

ORIGINAL

UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

In the matter of:

LONG ISLAND LIGHTING COMPANY

(Shoreham Nuclear Power Station
Unit 1)

Docket No. 50-322-OL-3

Location: Hauppauge, New York Pages: 14,042-14,240
Date: Tuesday, August 14, 1984

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of: :

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LONG ISLAND LIGHTING COMPANY : Docket No. 50-322-OL-3

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(Shoreham Nuclear Power Station, : (Emergency Planning

Unit 1) : Proceeding)

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Court of Claims

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State of New York

State Office Building

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Room 3B46

Veterans Memorial Highway

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Hauppauge, New York 11787

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Tuesday, August 14, 1984

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The hearing in the above-entitled matter was
convened, pursuant to recess, at 10:19 a.m.

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BEFORE:

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JAMES A. LAURENSEN, ESQ., Chairman
Atomic Safety and Licensing Board
Nuclear Regulatory Commission
Washington, D. C. 20555

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DR. JERRY KLINE, Member
Atomic Safety and Licensing Board
Nuclear Regulatory Commission
Washington, D. C. 20555

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DR. FREDERICK SHON, Member
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Washington, D. C. 20555

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25APPEARANCES:On Behalf of LILCO:

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C O N T E N T S

<u>WITNESSES</u>	<u>Direct</u>	<u>Cross</u>	<u>Redirect</u>
Matthew C. Cordaro) Carol A. Clawson) Richard J. Watts)	14,059	14,062	
Susan C. Saegert) Edward P. Radford)	14,104	14,106	14,137
Thomas E. Baldwin) Roger B. Kowieski) Philip McIntire) Joseph H. Keller)	14,147	14,155/ 14,173	

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14 Testimony of Matthew C. Cordaro,
Carol A. Clawson, Richard J. Watts Page 14,061

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16 Testimony of Edward P. Radford
and Susan C. Saegert Page 14,105

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17 Testimony of Thomas E. Baldwin,
Roger B. Kowieski, Philip)
18 McIntire, and Joseph H. Keller) Page 14,151

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

2 (10:19 a.m.)

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4 JUDGE LAURENSEN: Let the record show that the
5 hearing is now opened. Before we begin with the formal
6 oral argument concerning motions to strike testimony, I
7 wanted to review with all of the parties present the items
8 that we have on our agenda for this week which we will take
9 up orally.

10 First, is the New York motion to quash subpoenas;
11 secondly, is the County's motion to reconsider the order
12 concerning the schedule and page limitations on proposed
13 findings of fact. Both of these items, one and two, are
14 carried over from our conference of counsel of last week.

15 Number three will be the LILCO Motion to admit
16 revised testimony on relocation centers, and in conjunction
17 with that we will be discussing the joint motion of the
18 County and New York State for summary judgment, for
19 summary disposition on those contentions. I assume everyone
20 has received the copy of the Motion?

21 MS. McCLESKEY : No, sir.

22 MR. BORDENICK: Nor has the Staff. This is the
23 first I have heard of it.

24 MR. McMURRAY: Judge Laurenson, it has been
25 Federal Expressed to the parties. We will make sure they

1 get copies today.

2 MR. BORDENICK: Could I inquire as to where it
3 was Federal Expressed?

4 MR. McMURRAY: It should have been served by
5 hand on the NRC Staff yesterday. Nevertheless, there are
6 copies being Federal Expressed to us today. We will make
7 sure they get to you.

8 MR. BORDENICK: That is satisfactory. Thank
9 you.

10 JUDGE LAURENSEN: Item No. 4 is the -- what
11 if anything remains of the joint motion of the State and
12 County to compel discovery concerning the Board's sua
13 esponde questions, and fifth, is the County's Motion for
14 reconsideration regarding the schedule and oral testimony
15 on the sua esponde issues, or strike issues.

16 So, those are the items that we have listed as
17 currently pending that we will be addressing this week.
18 And when I included in there the joint motion for summary
19 disposition, I don't mean that we are going to be getting
20 to the merits of that, but as to how we proceed with that.

21 Anything else for that schedule for the week?

22 (Note: No response)

23 JUDGE LAURENSEN: All right. Under the arrange-
24 ments that we had made for the last three weeks of this
25 hearing, we have switched to oral motions to strike with

1 some brief advanced written notice of the scope of the motions
2 rather than requiring written motions as we have in the past.

3 And yesterday, the Board received from LILCO
4 and Suffolk County motions to strike each other's testimony
5 on the contention 16.E, the public information brochure.

6 The procedure that we will follow today on that
7 is that since the LILCO panel is scheduled to go forward
8 first, we will first hear the County's motion to strike. We
9 will give LILCO an opportunity to respond, followed there-
10 after by any other party who wishes to be heard on that
11 question. We will then turn to the LILCO Motion to strike
12 the County's testimony, and follow the same type of procedure.

13 Thereafter, the Board will take a brief recess,
14 consider the arguments, the motions to strike, and the
15 arguments in support and against them. We will come back
16 and announce a decision, and we will then begin with the
17 LILCO panel of witnesses on Contention 16.E.

18 So, at this time then I believe we are prepared
19 for the County's Motion to strike the testimony of the LILCO
20 panel on Contention 16.E.

21 MR. McMURRAY: Thank you, Judge Laurenson. There
22 are two basic objections that the County has to LILCO's
23 testimony on Contention 16.E.

24 The first deals with a number of sections of the
25 LILCO testimony, specifically Question and Answer 8, Question

1 and Answer 9, and the question it is the reference to the
2 Keeping Current article, and in the answer it is the second
3 sentence of that answer.

4 Question and Answer 10 in its entirety. Question
5 and Answer 11. Answer 12, the first two paragraph. Answer
6 16, the last paragraph, and the entirety of Attachment 2,
7 which is the Keeping Current article.

8 The reason for this Motion to strike, Judge
9 Laurenson, is that it is simply beyond the scope of the
10 issue in Contention 16.E. That issue, as narrowed by the
11 Board in its memorandum and order of June 28th, limited the
12 issue to the adequacy of the brochure's treatment of the
13 magnitude of doses and health effects during an emergency
14 at Shoreham.

15 And, in fact, LILCO's testimony -- in the beginning
16 of that testimony, makes much of that limitation imposed
17 by the Board.

18 I feel that the Keeping Current article is
19 irrelevant. It is far beyond the scope of what the County
20 intended in the contention. The keeping current article
21 is not the brochure, it is not held out as LILCO's brochure.
22 Therefore, those portions which refer to the Keeping Current
23 article should be striken.

24 The second portion to be struck involves Question
25 and Answer 15, Question and Answer 16. Again, these portions

1 of LILCO's testimony are irrelevant. They deal with
2 brochures of other plants. Those brochures are simply not
3 relevant to the Shoreham issue, or to the LILCO plant.

4 Moreover, they are vague -- the testimony is
5 vague and doesn't provide any specifics about those brochures,
6 and will not help the Board to make any determination about
7 the adequacy of the LILCO Plan, and the LILCO brochure on the
8 issue of health effects and the magnitude of doses.

9 That concludes the County's Motion to strike.

10 JUDGE LAURENSEN: Ms. Falzone?

11 MS. FALZONE: LILCO has a public education program
12 for educating the population on the effects of radiation,
13 and the issue of the adequacy of the treatment in the
14 brochure depends, in part, on what information is disseminated
15 to the public by other means.

16 LILCO has a valid defense to Contention 16. That
17 is, that it is not necessary to include the type of information
18 the County is asking us to include because we already
19 include that information in other sources. LILCO is
20 entitled to assert that defense, and I think it is a valid
21 defense in light of the regulations which are, in fact,
22 cited by the County in their contention, which doesn't state
23 that this type of information has to be included in the
24 brochure.

25 LILCO is entitled to show that its public

1 information on radiation satisfies the regulations, and
2 the regulations themselves do not require that that information
3 be included in the brochure.

4 The second point about the irrelevance of the
5 brochures from the other facilities, we disagree with that
6 because emergency planners refer to plans from other
7 utilities in determining what the standards are under the
8 regulations, and I think it is probative of what other
9 -- what other utilities are doing is probative of whether
10 what LILCO is doing satisfies the regulations. If FEMA has
11 found that those brochures satisfies the regulations, and
12 our brochure is doing as much or more -- well, let me
13 rephrase that. If our public information material is doing
14 as much or more as those brochures, that would lend some
15 weight to whether or not our brochure satisfies the
16 regulation.

17 JUDGE LAURENSEN: Does New York wish to be
18 heard on this?

19 MR. ZAHNLEUTER: Yes. Quite briefly, the
20 State also objects to the material on the Keeping Current
21 article. I think that the scope of the issue is the brochure,
22 and not the general, overall public information program that
23 LILCO intends to have.

24 JUDGE LAURENSEN: Anything from the Staff?

25 MR. BORDENICK: Yes. The Staff does not support

1 the Motion to Strike. As to the portion of the Motion
2 that deals with the testimony on what appears in Keeping
3 Posted as opposed to the brochure, it seems that the
4 Staff and LILCO has already alluded to this. I won't spend
5 a great deal of time on it.

6 Although the Contention itself speaks in terms
7 of the brochure, it seems to the Staff that you would be
8 putting form over substance to strike this particular
9 testimony, because as LILCO has pointed out, they are
10 attempting to answer the County's concern as stated in the
11 Contention. The fact that the information the County said
12 should be made available to the public appears in Keeping
13 Posted as opposed to the brochure, is not despositive
14 of the question of whether the testimony should be striken.

15 The Contention says brochure at the time that
16 the contention was propounded by the County. Obviously,
17 they were unaware of the information that was, in fact, in
18 Keeping Posted. For that reason, I would not support the
19 motion to strike; I think the testimony should be admitted
20 for whatever weight the Board wants to give it after cross
21 examination by the County.

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2 On the second aspect of the County's motion which
3 goes to the brochures of other plants, as I read Ms. Clawson's
4 testimony that testimony, the questions and answers that the
5 County seeks to strike really is part of the basis for her
6 opinion. And I think if you strike that testimony, then
7 there really is no basis for her to give the opinion.

8 So, I think in a nutshell, the County's argument
9 in that regard goes to the weight that should be given to
10 that particular aspect of the testimony rather than its
11 admissibility.

12 In summary, I would not strike any portion of the
13 LILCO testimony.

14 JUDGE LAURENSEN: Let's turn now to the LILCO
15 motion to strike.

16 MR. BRODENICK: Judge Laurenson, I think I said
17 Keeping Posted. I should have said Keeping Current. I'm
18 aware of a publication called Keeping Posted and apparently
19 it has stuck in my mind.

20 MS. FALZONE: LILCO has two motions to strike the
21 County's testimony. The first motion covers Page 11, Line
22 13, through Page 13, Line 2, in which the County discusses
23 a drawing on Page 7 of the brochure which they claim is
24 misleading because it gives the public the wrong impression
25 that a home shelters against all radiation.

LILCO believes that this testimony is beyond the

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2 scope of Contention 16. As the Board states, the issue
3 to be litigated under Contention 16.E is how much should
4 the brochure say about radiation.

5 The County's discussion focuses not around how
6 much should be included in the public information brochure
7 but rather takes issue with a particular treatment by LILCO
8 of the efficacy of protective action recommendations. Beyond
9 that, this issue previously was raised by the County in
10 Contention 16.C and was not admitted by the Board.

11 And it would be improper for the County at this
12 time to come back and litigate that issue that was already
13 not admitted by the Board.

14 The second motion we would like to make covers
15 Page 12, Lines 19 through 22, and Page 13, Lines 1 and 2,
16 in which the County states that a person with some knowledge
17 about the efficacy of sheltering would recognize that the
18 drawing is misleading and as a consequence might dismiss the
19 entire brochure as inaccurate.

20 In LILCO's view, this is an attempt by the County
21 to raise the issue of credibility. Though the County uses
22 the word "might dismiss the entire brochure as inaccurate,"
23 the fact that they are pointing to the fact that one statement
24 might lead the reader to believe that the entire brochure is
25 inaccurate, in LILCO's view is an attack on the credibility
of the brochure and should be stricken for that reason.

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1 JUDGE LAURENSEN: Since Mr. Glass is not here
2 to speak for FEMA, I think we will have to hold your request
3 to strike some of the FEMA testimony until that panel is
4 ready to testify and Mr. Glass is here.

5 Mr. McMurray.

6 MR. MC MURRAY: Judge Laurenson, the County op-
7 poses LILCO's motion. With respect to the misleading diagram
8 in the brochure, I think that LILCO has too narrowly defined
9 the issue. The issue is not only how much information on
10 radiation should be included in the brochure, but whether
11 the information that is there gives an accurate perception of
12 the risk. That's in LILCO's own testimony.

13 Here we have a diagram that is simply inaccurate.
14 And, of course, it discusses exactly the issue that's
15 raised in the contention, which is what would be the magnitude
16 of doses likely to be received during a radiological
17 emergency and the health effects of such doses. LILCO is
18 saying that -- or, this diagram implies that the magnitude
19 of doses would be zero if one shelters.

20 I'm sure LILCO didn't mean to intend to imply
21 this, but that's what the diagram shows. And that is
22 squarely within the bounds of this contention.

23 Also, with respect to Ms. Falzone's reference to
24 Contention 16.C, that did not deal with this diagram. It
25 rather dealt with some text in the brochure about the value

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1 of sheltering. Nevertheless, the Board denied the admission
2 of that contention, not because it substantively lacked merit
3 but because that contention was redundant to other contentions
4 raised in 16.

5 And I have the Board's Order which it issued last
6 August stating its reasons for denying the admission of 16.C,
7 so that is not a valid reason for not letting our witnesses
8 address this misleading diagram.

9 On the issue of someone with knowledge of the
10 efficacy of sheltering recognizing that the drawing is
11 misleading and dismissing the entire brochure as inaccurate,
12 this is not an attempt by the County to discuss the issue
13 of LILCO's inherent lack of credibility. We agree that
14 issue has been litigated.

15 This is rather the County's discussion of what
16 happens when you have information that is inaccurate and
17 inadequate. We can't just discuss the accuracy or the
18 adequacy of a brochure in a vacuum. I think there has to
19 be some discussion of the consequences of having inaccurate
20 or inadequate information. We have to discuss what the
21 purposes of having any information at all in the brochure are.
22 This is a very brief discussion of why you need accurate
23 and adequate information.

24 And this is again squarely within the bounds of
25 Contention 16.E.

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JUDGE LAURENSEN: Mr. Zahnleuter.

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MR. ZAHNLEUTER: The State opposes LILCO's motion for the same reasons stated by counsel for Suffolk County.

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JUDGE LAURENSEN: Mr. Bordenick.

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MR. BORDENICK: As to the first part of LILCO's motion, the Staff does not join in supporting it. The Staff reads the testimony in question as arguably relevant; therefore, it should not be stricken.

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As to the second part of the motion, I agree with LILCO's motion for the reasons indicated and support it.

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JUDGE LAURENSEN: All right. That completes the arguments on the motions to strike. We will take a brief recess and we will be back with our decision.

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We will then begin the LILCO panel testimony on Contention 16.E.

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MR. MC MURRAY: Judge Laurenson, at this time I would just like to note for the record that the County is distributing copies of its motion for summary judgment on the relocation center issues.

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(Short recess.)

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JUDGE LAURENSEN: We are back on the record now. Before we begin with the rulings on the specific motions that we have before us today, the Board wants to emphasize to the Parties its view that relatively little has been accomplished by motions to strike, in comparison with the time that we have all spent on them. Accordingly, we suggest that the Parties reexamine their need to file any further such motions before next week's deadline.

By now it should be apparent that except in unusual cases, the Board is not inclined to strike testimony.

Turning to the motions at hand, we deny all parts of all motions.

Contention 16E is a broadly-worded contention asserting that the brochure does not adequately address the magnitude of doses the public might receive in a severe accident. We did not rewrite or restrict that contention in our prior ruling, except to say that the issue of credibility will not be litigated in connection with this contention.

Turning to the specifics: LILCO claims that its public information program is in compliance with the NRC and FEMA regulations and guidelines. We do not decide the merits of that issue, but we find that LILCO should have the opportunity to make a record to support that claim

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1 later.

2 Further, we have consistently held throughout
3 this case that LILCO may refer to the practices and
4 procedures in effect at other nuclear plants in the United
5 States to support its plan.

6 Turning to the LILCO motion, we find that the
7 drawing or sketch on page 7 of the brochure may not
8 adequately address the magnitude of doses that the public
9 might receive, and therefore Suffolk County may present
10 testimony under this contention.

11 In our June 28th, 1984 order, we removed the
12 issue of credibility from this contention. We did not
13 preclude the use of the word "inaccurate" as opposed to
14 "incredible." There is nothing in our prior order which
15 precludes this testimony.

16 In conclusion, all motions to strike the LILCO
17 and Suffolk County testimony on Contention 16E are denied.

18 We are now ready for the LILCO panel of witnesses
19 on Contention 16E.

20 MS. MC CLESKEY: Judge Laurenson, the witnesses,
21 Clason, Cordaro and Watts have resumed the stand.
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1 Whereupon,

2 MATTHEW C. CORDARO

3 CAROL A. CLAWSON

4 RICHARD J. WATTS

5 resumed the stand as witnesses on behalf of the Applicant,
6 and, having been previously duly sworn, were further
7 examined and testified as follows:

8 DIRECT EXAMINATION

9 BY MS. MC CLESKEY:

10 Q Will each of you please identify yourself for
11 the benefit of the Court Reporter?

12 A (Witness Cordaro) Matthew C. Cordaro.

13 A (Witness Clawson) Carol A. Clawson.

14 A (Witness Watts) Richard J. Watts.

15 MS. MC CLESKEY: I believe, Judge Laurenson,
16 that each of these witnesses has been previously sworn.

17 JUDGE LAURENSEN: That is correct. You are still
18 under oath.

19 BY MS. MC CLESKEY:

20 Q Do each of you have before you a document
21 consisting of 12 pages of testimony, plus two attachments,
22 entitled LILCO's Testimony on Contention 16.E, Public
23 Information on Radiation?

24 A (Witness Cordaro) Yes.

25 A (Witness Clawson) Yes.

1 A (Witness Watts) Yes.

2 Q Is this your testimony?

3 A (Witness Cordaro) Yes.

4 A (Witness Clawson) Yes.

5 A (Witness Watts) Yes.

6 Q Was it prepared by you and under your supervision?

7 A (Witness Cordaro) Yes.

8 A (Witness Clawson) Yes.

9 A (Witness Watts) Yes.

10 Q Do you have any changes to make to your testimony?

11 A (Witness Clawson) Yes, we do.

12 On page 11, the first full sentence which

13 reads --

14 "Two other plans, the plans for Indian

15 Point and Millstone have received FEMA's interim

16 approval for up to 5 percent power.

17 -- should be stricken from the testimony.

18 Q With this change, is the testimony true and

19 correct to the best of your knowledge and belief?

20 A (Witness Cordaro) Yes.

21 A (Witness Clawson) Yes.

22 A (Witness Watts) Yes.

23 MS. MC CLESKEY: Judge Laurenson, I move

24 this testimony into evidence and ask that it be bound into

25

1 the record as if read.

2 JUDGE LAURENSEN: Any objections?

3 MR. MC MURRAY: No objection.

4 MR. ZAHNLEUTER: No objection.

5 MR. BORDENICK: No objection.

6 MR. GLASS: No objection.

7 JUDGE LAURENSEN: The testimony will be received
8 in evidence and bound as indicated.

9 (The document, LILCO's Testimony on Contention
10 16.E (Public Information on Radiation) follows:)

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LILCO, July 30, 1984

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

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

LILCO'S TESTIMONY ON CONTENTION 16.E
(PUBLIC INFORMATION ON RADIATION)

PURPOSE

This testimony addresses whether the LILCO public education brochure contains "general information as to the nature and effects of radiation" in accordance with 10 C.F.R. Part 50, Appendix E, IV.D.2, and the guidelines of NUREG-0654. The testimony demonstrates (1) that the brochure does provide general information as to the nature and effects of radiation, (2) that it contains information to "prime" the public to perceive accurately the risk in a radiological emergency, (3) that additional, more detailed information about radiation and its effects is sent out each year under the LILCO plan, and (4) that a comparison of the LILCO-supplied information with 22 brochures for other nuclear plants around the country shows that LILCO is providing at least as much information about radiation as is provided in the other brochures.

Attachments

Attachment 1

LILCO Public Emergency Procedures Brochure (Revision 3)

Attachment 2

Article from the Spring 1984 "Keeping Current" newsletter entitled "Radiation--Where it Comes From--and--How it Affects Us"

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
(Shoreham Nuclear Power Station,) (Emergency Planning
Unit 1)) Proceeding)

LILCO'S TESTIMONY ON CONTENTION 16.E
(PUBLIC INFORMATION ON RADIATION)

1. Q. Will the witnesses please identify themselves?

A. [All witnesses] Our names are Carol A. Clawson, Matthew C. Cordaro, and Richard J. Watts. We have previously testified in this proceeding, and our statements of professional qualifications have already been entered into the record. We have previously been sworn.

2. Q. What is Contention 16?

A. [Clawson, Cordaro] Contention 16 reads as follows:

Contention 16. LILCO has drafted a public education brochure entitled "Emergency Procedures: Shoreham Nuclear Power Station." The content of LILCO's public information brochure is misleading and incomplete and thus this aspect of the public information program fails to comply with 10 CFR Section 50.47(b)(7), 10 CFR Part 50, Appendix E, Section IV.D.2, and NUREG 0654, Sections II.G.1 and 2.

3. Q. What is subpart 16.E of Contention 16?

A. [Clawson, Cordaro] Subpart 16.E reads as follows:

E. The LILCO brochure's discussion of radiation effects is limited to natural sources and very low levels of radiation. It does not adequately address the magnitude of doses that the public might receive during a severe accident, such as one requiring EPZ evacuation, nor the health-threatening consequences related to such releases. Such inadequate disclosure of essential facts renders the brochure incredible.

4. Q. What are the legal standards cited in Contention 16?

A. [Clawson, Cordaro] The legal standards cited in Contention 16 are the following:

10 C.F.R. § 50.47(b)(7)

Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.

10 C.F.R. Part 50,
Appendix E, IV.D.2

Provisions shall be described for yearly dissemination to the public within the plume exposure pathway EPZ

of basic emergency planning information, such as the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency. Signs or other measures shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an accident occurs.

NUREG-0654, II.G.1

Each organization shall provide a coordinated periodic (at least annually) dissemination of information to the public regarding how they will be notified and what their actions should be in an emergency. This information shall include, but not necessarily be limited to:

- a. educational information on radiation;
- b. contact for additional information;
- c. protective measures, e.g., evacuation routes and relocation centers, sheltering, respiratory protection, radioprotective drugs; and
- d. special needs of the handicapped.

Means for accomplishing this dissemination may include, but are not necessarily limited to: information in the telephone book; periodic information in utility bills; posting in public areas; and publications distributed on an annual basis.

NUREG-0654, II.G.2

The public information program shall provide the permanent and transient adult population within the plume exposure EPZ an adequate opportunity to become aware of the information annually. The programs should include provision for written material that is likely to be available in a residence during an emergency. Updated information shall be disseminated at least annually. Signs or other measures (e.g., decals, posted notices or other means, placed in hotels, motels, gasoline stations and phone booths) shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an emergency or accident occurs. Such notices should refer the transient to the telephone directory or other source of local emergency information and guide the visitor to appropriate radio and television frequencies.

5. Q. What precise issue does this testimony address?
- A. [Clawson, Cordaro] The issue addressed by this testimony is that stated in the Licensing Board's "Memorandum and Order Ruling on LILCO's Motion for Summary Disposition of Contentions 16.E, J, K, L and M (Public Information Brochure)," dated June 28, 1984. The issue to be litigated, as stated on page 13 of that Memorandum and Order, is "limited to the adequacy of the brochure's treatment of magnitude of doses and health effects." The issue is "how much should an emergency brochure say about

the magnitude of radiation doses the public might receive in the event of a severe accident and the health effects of such doses" (page 7 of the Memorandum and Order). The Board expressly did not re-open for consideration "the issues raised by the last sentence of Subcontention 16.E--whether any failure to adequately discuss larger radiation doses and their health effects renders the brochure incredible" (page 7 of the Memorandum and Order).

6. Q. What is LILCO's public education brochure?
- A. [Clawson, Cordaro] It is Attachment 1 to this testimony.
7. Q. Does the brochure contain general information as to the nature and effects of radiation?
- A. [Clawson, Cordaro] Yes, on pages 14-16. Also, there are references to the nature of radiation on pages 2, 3, 4, and 5.
8. Q. Does LILCO plan to disseminate information about radiation in addition to the brochure?
- A. [Clawson, Cordaro] Yes. An article in the Spring 1984 issue of our newsletter "Keeping Current" entitled, "Radiation--Where it Comes From--and--How

it Affects Us," explained the nature of radiation, the acceptable radiation exposure levels, and the effects of radiation, including radiation from both routine operations and accidents at nuclear plants. A copy of the article is Attachment 2 to this testimony. The LILCO "Keeping Current" article has already been mailed to every address that would receive the brochure.

9. Q. How often will the public education brochure and the article in "Keeping Current" be distributed?

A. [Clawson, Cordaro] The public education brochure will be distributed annually to residents of the EPZ. Additional material relating to radiation, such as the article in "Keeping Current," will also be distributed annually.

10. Q. Does the information in either of those sources discuss the "magnitude of doses that the public might receive during a severe accident"?

A. [All witnesses] Yes. The article in "Keeping Current" states that in a severe accident at a nuclear power plant people could be exposed to dangerously high levels of radiation. See page 3, column 1, of Attachment 2.

11. Q. Does the information in either of these sources discuss the health-threatening consequences related to releases of radiation in a severe accident?

A. [All witnesses] Yes. The article in "Keeping Current" states that "exposure to very large amounts of radiation over a short period of time (several minutes to several hours) can cause serious injury to cell tissues, and even death" (Attachment 2, page 2, column 3) and that "animal studies show that large doses can cause genetic damage which continues through several generations of offspring" (Attachment 2, page 3, column 1).

12. Q. Why don't you include in the brochure the level of detail found in the "Keeping Current" article?

A. [Clawson, Cordaro] We see little reason to do so. The two publications will be sent to precisely the same addresses by precisely the same means (U.S. mail). Both are sent in a special mailing, not as bill enclosures. People will receive both pieces of information each year.

The reason for not repeating more of Attachment 2 in Attachment 1 is that we have tried to keep the brochure reasonably concise and reasonably simple.

It is our opinion that the main focus of the brochure should be to give the public "action information"; we have tried to make the brochure a more practical document, emphasizing what people should actually do in preparation for and during an emergency.

13. Q. How much information about radiation should be in a public education brochure?

A. [All witnesses] The primary purpose of the brochure is to inform the public what to listen for and what to do in case of an emergency (for example, to prepare people to turn on their radios when they hear the warning sirens). To the extent that information about radiation is required, the important information to include is that radiation may be hazardous and that it may require protective actions. Such information is, in fact, in the LILCO brochure. The information in the brochure should be designed to prime the public to respond appropriately in an emergency. This means it should provide basic information to give people an accurate perception of the risk -- for example, information that the power plant cannot explode like a bomb (Attachment 1, page 3), that radioactive

materials may be airborne and could lead to exposure of individuals offsite (Attachment 1, page 4), and that radiation can be hazardous (Attachment 1, page 2).

14. Q. Does the LILCO brochure do this?

A. [All witnesses] Yes.

15. Q. Have you reviewed public information materials from other nuclear facilities, especially with respect to information provided about the nature and effects of a radiological release during a nuclear accident?

A. [Clawson] Yes, I have reviewed a number of public information brochures for nuclear plants across the country. The most recent ones I have examined are the following:

<u>Plant</u>	<u>State</u>
Diablo Canyon Nuclear Power Plant	California
Rancho Seco Nuclear Generating Station	California
Millstone Nuclear Power Plant	Connecticut
Crystal River Nuclear Power Plant	Florida
Turkey Point Plant	Florida
Zion Nuclear Plant	Illinois

Duane Arnold Energy Center	Iowa
Palisades Nuclear Plant	Michigan
Grand Gulf Nuclear Station	Mississippi
Oyster Creek Nuclear Generating Station	New Jersey
Salem Nuclear Generating Station	New Jersey
Indian Point Station	New York
Nine Mile Point/FitzPatrick Nuclear Station	New York
R. E. Ginna Nuclear Power Plant	New York
Brunswick Steam Electric Plant	North Carolina
Catawba Nuclear Station	South Carolina
Sequoyah Nuclear Plant	Tennessee
North Anna Power Station	Virginia
Surry Power Station	Virginia
Yankee Nuclear Power Station	Vermont
Kewaunee/Point Beach Nuclear Power Plant	Wisconsin
La Crosse Boiling Water Reactor	Wisconsin

These brochures were picked to cover a variety of locations around the country and to include the most recent brochures I had on hand.

Of the emergency plans addressed in these brochures, nine have been approved through FEMA's 44 C.F.R. Part 350 process. These are Brunswick, Crystal River, Grand Gulf, North Anna, Palisades,

Sequoyah, Surry, Turkey Point, and Zion. ~~Two other plans, the plans for Indian Point and Millstone, have received FEMA's interim approval for up to 5 percent power.~~

16. Q. How does the public information provided by LILCO regarding the nature and effects of radiation compare to the public information provided in the brochures for the other nuclear plants listed above?

A. [Clawson] LILCO's information is typical of the information in such brochures. Indeed, two of the brochures for New York State plants (Indian Point and Nine Mile Point/FitzPatrick) include a discussion by Roger Linnemann virtually identical to the one in the LILCO brochure.

In no case have I found a brochure that specifies the magnitude of the worst possible release. The Zion brochure does say that "if the accident were serious, and could expose members of the public to 1000 millirem or more of radiation," state plans call for sheltering or evacuation of the public. Three others -- Kewaunee/Point Beach, Oyster Creek, and Salem -- refer to the possibility of a release of "substantial quantities" of radioactivity. A few brochures say that accidents can have a range

of consequences. For example, the Turkey Point brochure says that the "most serious accident imaginable would pose a wide range of consequences," depending on a number of factors.

None of the 22 brochures discusses cancer induction. (The Zion brochure does say that "200 millirem of radiation, over the course of a year, has been estimated to have roughly the same risk to life as smoking two to six cigarettes.") None gives a numerical figure for increased cancer risk from radiation. A handful of the brochures, such as the one for Salem, mention (as does the LILCO "Keeping Current" article) that radiation can cause damage to cells in the body.

The LILCO "Keeping Current" article (Attachment 2) includes more detail on the magnitude and effects of radiation doses than any brochure that I have reviewed.

Shoreham Nuclear Power Station

Public Emergency Procedures Maps for Zone R

(Rev. 3)

LILCO
LONG ISLAND LIGHTING

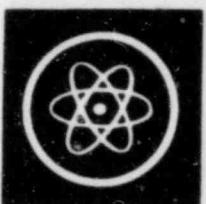
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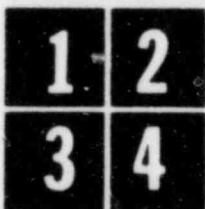
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Be Prepared
Page 17



Why Emergency Planning?

In 1980 more than 130,000 American families had to leave their homes because of emergencies. There were hurricanes, tornadoes, major accidents, explosions, and fires. To meet the needs of these people the American Red Cross set up thousands of temporary relocation centers.

Government and private agencies have improved their ability to handle emergencies. Plans are made to provide for safe and efficient care of families during emergencies. In 1979, the U.S. Government established the Federal Emergency Management Agency (FEMA). FEMA oversees the federal role in emergencies. State and County agencies are also responsible for planning for emergencies.

LILCO operates the Shoreham Nuclear Power Station under the very highest safety standards. Still, it is possible that the Shoreham Station could release hazardous material into the air. LILCO has carefully developed plans for handling all emergencies. These plans were developed under regulations issued by the Federal Government in 1980. They strengthen emergency procedures for all nuclear stations. They enable officials to handle any emergency situation that may arise.

Each person in the area should also be personally prepared. This booklet describes your role in dealing with a local emergency. Although this booklet was written for the Shoreham Power Station, many of the procedures can be applied when storms, fires, transportation accidents, or other emergencies strike.

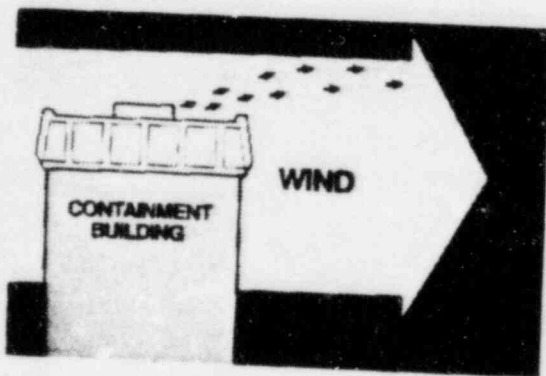
Emergency plans have been developed for each of the nineteen separate zones. Each zone is an area that might need to take action in an emergency. The zones take in areas up to ten miles around the Shoreham Plant.



WHAT CAN OCCUR

Due to the many safety systems designed and built into Shoreham, there is very little likelihood that an accident would occur that would require area residents to take protective action.

Occasionally, nuclear power plants do fail to perform properly. The pumps, valves and pipes inside the plant can fail to work correctly. Some failures may result in a leak of radioactive material into the containment building. The building was designed to hold the radiation inside.



A serious accident at Shoreham could result in the release of radioactive materials into the air. If radiation is released, it could occur all-at-once or over a period of time. In most cases, the release would not begin for several hours after the problem was discovered.

The release into the air would most often be relatively small, and it would move with the wind until diluted to such a low level that it would not be a hazard.

Radiation is not visible, and it does not have an odor. But it can easily be detected by scientific equipment.

If a serious accident occurs which results in the release of radiation into the air, you may be asked to take protective actions. You will know how serious an accident is by the classification system.

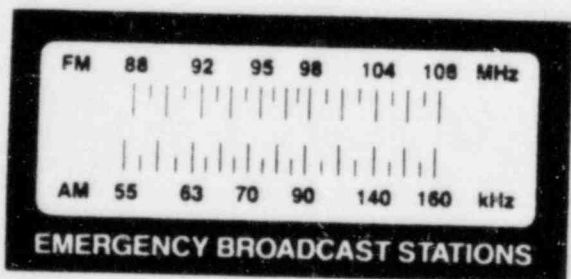


How You Would Be Told

Eighty-nine sirens have been installed in the ten-mile zone around the Shoreham Plant. The sirens sound similar to fire sirens but there is a difference. The Shoreham sirens make a sound lasting from three to five minutes. (Fire alarms make a wailing sound for about two minutes. Their sound pulsates up to ten times in the two minutes.) If you hear the long siren sound:

- Turn on your radio
- Tune in to your local Emergency Broadcast System radio station.
- You will receive instructions from the Local Emergency Response Director.

In addition to the sirens and your own radios, there are more than 100 tone-alert radios in the area. These radios automatically turn on when an Emergency Broadcast Message comes on the air.



These tone-alert radios have been placed in schools, hospitals, nursing homes, and other buildings.

The Emergency Broadcast System will provide details about the reason for an alarm. You will always be advised what to do. You should stay tuned in to your local Emergency Broadcast System radio station until the emergency is declared over.

IF YOU ARE HEARING IMPAIRED

People who are hearing impaired should arrange for a family member or neighbor to notify them if the sirens sound.

If you are hearing impaired and would need special assistance in the event that the sirens are sounded it is important for you to register with the Local Emergency Response Organization (LERO).

If the sirens are sounded due to an emergency at the Shoreham Nuclear Power Station, a LERO worker will come to your house to notify you personally of the emergency condition.

To register with LERO, please complete the post card in the back of the brochure and mail it to us today.

EBS STATIONS

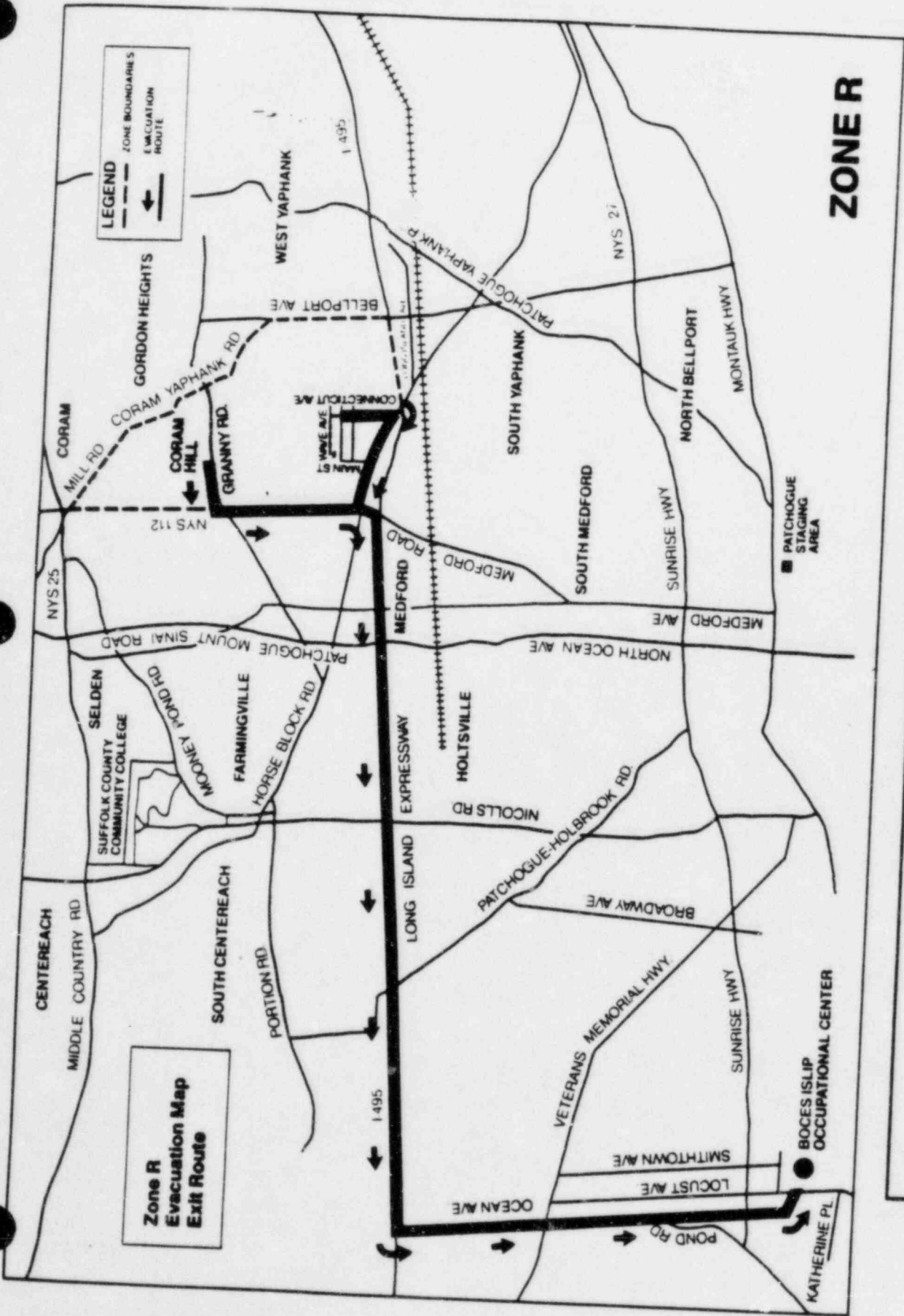
(To be completed prior to mailing to public)



- Gather the items you would need for a few days away from home including:
 - blankets and sleeping bags for everyone
 - prescription medicines, if needed
 - changes of clothing for several days
 - personal items such as shaving kits, soaps and cosmetics
 - formulas and other needs of infants and children
 - checkbooks, credit cards and important papers
 - a portable radio with fresh batteries
 - this booklet
- Place a damp common cotton handkerchief or bathroom towel over your nose and mouth when you leave your house.
- Leave by the specific route for your location shown on page 10A of this booklet.
- Follow the blue and white pathfinder signs. They are located on every major roadway in the 10-mile emergency zone. The signs will direct you along predesignated routes out of the zone.
- Follow the directions of the traffic guides. They are there to help speed evacuation.
- If you do not have a ride, walk to the nearest point on the emergency bus route map which is located on page 10B of this brochure. Buses will pick you up along this route and take you to a relocation center outside the zone.

IF YOU ARE DISABLED

Arrangements have been made for handicapped people who are unable to follow the directions given in this booklet. People needing special help because of physical disabilities, confinement, or old age should fill out the advance registration card in the pocket of this booklet **now** and mail it. Those who cannot mail the card for themselves should have someone do it for them. The cards will be used to compile a list of area residents who need special assistance due to blindness, hearing loss, wheelchair confinement, or inability to move because of age. The disabled who need help will be properly cared for. Persons who mail the card will hear from us soon after we receive the card.



ZONE R

DESCRIPTION: Zone R is south of Coram-Yaphank Road/Mill Road, east of Rt. 112, west of Bellport Avenue, and north of Horseblock Road (CR 16) and the Long Island Expressway (Rt. 495).

RELOCATION CENTER: BOCES Islip Occupational Center

ROUTING ASSIGNMENTS: Most convenient to Rt. 112, Rt. 112 south to the Long Island Expressway (Rt. 495, Exit 64), Rt. 1495 west to exit 595 (Ocean Avenue), Ocean Avenue south to Locust Avenue and the BOCES center.



Children In School

There are 17 school districts, two Boces districts, two parochial schools and 12 nursery schools located in the 10-mile emergency planning zone circling Shoreham.

Some of these districts have schools which are located outside the 10-mile zone.

SCHOOL LISTINGS

SHOREHAM WADING RIVER SCHOOL DISTRICT

All within the 10-mile zone.

Briarcliff Road School
Miller Avenue School
Wading River School
Shoreham Wading River Middle
School
Shoreham Wading River High School

LITTLE FLOWER UNION FREE SCHOOL DISTRICT

Within the 10-mile zone.

Little Flower Elementary School

ROCKY POINT UNION FREE SCHOOL DISTRICT

All within the 10-mile zone.

Joseph A. Edgar School
Rocky Point Elementary School
Rocky Point Junior-Senior High
School

MIDDLE ISLAND CENTRAL SCHOOL DISTRICT

All within the 10-mile zone.

Ridge Elementary School
West Middle Island Elementary
School
Coram Elementary School

Charles E. Walters Elementary
School
Middle Island Junior High School
Longwood High School

MILLER PLACE UNION FREE SCHOOL DISTRICT

All within the 10-mile zone

North Country Road School
Andrew Muller Primary School
Sound Beach School
Miller Place High School

MOUNT SINAI UNION FREE SCHOOL DISTRICT

Both within the 10-mile zone.

Mount Sinai Elementary School
Mount Sinai Junior High School

PORT JEFFERSON UNION FREE SCHOOL DISTRICT

Both within the 10-mile zone.

Port Jefferson Elementary School
Port Jefferson Junior High School

Outside the 10-mile zone.

Earl L. Vandermeulen High School.

COMSEWOGUE UNION FREE SCHOOL DISTRICT

Both within the 10-mile zone.

Clinton Avenue Elementary School
Comsewogue Senior High School

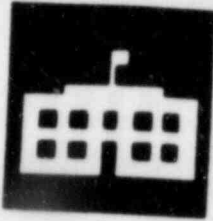
Outside the 10-mile zone.

Boyle Road Elementary School
Terryville Elementary School
Comsewogue Secondary School
Norwood Avenue Elementary School
John F. Kennedy Junior High School

MIDDLE COUNTRY CENTRAL SCHOOL DISTRICT

Outside the 10-mile zone.

New Lane Memorial Elementary
School
Bicycle Path Elementary School
Hawkins Path Elementary School



Outside the 10-mile zone.
St. John the Evangelist School
St. David School
Mercy High School

NURSERY SCHOOLS

All within the 10-mile zone.
Alphabetland Child Enrichment
Center
Brookhaven Country Day School
Central Brookhaven Head Start
Coram Child Care Center
Kids-R-Us Day Care Learning Center
Middle Island Nursery School
St. Anselm's Nursery School
St. John's Pre-School
Sound Beach Pre-School Co-op
Step-by-Step Early Learning Center
Trinity Lutheran Nursery School
Wading River Cooperative Play
School

Outside the 10-mile zone.
North Shore Christian School

All school districts, parochial schools and nursery schools which are located inside the zone or which may draw students from inside the zone will be kept up to date on conditions at Shoreham in the event of an accident at the nuclear plant.

Schools will be advised to implement emergency procedures at the earliest possible stage.

In the event of an Alert Condition at the Shoreham plant which results in no protective action recommendations for the general public, school districts, parochial schools and nursery schools listed in this brochure will be advised to dismiss their students early.

In the event of a Site Area or General Emergency Condition at the Shoreham plant which results in the protective ac-

tion recommendation of sheltering anywhere in the 10-mile emergency planning zone, all schools listed in this brochure will be advised to shelter their students. Students who live within the zone but who attend school outside the zone will be asked to remain at school when the school day ends.

In the event of a General Emergency Condition at the Shoreham plant which results in the protective action recommendation of evacuation anywhere in the 10-mile emergency planning zone, all schools listed in this brochure will be advised to relocate their students to reception centers outside the zone. Students who live within the zone but who attend school outside the zone will be asked to remain at school when the school day ends.





higher elevation would expose you to additional cosmic rays. If you make trips by airplane you receive 1 to 2 additional millirem for each 2,500 miles. The higher flying altitudes put you closer to the cosmic rays.

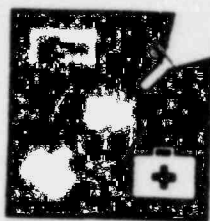
RADIATION AND NUCLEAR PLANTS

The operation of a nuclear power plant is a minor factor in radiation exposure. Even the people who live nearest a plant receive at most only 1 to 2 millirem a year! This is less than the radiation one gets during one coast-to-coast airplane flight.

What about radiation released as a result of a reactor accident? There are more than 75 nuclear-powered commercial electric plants operating around the country. Yet, there has never been an accident that has exposed the public to the level of a year's natural radiation. At Three Mile Island the containment building prevented a major release of radiation. This was what it was built to do.

Radiation and health experts calculated at Three Mile Island the most radiation that anyone could have received. Even those standing in the highest radiation area outside the plant for 10 days received a dose of only 70 millirems. They reported that the average exposure for the population within 5 miles of the plant was only about 1 millirem.

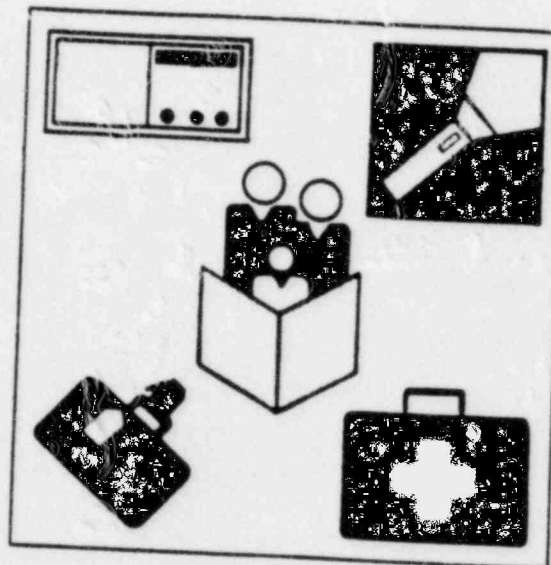




Be Prepared

To be sure that your family is prepared for any emergency, you should:

- Have your family read this booklet.
- Talk about it with the family. Be sure that everyone knows what to do.
- Find your emergency Relocation Center on the map (page 10). Note how you would get from your house to the Relocation Center.
- If the Local Emergency Response Organization Director recommends that people in your zone should leave home, go quickly. Plan now where you will go. Will you go to your Relocation Center? Or will you go to a friend's or relative's house outside the 10-mile emergency area?
- Each family should decide now how they will get together.
- Do you think you will need special help? If you do, mail the enclosed card to us. We will write back telling how we will help. Do you know of someone else who needs help? If you do, tell us that too.
- It is a good idea to keep a portable radio and extra batteries on hand. A flashlight and a first-aid kit are good to have with you too.
- Keep this booklet. Put it in a place that you will not forget.
- Any questions? Please feel free to write to:
**Local Emergency
Response Organization
P.O. Box 624
Wading River, NY 11742**
We want to help.



Keeping Current

An open line for neighbors of the Shoreham Nuclear Power Station

Spring 1984

LONG ISLAND LIGHTING COMPANY



Brookhaven National Laboratory's Radiological Assistance Program team members setting up equipment.

Community Groups Participate in Emergency Planning for Shoreham

There are a variety of groups and organizations in the local area that are prepared to help the public if there is an accident at the Shoreham Nuclear Power Station.

These groups range from government agencies to private citizens. The level of response would depend upon the seriousness of the accident and whether public protective actions would be necessary.

To determine any potential public consequences from an accident at

Shoreham, the Local Emergency Response Organization (LERO) would rely heavily on a federal government program that has been in existence for 30 years.

The United States Department of Energy's Radiological Assistance Program (RAP) has worked with both local or state governments and nuclear plant licensees in radiological monitoring and assessment services throughout the country since the 1950's.

For the Long Island area, the federal government RAP team is based at Brookhaven National Laboratory (BNL) and is comprised of senior staff members of the lab and the Federal Department of Energy. Most are health physicists who have graduate degrees in nuclear physics. Others are chemists, industrial hygienists, nuclear engineers and medical doctors. Many live close to Brookhaven Lab and to the Shoreham Nuclear Power Station.

As a facility that uses radiological materials for a variety of research purposes, Brookhaven National Laboratory routinely performs radiological monitoring and assessment activities for its own facilities. BNL personnel also observe and evaluate nuclear plant emergency plan drills and exercises. In addition, the Department of Energy RAP team would monitor, assess and interpret data in the event of a release of radiation at Shoreham or at any other nuclear plant in the northeast.

In fact, the RAP team from Brookhaven was the first such group at Three Mile Island in 1979. The Department of Energy sent more than 100 radiation specialists from throughout the country to Three Mile Island to monitor and assess radiation during the nuclear plant accident. The Brookhaven RAP team was also on a stand by status in the event it was needed to respond to the 1982 accident at Ginna Nuclear Station in Rochester.

Continued on pg. 2

Large doses of radiation to pregnant women can impact the development of an unborn child. Although there is no comparable evidence for humans, animal studies show that large doses can cause genetic damage which continues through several generations of offspring.

What do we mean by "large doses of radiation?" A person must be exposed to at least 25,000 to 50,000 millirem within a short period of time before it is possible to observe any minor yet reversible blood changes. This exceeds the federal limits on public radiation exposure by 50 to 100 times. It would require a massive dose of radiation — 350,000 millirem — within a short period of time to cause serious illness or death.

There are very few sources of radiation from which people might receive doses high enough to result in noticeable effects. These sources are not present as a routine part of our lives. Exposure to radiation from the explosion of nuclear weapons is one such source. Treatment of disease with radiation therapy, although a highly controlled procedure, is another source of high levels of exposure. In a severe accident at a nuclear power plant — one in which all the nuclear fuel would melt and all of the many barriers designed to prevent radioactive material from entering the environment would fail — people could also be exposed to dangerously high levels of radiation. The chance of this happening is **extremely remote**.

Radiation and Nuclear Plants

What levels of radiation exposure do people receive from nuclear power plants? The routine operation of a nuclear power plant is actually a minor factor in radiation exposure. Even the people who live nearest a plant receive less than 1 millirem a year. This is less than the radiation

TYPICAL RADIATION SOURCES ON LONG ISLAND

Sources and amount of annual radiation exposure according to U.S. government health and environmental experts.

Source	Millirem
Cosmic rays from the sun.....	23
Natural radioactivity in water, food and air.....	23
Natural radioactivity in soil and rocks.....	23
Medical and dental X-rays.....	64
Fallout from weapons tests.....	3-4
Routine operation of nuclear power plants.....	less than 1
<hr/>	
Total 137-138	

one gets during a coast-to-coast airplane flight.

What about radiation released as a result of an accident like the one at Three Mile Island? At Three Mile Island the containment building prevented a major release of radiation. This was what it was built to do.

Radiation and health experts calculated the most radiation that anyone could have received at Three Mile Island. Even standing in the highest radiation area outside the plant for 24 hours a day during a 10 day period, a person would have received a dose of only 80 millirem. The average exposure for the population within 5 miles of the plant was only about 1 millirem. There has never been an accident at a nuclear power plant in the United States, not even at Three Mile Island, that has exposed the public to the level of even a year's natural radiation.

Radiation Guidelines

Based on the recommendations of the International Commission on Radiological Protection and the National Council on Radiation Protection and Measurements, the

federal government has established public health and safety standards for radiation exposure. After more than 50 years' experience, they recommend today that exposure to workers in the nuclear industry be limited to 5,000 millirem a year. For members of the public, the recommendation is a limit of 500 millirem above the exposure received from natural and medical sources.

A majority of the scientists and university professors who are experts on radiation conclude that these federal limits on radiation exposure are probably very conservative and offer an ample margin of protection.

Protective Action Guidelines have also been established by the Environmental Protection Agency for protecting the general public in the event of an accident at a nuclear power plant. These guidelines, which include sheltering (staying indoors) and/or evacuation, are initiated when the projected dose to the general population is expected to be between 1,000 and 5,000 millirem, levels well below those known to result in any effects on human health.

1 MS. MC CLESKEY: Judge Laurenson, these
2 witnesses are ready for cross examination.

3 JUDGE LAURENSEN: Mr. McMurray?

4 CROSS-EXAMINATION

5 BY MR. MC MURRAY:

6 Q Mrs. Clawson, let me refer you to the part
7 of your attachment 1, which is the LILCO information brochure
8 entitled, What you Should Know About Radiation. This is
9 on page 14.

10 Do you have that in front of you?

11 A (Witness Clawson) Yes, I do.

12 Q This section, What you Should Know About
13 Radiation, I take it was drafted by Roger Linnemann, who
14 is an MD, is that correct?

15 A Essentially, yes it was.

16 Q Did Dr. Linnemann actually write this draft?
17 Or, was it written by you based on other materials you
18 received for it? When I say "you," I mean LILCO.

19 A Yes, I understand what you are saying.

20 Dr. Linnemann had written an article about
21 radiation and sometime ago we had some reading experts
22 look throughout the entire brochure to potentially, and
23 in some cases rewrite the brochure, to a lower reading
24 level. And that is why the top of the article, we say
25 it is information -- based on information by Roger Linnemann.

1 But, essentially, yes it is Dr. Linnemann's work.

2 Q I take it then that what you are saying is
3 Dr. Linnemann provided you with an article and it was edited
4 by people at LILCO or people hired by LILCO, correct?

5 A People hired by LILCO, correct.

6 Q Would that be Dr. Mileti?

7 A No, not in terms of this. But Dr. Mileti did
8 review the brochure after it was revised by reading experts.

9 Q Who edited Dr. Linnemann's article?

10 A We had contracted two reading experts. One from
11 Adelphi University and another one from a college board
12 organization to at first ascertain the reading level of
13 the brochure and then to essentially rewrite the brochure
14 to a Junior High School reading level.

15 Q And they took Dr. Linnemann's draft and reduced
16 that to the Junior High School reading level?

17 A That's correct.

18 Q Let me refer you to attachment number 2, which
19 is the Keeping Current article.

20 You would agree, wouldn't you, that the text of
21 this article -- and that article is found on page 2 of
22 attachment 2 -- is up to the point of the portion of that
23 article entitled "The Facts of Radiation," virtually identical
24 with the information provided in attachment number 1, that is
25 the brochure?

1 A I would say that they are very similar, yes.

2 Q That's because attachment 2, the article in
3 attachment 2, was also prepared by Dr. Linnemann, correct?

4 A No, it was not prepared by Dr. Linnemann.

5 Q It was prepared from Dr. Linnemann's --

6 A Article.

7 Q -- article, correct?

8 A Yes.

9 Q Was the section entitled "Effects of Radiation"
10 part of Dr. Linnemann's article, or is this a paraphrase
11 of part of his article?

12 A Give me a moment, I'll take a look. I don't
13 believe so, but I will take a look.

14 I mean, if you are asking whether we have cut
15 anything from Dr. Linnemann's article, the answer is no.
16 But, I would have to go back and take a look at both and
17 compare them. We did not intentionally cut anything from
18 Dr. Linnemann's article.

19 Q Then are you saying that the section on the
20 Facts of Radiation -- well, you would agree with me, would
21 you not, that the text, after the first paragraph under the
22 section -- of the section entitled Effects of Radiation, is
23 not included in the brochure?

24 I'm talking about the information regarding
25 serious injury to cell tissues, death, pregnant women may

1 be affected, there might be genetic damage, things like
2 that. That, and the text following it is not included in
3 the brochure, correct?

4 A That's correct.

5 Q Then I take it somebody else, other than
6 Dr. Linnemann, wrote that text, correct?

7 A That's correct.

8 Q Who wrote that text?

9 A The text was written by a consultant of ours,
10 from the IMPEL Corporation.

11 Q Is that Mr. Watts?

12 A Mr. Watts did not write it, but it is my
13 understanding that he reviewed it. It was written by a
14 writer from the IMPEL Corporation, and reviewed by health
15 physics experts from the IMPEL Corporation, including
16 Mr. Watts.

17 Q Was the information or derived at all from
18 information given by Dr. Linnemann, or was this drafted from
19 scratch by IMPEL?

20 A I suspect that a portion of it, as we have already
21 noted, was derived from information provided by
22 Dr. Linnemann's article.

23 Q So, Dr. Linnemann's article did not mention the
24 possibility of serious injury to cell tissues or even death,
25 possible genetic damage, or the impact of radiation on

1 pregnant women?

2 A Not to my knowledge, no.

3 Q The reading experts who edited the brochure, were
4 not experts in the health of effects of radiation, correct?

5 A That's correct.

6 Q They weren't experts in the magnitude of
7 doses that could be received during an emergency, correct?

8 A That's correct.

9 They were not given that task. They were given
10 the eating level task.

11 Q Is "Keeping Current" a publication that is
12 still sent monthly to people in the EPZ?

13 A No. We this year have determined that the
14 publication would be sent quarterly, and I believe I have
15 discussed that in prior testimony.

16 Q And this news letter does not always contain this
17 article on health effects of radiation, correct?

18 A I am not aware of any news letter that contains
19 identical articles in every edition, and this one does not,
20 either.

21 Q So sometimes "Keeping Current" will have
22 articles on the Shoreham Plant, sometimes on the LERO
23 organization, and at least once it has had an article on
24 the health effects of radiation, correct?

25 A That's correct.

1 Q Its purpose is not solely to inform the people
2 about emergency planning for Shoreham, correct?

3 A Its purpose is to inform the public about
4 emergency planning for Shoreham, and about aspects related
5 to the Shoreham Nuclear Power Station and nuclear power
6 in general.

7 Q So you are saying its purpose is not restricted
8 to informing people about emergency planning for Shoreham?

9 A Not exclusively.

10 Q How is "Keeping Current" sent to the public?

11 A "Keeping Current" is sent to the public by the
12 United States Mail. The Postal Service. It is sent to
13 the same mailing list that would receive the brochure.

14 Q Bulk, First Class, Third Class?

15 A Bulk.

16 Q Is there any statement that accompanies "Keeping
17 Current" which says you should read this in order to
18 derive important information about emergency planning for
19 Shoreham?

20 A No.

21 What is said on "Keeping Current" is that it is
22 an open line for neighbors of the Shoreham Nuclear Power
23 Station.

24 Q And it doesn't inform people either that inside
25 of this news letter is some important information on the

1 health effects of radiation, does it?

2 A No, it does not.

3 Q Do you have any figures on the proportion of the
4 population who actually reads "Keeping Current?"

5 A Well, as I previously testified, we feel that we
6 have gotten a very good response in terms of readership of
7 "Keeping Current," and our measure of this was in the
8 first six or seven months of the issuance of this news letter
9 we had included a post card for residents to send questions
10 in to the Long Island Lighting Company relating to
11 Shoreham or nuclear power, or the Long Island Lighting Company
12 and we received what we thought to be a very favorable
13 response in terms of numbers. And that is somewhere in
14 excess of 2000 postcards with probably in excess of
15 10,000 questions or statements which we thought was a good
16 response.

17 And additionally, we found that people seemed
18 to keep these things, the news letters, because in each
19 edition that included a post card, we had a date, a
20 monthly date on the post card, and we were receiving post
21 cards from February that were mailed in August. So, we did
22 tend to find that people kept the issues of "Keeping Current."

23 Q That is some of the people who wrote you post
24 cards tended to keep them?

25 A That's correct.

1 Q That is the 2000 post cards you received out of
2 what, about 45,000 residences in the EPZ?

3 A Somewhere in that neighborhood. I don't have
4 the exact numbers with me. 44, 43, it varies. The numbers
5 vary.

6 Q And in your opinion that is a good response?

7 A Yes, we thought it was a very good response.

8 Q What are your standards for a good response?

9 Do you have any quantitative standards to determine whether
10 or not -- well, strike that.

11 Let's go back to the "Keeping Current" article.
12 Do you have any data which would give you quantitative
13 figures on how many people residing in the EPZ have read
14 or know about this article? I'm not talking about your
15 subjective determination based on the post card response. I
16 am talking about data.

17 A If you are asking me whether we did a survey
18 following the distribution of this news letter in terms of
19 how many people have read this article and understood the
20 article, the answer is no, we did not do a survey following
21 the dissemination of this news letter.

22 Q So, I take it that your -- any basis for
23 determination on your part that the people have been
24 adequately informed by this "Keeping Current" article is
25 based pretty much on the post card responses that you have

1 received and the number of questions on those post cards?

2 A Well, I am not trying to compare the two. You
3 had asked me a question about whether we thought people
4 were reading this and responding to this.

5 And based on my post card response, my answer was
6 yes.

7 Q That some people are reading it?

8 A Well, I certainly couldn't testify that everybody
9 was reading it.

10 Q You don't know how many people are reading it?

11 A No, I don't know how many people are reading it.
12 There is no way of knowing that. And we have not done a
13 survey related expressly to "Keeping Current," relating to
14 how many people read it.

15 Q Let me refer you to page 7.

16 A 7 of the testimony or the brochure?

17 Q I'm sorry, of the testimony.

18 There you say that the article in "Keeping
19 Current" states that exposure to very large amounts of
20 radiation over a short period of time -- that is several
21 minutes or several hours, can cause serious injury to cell
22 tissues and even death.

23 Do you see that?

24 A Yes, I do.

25 Q And that is in the "Keeping Current" article on

1 the bottom of page 2 of that article, correct?

2 Bottom right-hand corner?

3 A That's correct.

4 Q Mr. Watts, what is the serious injury to cell
5 tissues that can occur from large amounts of radiation?

6 A (Witness Watts) The injury that could be
7 created by ionizing radiation would include damage to
8 the chromosome material in the individual cell. This can,
9 in turn, affect the functioning of the cell or the survival
10 of the cell.

11 There is possibility of biological repair in
12 that -- in response to that injury as well.

13 Q The damage to the chromosomes, I take it, is also
14 discussed in the third sentence of that -- I'm sorry, the
15 last sentence of that paragraph, which talks about large
16 doses that can cause genetic damage, et cetera. Is that
17 correct?

18 I am talking about the paragraph which talks
19 about the serious injury to cell tissues, et cetera. Do
20 you see that?

21 A Yes, I see that sentence.

22 Q That is part of what you are talking about?

23 A Yes, that is part of it. Depending on whether
24 it is a somatic effect or a genetic effect. But in both
25 cases there is potential for injury to the chromosome

1 material in the cell.

2 Q I guess what you are saying then is that serious
3 injury to cell tissues could also be somatic effects, correct?

4 A Yes.

5 Q And the most serious of those somatic effects
6 would be cancer, correct?

7 A Well, it depends on the timeframe. The most
8 serious of the somatic effects could be early death due to
9 an extremely high dose of radiation which we talk about in
10 the subsequent paragraph.

11 Q Of the latent somatic effects you would agree that
12 cancer would be among the most serious of those effects,
13 correct?

14 A That is one of the most common, yes.

15 Q Since it is one of the most common, wouldn't you
16 agree that it would be worthwhile to discuss or mention the
17 possibility of cancer in the same way that you mention in
18 this article, the possibility of genetic damage?

19 A I think the importance of this article is to
20 impart the idea that radiation can cause injury or death to
21 an organism. That can happen by a number of means if it is
22 going to happen. I am not entirely convinced that that
23 necessarily contributes to imparting that idea. That is an
24 extra piece of information, yes. -

25 Q Wouldn't you say that the term "serious injury to

1 cell tissues" is a much less explicit term than cancer?

2 A This sentence is a general one which encompasses
3 or could encompass easily the early effects or the delayed
4 effects.

5 Q Wouldn't you say that when you talk about
6 serious injury to cell tissues, you can talk about anything
7 from some sort of restructuring of the chromosomes all the
8 way up to something that would cause an early death?

9 A There are a number of effects. If one wanted
10 to go into a great amount of detail, there are a number of
11 effects that could be talked about.

12 However, in terms of imparting the information
13 in a clear and concise manner, the information was placed
14 or was included in a fairly concise form which encompassed
15 any number of effects that could result from large radiation
16 doses..

17 Q What do you think the average person thinks about
18 -- what occurs to the average person when he reads the
19 term "serious injury to cell tissues"?

20 A I'm not sure I am qualified to answer that
21 question.

22 Q So you don't really know whether that term
23 would mean cancer to somebody who wrote that?

24 A (Witness Cordaro) Well --

25 Q Excuse me, I am entitled to a response from

1 Mr. Watts.

2 A (Witness Watts) Well, I guess I'm not exactly
3 sure what an individual's understanding of that would be.

4 A (Witness Cordaro) I would guess the average
5 individual -- to the average individual that would mean some
6 sort of harm would come to them. It would be that specific,
7 or that nonspecific.

8 Q That nonspecific. Thank you.

9 A (Witness Watts) I think one thing that is important in the
10 concept given to the public for emergency planning purposes.
11 Rather than to saturate the reader with detail on a variety --

12 Q I don't think, Mr. Watts, you are responding to
13 any question I just asked. You can get the speech in
14 either on redirect or when I ask a specific question about
15 it.

16 A I was trying to clarify as a followup to one of
17 your previous questions.

18 Are you interested in me completing my answer or
19 not?
20

21 end #3

22 Joe flws

23

24

25

1 Q I am interested in your answering my next
2 question.

3 A Fine.

4 Q Which is, was there ever a discussion -- I take
5 it that you were one of the people who reviewed this --
6 the information given under the effects of radiation?

7 A The article was prepared by my company, and it
8 was reviewed by a health physicist under my direction.

9 Q Did you have sort of editorial control over
10 that?

11 A I did not exert any editorial control.

12 Q Was there any discussion about whether the word,
13 'cancer' should be used?

14 A No, there was not. None to my knowledge.
15 The objective in putting the article together was to make
16 it as clear and concise as possible.

17 Q On page 8 of your testimony, beginning at the
18 bottom of page 7, and going over to page 8, Ms. Clawson,
19 you say that the information, such as the more detailed
20 information in the Keeping Current article, was kept out of
21 the brochure to keep it more concise, because the main focus
22 of the brochure should be to give the public action
23 information. Do you see that?

24 A (Witness Clawson) Yes, I do.

25 Q Do you consider that you have really primed the

1 public for action when you tell them about the amount of
2 radiation emitted by a smoke detector?

3 A I think if you look at the brochure in its
4 entirety, and our references to radiation being hazardous,
5 and potentially being dangerous, I think you do prime the
6 public for action, yes.

7 Q By telling them the amount of radiation in a
8 smoke detector?

9 A That in and of itself certainly would not prime
10 me to act, no.

11 Q That sort of a detail, right?

12 A Well, you have plucked out one particular
13 detail in the entire brochure, and asked if I thought it
14 would prime the public to act, and obviously it would not.

15 Q That is one detail though somebody in your
16 organization decided to leave in, while the sort of details
17 about health effects during an accident along the lines of
18 those included in Keeping Current were left out, correct?

19 A It is our belief that the brochure includes
20 general information about radiation, as so specified in
21 the NRC regulations.

22 I read nowhere in the NRC regulations a require-
23 ment that there be information relating to high doses of
24 radiation or to biological effects of radiation.

25 Q Well, you are saying that the main focus of the

1 brochure should be to give people action information. I
2 believe that the action you are referring to is what action
3 to take in an accident, right?

4 A That is correct. I believe that the brochure
5 is to give the public the immediate information that they
6 need to act during the course of an emergency, which would
7 include such information as the radio stations to turn to
8 to get information. Routes to take if they are asked to
9 evacuate. What they ought to do if they are instructed
10 to shelter.

11 Where relocation centers are. What kind of
12 property they should take with them. That is the type of
13 information that I refer to in calling it action information.

14 Q Then why not --

15 A (Witness Cordaro) If I could just add one thing
16 to her answer regarding your reference to smoke detector.
17 That kind of information gives the public some sort of base
18 line, some sort of reference point to have some degree of
19 comprehension of what radiation means. And that is the
20 total purpose of it. So that in the event someone hears
21 the word, 'radiation,' they have some sort of frame of
22 reference, and won't be unnecessarily alarmed.

23 They have to be aware they are exposed to
24 radiation in everyday life from natural sources as well as
25 man-made materials which they may come in contact with.

1 A (Witness Watts) There was a reference also to
2 the Three Mile Island accident in the brochure, which had
3 doses expressed in millirem, and in order for a millirem
4 to mean something to a person, it is necessary to relate that
5 to common, every day sources of exposure of millirem also.

6 Q An accident at Three Mile Island or at Shoreham
7 may or may not take on the proportions of the accident at
8 TMI, correct?

9 A That is correct, but in all likelihood in -- my
10 experience at Ginna was the same -- that the most probable
11 kinds of accidents, if there is a release, are likely to
12 result in doses in the millirem range. May be possibly just
13 fractions of millirems.

14 Q So it is not necessary in your mind, then, to
15 address accidents that are more severe in the brochure?

16 A In the information that LILCO has, in fact,
17 they do relate the fact that high exposures could occur from
18 accidents, although there is some wording as to the likelihood
19 of those severe accidents.

20 Q What are you referring to?

21 A In the Keeping Current article.

22 Q I am talking about the brochure right now.

23 A Even in the brochure, there is reference to
24 the release of hazardous material into the air, in the middle
25 of page 2, and also on page 16, the reference that we know that

1 radiation can be hazardous at high levels.

2 So, there is a tie in to potential high levels
3 of radiation and radiation exposure that could occur. There
4 is more details presented in the supplementary information
5 included in Keeping Current.

6 A (Witness Cordaro) Also in reference to the
7 classifications of accidents, there is an indication of the
8 severity of the accidents, and the potential for people
9 becoming exposed to greater amounts of radiation.

10 Q Greater than what?

11 A Greater than the lower classification. There
12 is a gradation of exposure which is tied to the classification
13 system.

14 Q I am sorry. I don't understand your answer.

15 A Well, under an unusual event, there is no release
16 and there is essentially no potential for exposure of the
17 general population residing in the ten mile zone of radiation.

18 However, if you go to the general emergency
19 level, and you read a description for that general emergency
20 classification, you see that it says -- in fact, I quote --
21 it involves possible fuel core damage. Radioactive releases
22 could result which may require people living within ten miles
23 of the plant to take protective action.

24 If you contrast that with the description given
25 for an unusual event or an alert, it is obvious that there is

1 more potential for exposure to radiation in these more severe
2 classifications.

3 Q But it is not stated whether that exposure could
4 be five millirems over the natural, or -- natural levels -- or
5 a thousand times over natural levels.

6 A Not in that particular section. Again, you have
7 to examine the brochure as a whole, and if you want more
8 detailed information on effects of radiation, look at the
9 Keeping Current article, and those together give more than
10 an adequate explanation.

11 Q Is there any reference in the brochure to the
12 Keeping Current article as a place to go for more information?

13 A No, and there is probably good reason for that,
14 because we are going to issue articles on a periodic basis,
15 which cover subjects like this. So, if we reference one
16 particular issue of Keeping Current, it might not be the most
17 current article or the most current information.

18 Q Well, does it reference any place to go for more
19 information on radiation? I am talking about the brochure.

20 A No, it doesn't but if I recall the card does leave
21 it open for people to ask questions.

22 A (Witness Watts) There are references provided
23 in the brochure. References at the bottom of page 16, there
24 is a table, Typical Radiation Sources, which references a
25 report on the Interagency Task Force on the health effects

1 of ionizing radiation issued by the U. S. Department of
2 Health Education and Welfare, June 1979, that does provide
3 that -- that particular report does provide considerable
4 detail on sources of radiation and effects.

5 A (Witness Cordaro) I have to correct myself
6 on the brochure. I don't think the brochure openly invites
7 questions about radiation. However, the Keeping Current
8 articles and Keeping Current publication does open or invite
9 questions on all sorts of topics related to Shoreham, including
10 effects of radiation.

11 Q Mr. Watts, is it your opinion that the information
12 in the Keeping Current article is accurate?

13 A (Witness Watts) Yes, I believe so, yes.

14 Q With respect to the information on dose levels
15 and the health effects that would be experienced at various
16 dose levels. Is that your understanding --

17 A Yes, that is my general understanding. Maybe
18 you would like to finish your question. I am sorry I pre-
19 empted you.

20 Q With respect to the large doses of radiation to
21 pregnant women impacting on the development of unborn children,
22 are you saying that there would be no impact from doses below
23 25 to 30 -- I am sorry, to 50 rems, or 25,000 to 50,000 milli-
24 rems, as the article says?

25 A (Pause) My understanding is that it may well be

1 at doses somewhat less than 25 rem or 25,000 millirem. That
2 it would be imprudent to expose the unborn child, which is
3 one of the reasons for the protective action guidelines
4 being set at the levels they are.

5 This was meant as general background information
6 in reference to the appearance or non-appearance of chromosome
7 aberrations in an adult.

8 Q I believe you are talking about the impact of
9 the development of an unborn child here in this sentence,
10 correct?

11 A No --

12 Q The percentages of radiation in pregnant women
13 can impact the development of an unborn child.

14 Do you see that?

15 A Yes.

16 Q That refers only to genetic damage, or are you
17 talking about damage to the unborn fetus in that sentence?

18 A I am sorry, could you repeat the question.

19 Q Dr. Cordaro, do you understand the question?

20 A (Witness Cordaro) Yes, I do, and that is the
21 fetus.

22 Q Now, Mr. Watts, are you saying that large doses
23 -- doses that would have an impact on the development of an
24 unborn child would not be significant enough below 25,000
25 millirem to have an impact on the development of an unborn

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1 child?

2 A (Witness Watts) No. It is conceivable for
3 the unborn child that doses below 25,000 millirem could be
4 significant.

5 Q And would have an effect on the development of
6 the unborn child?

7 A It is conceivable that that could be the case,
8 which is one of the reasons that the protective action
9 guidelines are set at the levels they are.

10 Q Here you define large doses as being at least
11 25,000 to 50,000 millirem, correct?

12 A That was not meant to be a precise definition,
13 but an example of the ranges at which large does might be
14 labeled as such, but a large dose for an unborn child could
15 be lower than 25,000 millirem.

16 It was not meant to be a specific numerical
17 range.

18 A (Witness Cordaro) I think the intent there is
19 to suggest -- compared to a natural background radiation,
20 or where people are ordinarily exposed to -- in combination
21 with natural background radiation, such as man made source.

22 Q Are you saying that the word, the term, 'large
23 doses,' used in the sentence talking about the unborn children
24 is not meant to be defined by the first sentence and the
25 second sentence of the following paragraph, which say: What

1 do we mean by large doses of radiation. Basically say that
2 it is a range of 25,000 - 50,000 millirems.

3 A Those are suggestive of what large doses are.
4 Of course, to sensitive populations, a large dose is somewhat
5 less. But again, this is treating this in a general sense.
6 You know, we could get very, very specific and write a book
7 on this subject. The intent here is to convey a message, or
8 a general understanding of radiation, and in that sense, I
9 think this is descriptive enough and explicit enough.

10 Q Well, without writing a book, Dr. Cordaro, you
11 could add a few more paragraphs with more detail couldn't
12 you?

13 A We could always add a few more paragraphs, and
14 then a few more paragraphs. It is a matter of making judgments
15 as to where to cut it off.

16 A (Witness Watts) It is widely recognized that a
17 developing fetus is more radio sensitive than an adult. In
18 standards protective action guidelines, nuclear worker
19 exposure standards, and exposure guidelines, are all set up
20 with that particular potential consequence in mind.

21 Q And what is the protective action guideline for
22 a pregnant woman?

23 A The protective action guidelines apply to the
24 general public. However, as the EPA 520 document -- it
25 includes some general guidance as to precautionary evacuation

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1 -- precautionary sheltering.

2 Q Precautionary evacuation for pregnant women at
3 what level?

4 A Well, again, by LERO this is applied to the
5 general public, it could possibly be driven by pregnant
6 women, the whole body dose ranges, as you recall from our
7 testimony in Contention 61, range from 1 to 5 rem, whole body
8 dose. At the discretion of the Director of Local Response,
9 sheltering could be recommended at some level less than that.

10 Q On page 8, and going over to page 9, Ms. Clawson,
11 you say that brochures should give people an accurate
12 perception of the risk.

13 Do you see that?

14 A (Pause)

15 Q It is almost at the bottom of page 8.

16 A (Witness Clawson) Yes, I do.

17 Q And by, 'accurate perception,' you mean giving
18 somebody a clear understanding of the nature of the risk,
19 right?

20 A Well, as our testimony is defined, we are talking
21 about, for example, information that a power plant cannot
22 explode like a bomb, that radioactive materials may be
23 airborne, and could lead to exposures of individuals offsite,
24 and that radiation can be hazardous. That is what we are
25 referring to.

1 Q The risks we are talking about here is the risk
2 from an accident at the Shoreham power plant, correct?

3 A Yes, in terms of the brochure, yes, we are.

4 Q And the accident specific information that you
5 have given is that a plant can't explode like a bomb?

6 A That is right.

7 Q That the materials can be airborne?

8 A Yes.

9 Q And people offsite might be exposed?

10 A Yes.

11 Q And that radiation can be hazardous?

12 A Yes.

13 Q In your mind, this information gives an accurate
14 perception of the risks?

15 A In my mind, it gives them an accurate perception
16 of the risk that will enable them to take the proper action.

17 Q Will it enable them to understand the nature
18 of the risk?

19 A I have already answered that. I believe that
20 it will give them an accurate perception of the risk to enable
21 them to take the proper course of action.

22 Q What will they understand from this brochure
23 about the effects of exposure to them other than the fact
24 that it might be hazardous?

25 A I do not believe that they need to have an entire

1 discussion of the biological effects of radiation at various
2 levels in order for them to take action.

3 It is my belief that they need to know that the
4 plant cannot explode. That the radiation would be airborne,
5 and that the radiation could be hazardous. That there is
6 a material out there that could potentially be hazardous
7 to them.

8 Q Potentially, but it doesn't give them any guidelines
9 to help them figure out whether it would be or not, does it?

10 A I don't believe that that is necessary in the
11 public information brochure, because for one thing, it is
12 included in our public information program -- in our total
13 program. In our Keeping Current article, which we have
14 referred to today, and in our public emergency broadcast
15 messages, which would be aired at the time of the accident,
16 and I think it would not be productive to put that material
17 in the public information brochure.

18 Q Why is it productive to put in information about
19 your wristwatch, and not productive to put in information
20 relevant to the very event you are talking about, which is
21 an accident.

22 A I think that Dr. Cordaro has already answered
23 that question in relation to the smoke detectors. It is
24 the same thing. To give them a perspective about radiation
25 in their everyday lives, that it is not a totally foreign
substance, that they would only be exposed to it in the event

1 of an accident at a nuclear power plant. That it is a
2 part of their everyday lives. They are exposed to it every
3 day, and what the relative range of exposure is in their
4 everyday lives, so that they can relate that to the range
5 of exposure in the event of an accident.

6 Q What guidelines do they have about the upper
7 range -- the upper bounds of the range of exposure if there
8 is an accident. You have given them the lower range, which
9 the wristwatch gives them. You don't give them anything about
10 what the upper range is.

11 A Yes, we do. We give that to them as part of our
12 entire public information program in the emergency broadcast
13 messages, which we have already discussed.

14 Q Why not give them that range in the brochure?

15 A Because it is not necessary.

16 Q Didn't you just say that what you are trying to
17 do in the brochure is give them a perspective. Give them the
18 idea of the range. Give them the lower end, and the upper
19 end.

20 A No, I didn't say that. What I said was that I
21 thought it was relevant to give the public something that they
22 could relate to when they heard about a dose relating to an
23 accident at a nuclear power plant, and what they can relate
24 it to is the amount of radiation that they might receive when
25 they watch television, or if they have a smoke detector in

1 their house, or are in contact with many types of products
2 that have irradiation exposure. That is what they are used
3 to.

4 I don't think it would be relevant to talk about
5 high levels of radiation that may result from a very unusual
6 accident at a nuclear power plant.

7 A (Witness Cordaro) What is clear from the brochure
8 is that there are accidents which can occur, and they can
9 result in hazardous situations resulting from the release of
10 radioactivity, and based on this degree of radioactive
11 release, the public is asked to take certain protective
12 actions, or they are recommended to take certain protective
13 actions, and that is very, very clear from the brochure
14 without discussing the absolute magnitude of these numbers.

15 A (Witness Watts) We say that, in fact, in the
16 brochure, on page 7, where it says: A public protective action
17 recommendation would be based, number one, on the amount of
18 radiation which is or could be released into the air from the
19 plant; and two, the weather conditions which are occurring
20 or are anticipated.

21 So, what that is saying is that the public would
22 be informed that there is a hazard that is sufficiently high
23 to warrant either one of these protective actions; sheltering
24 or evacuation.

#5-1-SueT1

Q Isn't the discussion of what protective actions are appropriate different from a person's understanding of what the actual risk is to his body?

When you give guidelines which tell people what they should do at a particular level, that's different than telling them what could happen to their bodies at specific dose levels; isn't that correct?

A (Witness Watts) They are different but related, and the primary purpose of the brochure is to inform the public of the range of possible protective actions that they are going to be called upon to take, and to supplement that information with background information on the radiation risks and the fact that radiation can be hazardous.

That's really the key message that has to be conveyed through the brochure, is that radiation can be hazardous, there could be situations which would warrant protective actions being implemented due to the hazardous nature of the radiation and the level of radioactivity being released.

(Witness Cordaro) One of the other problems here is if you refer to any dose level is the range of effects that can occur at that particular dose level and it's based on statistical concepts derived from studies of radiation exposure. To go into that in any detail involves a considerable amount of detail and a potential for the

#5-2-SueT 1

confusion of the public.

2 Q So, LILCO has determined that it doesn't want
3 to give these details because it might confuse the public?

4 A That is the prime motivation for what we've done
5 in the brochure and our attempt to eliminate too much
6 dependence on numbers and discussion of statistical concepts
7 and things like that. We don't want to confuse the public.

8 We want to motivate them to act in the proper
9 fashion. However, if there are people in the public who
10 are very, very interested in this kind of information there
11 are mechanisms for them to get this information through
12 the Keeping Current program and through other aspects of
13 our public information program. They do have access to
14 this type of information.

15 And there are some people out in the public who
16 have a considerable amount of interest in this regard, as
17 you can tell from some of the postcards we received in the
18 Keeping Current article. People are asking questions about
19 the effects of radiation, and we are more than happy to
20 provide them that information if indeed they want to go into
21 that kind of detail.

22 Q Let me refer you to Page 11 of your testimony,
23 Mrs. Clawson.

24 In the beginning of the last paragraph, you say:
25 "In no case have I found a brochure that specifies the

#5-3-SueT 1

magnitude of the worst possible release."

2

Do you see that?

3

A (Witness Clawson) Yes, I do.

4

Q Is that what you think this contention puts at issue, or is asking LILCO to do?

5

6

A Well, I think it's pretty close. Yeah.

7

8

Q On the bottom of Page 11, going over to Page 12, you say: "A few brochures say that accidents can have a range of consequences."

9

10

What brochures are you talking about there other than -- you give Turkey Point as an example. What others are you talking about?

11

12

13

A Let me pull out -- I've got some notes on them. It's going to take a minute for me to pull it out but I can certainly get you the Turkey Point one and read that to you.

14

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(The witness is going through papers.)

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"The most serious accident imaginable would pose a wide range of consequences depending upon the radioactive material content of the fuel, the amount and the rate of radioactivity released, the way it is disbursed, and the number of people exposed to the radiation. Emergency plans for the plant site and for the area in the general vicinity of the plant are designed to minimize public exposure to radiation."

#5-4-SueT

2 In terms of high doses of radiation, Turkey Point
3 says as follows, the Turkey Point brochure says: "A large
4 dose of radiation is more damaging than a small one. And
5 the same dose over a short period of time is more damaging
6 than if it is received over a longer period."

7 That's the type of information that I'm referring
8 to in my answer here. Now, I can --

9 Q That information is not in your brochure,
10 correct?

11 A I don't think that this information -- I don't
12 think that that information says anything, that a large
13 dose of radiation is more damaging than a small dose of
14 radiation and that there are a wide range of consequences
15 from a large dose of radiation.

16 I don't think it tells the public anything. It's
17 verbage; it doesn't say anything worthwhile.

18 Q What does your brochure say more?

19 A It says that radiation can be harmful, there is
20 a hazardous substance out there, and our Keeping Current
21 article goes into the biological effects of high doses of
22 radiation in a more specific way than any brochure that I've
23 reviewed.

24 Q Your brochure just says that radiation can be
25 hazardous, correct?

A Our brochure is not our entire public information

#5-5-SueT

program, as you well know.

2 (Witness Cordaro) The brochure also says that
3 there are certain protective actions which are called for
4 which are directly tied to the potential for radiation
5 exposure. I think that's the most important element of it.

6 (Witness Clawson) Another example that I've
7 got here is the Salem brochure. And in general it says,
8 "Unusually high amounts of radiation can damage cells.
9 Repairs may be impossible and consequences severe."

10 That doesn't say what it is. It doesn't say
11 what kind of damage. It doesn't tell you what the biological
12 effects are.

13 Q So, it's not --

14 A It doesn't tell you what severe consequences
15 are.

16 Q So, it's not really that detailed?

17 A No. I haven't come across one brochure that is.

18 Q So, those brochures don't really give a very
19 good indication of what health effects are, correct?

20 A That's correct. And these are the range of
21 brochures that are from operating nuclear power plants
22 that have obviously been approved by the NRC and by FEMA.

23 Q Let me ask you whether or not of the nine
24 brochures that have been approved -- I'm referring to the
25 bottom of Page 10, are you aware of whether or not the FEMA

#5-6-SueT

review included the substance of those brochures?

2 A Yes, I believe it does.

3 Q How do you know that?

4 A I have a bit of knowledge, because we have
5 looked at the FEMA criteria in terms of our own brochures
6 and in applying that criteria to our brochure.

7 Q You are talking about the 0654 criteria?

8 A That's correct.

9 Q And you believe that the FEMA review, that
10 constitutes a substantive review of the content of the
11 brochures in your mind?

12 A As opposed to -- I'm not sure I really understand
13 the question. As opposed to what?

14 Q Let me ask you this. I take it from what you
15 say that in your mind the FEMA review of those nine
16 brochures constituted a comparison of those brochures
17 with the requirements of NUREG 0654, correct?

18 A I don't see any other reason for them to review
19 them and give an approval or not an approval. I mean, I
20 assume that is what is done. They review it; they've got
21 criteria. If it meets the criteria, they approve it; if
22 it doesn't meet the criteria, they don't approve it.

23 Q Of the others that you list on Pages 9 and 10,
24 I take it they have not gone through the FEMA process,
25 correct?

#5-7-SuT

A Not to my knowledge, that's right.

2 MR. MC MURRAY: I have no further questions,
3 Judge Laurenson.

4 JUDGE LAURENSEN: Mr. Zahnleuter.

5 CROSS EXAMINATION

6 BY MR. ZAHNLEUTER:

7 Q Mrs. Clawson, is it LILCO's intention to send
8 out the same Keeping Current article and the same brochure
9 year after year after year?

10 A No, it's not. We will not send out the identical
11 Keeping Current article. We will send out, on an annual
12 basis, information about radiation in Keeping Current. We
13 have done it this past Spring. We will probably do it
14 either next Spring or next Summer, and it will be -- I can't
15 tell you what it will be at this time, but it will be an
16 article on radiation disseminated to the public through
17 Keeping Current on an annual basis.

18 In terms of the brochure, since we haven't yet
19 issued our first brochure, I can't tell you what's going
20 to be issued year after year after year brochure-wise
21 either. But, yes, we will meet the NRC guidelines and the
22 FEMA criteria for information about radiation in the brochure.

23 Q Could you take a look at Page 3 of the brochure?

24 A (The witness is complying.)

25 Q In your view, is the material on that page action

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information?

2 A Well, I think there is one certainly very impor-
3 tant aspect, several important aspects, of the information
4 on Page 3. And that is, to tell people that the plant can-
5 not explode like a bomb, to some extent, yes, that is
6 action information.

7 To tell the public that the release of radiation
8 is in the air as opposed to in the soil or in the water,
9 and that there is a plan that has been designed to protect
10 the public in the event there has been a release of radiation
11 into the air, I believe that is action information for the
12 public.

13 Q Your testimony on Page 8 says that action
14 information is what people should actually do in preparation
15 for and during an emergency.

16 Now, how is the knowledge that a power plant
17 will not explode like a bomb action information?

18 A (Witness Cordaro) Very importantly, the nature
19 of the risk from an explosion is a lot different than the
20 nature of a risk associated with the release of radioactivity.

21 This is very clear. We recently received a letter
22 from some very knowledgeable people who, in good will with
23 the Company, and in agreement with the Company's position
24 to open Shoreham, made suggestions about building up berms
25 around the plant to soften the impact of an explosion of the

#5-9-SueT1

2 plant in the event of an accident, and they drew the
3 analogy of schools in Hiroshima which had such berms around
4 them and didn't receive a lot of the damages associated
5 with the bomb blast. You know, this makes it very, very
6 evident the kind of misconceptions that exist out in the
7 public.

8 And the person who I received this letter from --
9 actually it was directed to the Chairman, and the Chairman
10 asked me to respond to it -- was a very, very educated
11 person. So, you know, that concerns us. And that's why
12 information like this relating to the fact that a power
13 plant can't explode like a bomb is very, very necessary
14 because this perception still exists out there in the
15 public.

16 And it does directly relate to their perception
17 of what the risks are and what they can do to minimize
18 those risks. If indeed we recommend an evacuation, if
19 someone really in his mind believes that the plant is going
20 to explode and he is better off going to his basement and
21 covering his head and hiding, he's being misled. He is
22 going to do something that is not going to result in his
23 protection. It's actually going to result in some sort
24 of harm.

25 He should be evacuating instead of shielding
himself from some sort of potential blast.

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Q Well, isn't your example about the bomb actually an example of inaction information; that is, people should not build berms around their house?

A Of course. It's suggestive of what they should or should not do or what the potential range of protective actions will be in the event of an accident.

Q On Page 8, in the middle of the answer to Question 13 --

A (Witness Clawson) Excuse me. Are you referring to the testimony or the brochure?

Q Yes, the testimony.

You state that the brochure contains information that radiation may be hazardous and that it may require protective actions.

Could you tell me where in the brochure that is stated?

A Yes, I can. On Page 2, we say it is possible that the Shoreham station could release hazardous material into the air. On Page 3, we talk about a release of radiation into the air. On Page 4, we say a serious accident at Shoreham could result in the release of radioactive materials into the air. If radiation is released, it could occur all at once or over a period of time. If a serious accident occurs which results in the release of radiation into the air, you may be asked to take protective actions.

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You will know how serious an accident is by the classification systems.

And on Page 16, we say we know that radiation can be hazardous at high levels.

Q Isn't it true that when you speak of radiation releases into the air on Page 4, you say also that the release would be relatively small and it would move with the wind until diluted to such a low level that it would not be a hazard?

A Yeah, what we say, would most often. But we also say if radiation is released it could occur all at once or over a period of time. It would most often be small.

We didn't say it would only be small or would always be small.

Q You do say on Page 4 that most often it would be at a low level, correct?

A No. We say that it would move with the wind until diluted to such a low level that it would not be a hazard. We did not say that the radiation would be a low level.

Q On Page 16, you discuss radiation at high levels. Are you -- am I correct in that understanding?

A Yes. We say that we know that radiation can be hazardous at high levels.

#5-12-SueT

Q And then the sentence right after that says,
2 "At these levels, however, if there is an effect on health
3 it is so small that we cannot even detect it."

A I'm sorry but I think you have misread that.
4 We say: However, at the levels of these standards, which
5 refers to standards that have been set by the government
6 in terms of 5,000 millirem for exposure to workers in the
7 nuclear industry and the maximum of 500 above natural and
8 medical exposure for members of the public.
9

10 You have misread it. I'm sorry.

11 Q When you say high levels, do you mean higher
12 than the standards?

13 A Yes.

14 Q Then, your qualification about the effect on
15 health being so small that we cannot even detect it goes
16 to the levels of the standards, not the high levels?

17 A That's what it says.

18 MR. ZAHNLEUTER: I have no other questions.

19 JUDGE LAURENSEN: Mr. Hassell.

20 MR. HASSELL: May I have one moment to speak
21 with Bernie Bordenick? He has indicated to me that part
22 of his cross is taken care of by some of the responses.

23 JUDGE LAURENSEN: All right.

24 MR. MC MURRAY: Judge Laurenson, while Mr. Hassell
25 is out --

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JUDGE LAURENSEN: Is this off the record?

MR. MC MURRAY: Yes. I don't think this needs to be on the record.

(An off-the-record discussion ensues.)

JUDGE LAURENSEN: All right. We are back on the record.

Does the Staff have any cross-examination of the LILCO panel?

MR. HASSELL: The Staff has no cross.

JUDGE LAURENSEN: Is there any redirect examination?

MS. MC CLESKEY: No, sir.

JUDGE LAURENSEN: Any further cross-examination?

MR. MC MURRAY: No, Judge Laurenson.

JUDGE LAURENSEN: All right. At this point then the LILCO panel is excused.

(The witnesses are excused.)

Pursuant to the County's request, and with the agreement of all other parties, we will now proceed to the taking of the testimony of the County's panel of Dr. Saegert and Dr. Radford on Contention 16.E. before we break for lunch.

MR. MC MURRAY: Judge Laurenson, could we take a short break while we ring up Dr. Radford?

JUDGE LAURENSEN: All right. We will do that.

(Short recess.)

end #5
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1 JUDGE LAURENSEN: Dr. Radford, this is Judge
2 Laurenson speaking. We are about to start the next part of
3 the testimony, and I am going to call on Mr. McMurray at
4 this point to begin the County's testimony on the public
5 information brochure on Contention 16.E.

6 Mr. McMurray?

7 MR. MC MURRAY: Thank you, Judge Laurenson.

8 Dr. Radford, can you hear me?

9 DR. RADFORD: Yes, I can.

10 MR. MC MURRAY: Judge Laurenson, at this time
11 the County will present its panel on Contention 16E regarding
12 LILCO's public information brochure. This panel consists of
13 Professor Susan Saegert, who is here in the courtroom,
14 and Dr. Radford, who is connected to this courtroom by phone.
15 He is presently in Japan.

16 I believe that both witnesses have previously
17 been sworn.

18 Whereupon,

19 SUSAN C. SAEGERT

20 EDWARD P. RADFORD

21 resumed the stand as witnesses on behalf of the County,
22 and having been previously duly sworn, were further examined
23 and testified as follows:

24 JUDGE LAURENSEN: Let me clarify just for the
25 record, that the arrangements to take the testimony of

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1 Dr. Radford by this telephone hookup, have been agreed to
2 by all parties to the case, is that correct?

3 MR. MC MURRAY: That is correct, Judge Laurenson.

4 MS. MC CLESKEY: LILCO agrees.

5 JUDGE LAURENSEN: The Staff, and FEMA and New
6 York agree?

7 MR. ZAHNLEUTER: I agree, for the State.

8 MR. GLASS: FEMA agrees.

9 MR. BORDENICK: As does the Staff.

10 JUDGE LAURENSEN: Fine. Please proceed.

11 DIRECT EXAMINATION

12 BY MR. MC MURRAY:

13 Q These questions are directed to both Professor
14 Saegert and Dr. Radford.

15 Do each of you have in front of you a document
16 entitled Direct Testimony of Edward P. Radford and
17 Susan C. Saegert on Behalf of Suffolk County Concerning
18 Contention 16.E?

19 A (Witness Saegert) Yes, I do.

20 A (Witness Radford) Yes, I do.

21 Q Was this document prepared by you or under your
22 direct control and supervision?

23 A (Witness Saegert) Yes, it was.

24 A (Witness Radford) Yes, it was.

25 Q And is this testimony true and accurate to the

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1 best of your knowledge?

2 A (Witness Saegert) There are two typographical
3 errors in here that we would like to correct at this time.
4 One is on page 3, a word was left out on the second line
5 of the answer. It should be "magnitude of."

6 And, on page 7, an "i" was left out of
7 "probabilistic risk assessment." That is the eighth line
8 down from the top.

9 Q Eight lines down from the top on page 8?

10 A 7, page 7.

11 Q And with those corrections, is this testimony
12 true and accurate to the best of your knowledge?

13 A Yes, it is.

14 A (Witness Radford) Yes, it is.

15 MR. MC MURRAY: Judge Laurenson, at this time
16 I move for the admission into evidence of the County's
17 direct testimony on Contention 16.E.

18 JUDGE LAURENSON: Any objection to that?

19 MS. MC CLESKEY: LILCO has no objection.

20 MR. ZAHNLEUTER: No objection.

21 MR. BORDENICK: No objection.

22 JUDGE LAURENSON: Testimony will be received
23 into evidence and bound in the transcript following this page.

24 (Document, Direct Testimony of Edward P. Radford
25 and Susan C. Saegert on Behalf of Suffolk County Concerning
Contention 16.E follows:)

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,)	
Unit 1))	
)	

DIRECT TESTIMONY
OF EDWARD P. RADFORD
AND SUSAN C. SAEGERT
ON BEHALF OF SUFFOLK COUNTY
CONCERNING CONTENTION 16.E

- Q. Please state your name, occupation and qualifications.
- A. My name is Dr. Edward P. Radford, and I am an Adjunct Professor of Epidemiology at University of Pittsburgh. I received my M.D. degree from the Harvard Medical School in 1946. One of my specialties is the subject of the health effects of ionizing radiation, which I have taught at the Harvard University School of Public Health, the University of Cincinnati School of Medicine, Johns Hopkins University School of Hygiene and Public Health, and the University of Pittsburgh. I am presently a visiting scientist of the Radiation Effects Research Foundation in Hiroshima where I am conducting research on new data that have been compiled regarding the health effects of the atomic explosions in Japan in 1945. My professional

qualifications and background are set forth in my curriculum vitae which was Attachment 3 to my testimony concerning Contention 61.

My name is Susan C. Saegert. I am an Associate Professor of Psychology and Environmental Psychology at the City University of New York Graduate School. My professional qualifications are described in my curriculum vitae, which was submitted and admitted into evidence as an attachment to my testimony on Contention 65. See Tr. 2259.

Q. What is the purpose of this testimony?

A. [Radford, Saegert] The purpose of this testimony is to address Contention 16.E which reads as follows:

Contention 16. LILCO has drafted a public education brochure entitled "Emergency Procedures: Shoreham Nuclear Power Station." The content of LILCO's public information brochure is misleading and incomplete and thus this aspect of the public information program fails to comply with 10 CFR Section 50.47(b)(7), 10 CFR Part 50, Appendix E, Section IV.D.2, and NUREG 0654, Sections II.G.1 and 2. In particular:

* * * * *

E. The LILCO brochure's discussion of radiation effects is limited to natural sources and very low levels of radiation. It does not adequately address the magnitude of doses that the public might receive during a severe accident, such as one

omitting EPZ evacuation, nor the health-threatening consequences related to such releases. Such inadequate disclosure of essential facts renders the brochure incredible.

2. Do you agree with Contention 16.B?

A. [Raiford, Saegert] Yes we do. LILCO's brochure is void of any meaningful discussion of the magnitude^{of} and effects of exposure to, the levels of radiation that could be released into the environment during a serious accident at Shoreham. Rather, the brochure is replete with information about radiation exposure levels experienced in our everyday lives. Although such information is not in itself inaccurate, it is misleading in the context of a discussion of what could happen in the event of an accident at the Shoreham plant because the discussion of natural and very low levels of radiation does not contribute to an understanding of the need to protect one's self and family from the higher exposures which could result from an accident. Furthermore, the brochure contains a misleading illustration which misrepresents the dose savings likely to be achieved by sheltering.

The purpose of a brochure such as LILCO's is to inform the public of the nature of the risk should an accident occur requiring protective actions. Only if the public is informed

of the true nature of the risk is it reasonable to expect that people will attempt to take appropriate protective actions. Inaccurate and incomplete information such as that found in the LILCO brochure renders the brochure ineffective and inadequate as a method of informing the public about why planning for a radiological emergency is necessary.

Q. What does LILCO's brochure tell the readers about radiation?

A. [Radford, Saegert] LILCO's brochure at pages 14-15 describes a few interesting facts about radiation; however, in the context of a discussion of emergency planning, those facts are largely irrelevant and present a distorted and misleading picture to the public. Page 14 is entirely devoted to naturally-occurring levels of radiation. It notes, for example, that radiation is everywhere, that it is easily detected, and that someone living in New York would probably receive a total of about 200 millirems a year from natural sources (e.g., cosmic radiation, food and air) and manmade sources (e.g., medical x-rays and consumer goods). On page 15, the brochure goes on to explain that a person living near a nuclear power plant which is operating normally would receive "at most only 1 to 2 millirems a year."

It is only after more than a page of this sort of information that the LILCO brochure finally asks the relevant question, "What about radiation released as a result of a reactor accident?" The brochure's answer, however, is evasive and unresponsive and could lead the reader to question the relevance of the brochure to the event he is supposed to be receiving information about. The response to the question is that the 75 nuclear power plants operating around the country have never experienced an accident that exposed the public to a level of radiation above natural levels. A brief reference to the accident at Three Mile Island also tells the reader that the average dose to the public within five miles of that plant was about 1 millirem. The effects and possible exposures in the event of a serious accident at Shoreham, however, are completely ignored.

Q. Why is the information in the LILCO brochure inadequate?

A. [Radford, Saegert] The discussion of radiation and possible radiation exposures is inadequate because it does not tell the reader what doses would be possible during a radiological emergency at Shoreham and how taking appropriate protective actions could help to reduce those doses. Apparently LILCO considers the level of radiation one receives from a luminous

watch, a smoke detector or from living in Denver to be relevant to a discussion of planning for an emergency at Shoreham (see page 14). Even assuming for the sake of argument that such matters are relevant, they are certainly no more relevant than the potential consequences of the very incident the brochure is supposed to address - a radiological emergency at Shoreham requiring protective actions on the part of the public. Although information on the potential consequences of an accident exists and could be included in the brochure, LILCO has failed to include any such information.

Q. What additional information should be included in the brochure?

A. [Radford, Saegert] The information about radiation relating to a Shoreham accident which should be included in the brochure falls into two general categories. The first category is the range of potential radiological exposures which could occur as a result of a severe accident at Shoreham. The second category is the potential health consequences of such exposures.

[Radford] Information exists with respect to both subjects. See, for example, the Testimony of Fred C. Finlayson, Gregory C. Minor and Edward P. Radford on Behalf of Suffolk

County Regarding Contention 61, which sets forth the potential doses which could result from a severe Shoreham accident involving the release of radioactive material, the potential dose reductions that could be achieved through the use of various types of shelter in the EPZ, and the potential doses to the public who are in automobiles with no access to shelter. In addition, Science Applications Incorporated and Pickard, Lowe & Garrick have performed a probabilistic risk assessment and consequence analyses, respectively, concerning potential accidents at Shoreham, on behalf of LILCO. Thus, information concerning the range of potential exposures and the potential doses and health effects from such doses is available but has not been included, or even referenced in the LILCO brochure.

[Radford, Saegert] The LILCO brochure includes, at page 16, a brief discussion of federal guidelines on acceptable exposure limits; however, it does not say anything about the relationship of such exposures to those that could occur during a Shoreham accident, or the health consequences of exposure to the levels of radiation that could occur during an accident at Shoreham, which could be far above the limits set forth on page 16.

Q. What should the brochure say about health effects?

A. [Radford, Saegert] In our opinion, the public should be given a brief and accurate description of the health effects -- both early and delayed -- that could result from the exposures that might be received from the wide range of possible accidents at Shoreham.

[Radford] The public should be told that the health effects of radiation can be divided into two basic categories -- "early" effects (sometimes called "acute" effects) and delayed effects; that early effects which may include fatalities or injuries, generally occur from within a few days to 60 to 90 days after exposure, and that delayed effects (sometimes called "latent" effects) may occur at any time throughout the normal lifetime of an individual after exposure. Latent periods of 10 years or more (during which no effects would be medically observed in an exposed individual) are common to most delayed effects.

With respect to early effects, the brochure should tell the reader that the threshold level at which early death occurs is about 200 rem, irrespective of treatment methods for exposed individuals and that given minimal standards of medical treatment after exposure, there is a 50 percent risk of death within

60 days from an exposure of 300 rem. The public should also be informed of the symptoms of radiation illness, which is characterized by vomiting and lethargy. The individual risks of early illness range from a 30 percent chance at 100 rem, to 80 percent chance at 300 rem to almost 100 percent at 400 rem; the chances of incurring early illnesses that might require treatment become negligible at doses of less than 50 rem. The public should also be told that detectable changes in blood cells is commonly associated with doses of 25 to 30 rem.

With respect to delayed effects, the brochure should inform the reader that delayed effects include cancers, teratogenic effects on the developing fetus, and genetic effects, and that cancer is the most common delayed effect. In order to put the risk of cancer from radiation exposure into perspective, the brochure should state that while the average person has about a 28 percent chance of contracting cancer (other than skin cancer) and about a 17 percent chance of dying from it, a dose of 30 rem will increase a person's chance of contracting cancer to about 34 percent. Finally, the public should be told that a 200 rem dose (aside from the early effects) will more than double the chance of contracting cancer -- from 28 percent to 60 percent, and that roughly half of all contracted cancers, except skin cancer, are fatal.

Q. Why should the type of information you have described concerning potential levels of exposure and the resulting health effects of such exposures be included in LILCO's brochure?

A. [Radford, Saegert] The public is generally not well informed about the health consequences of radiation. Radiation is simply not a commonly-confronted disaster agent. People know that if a person is swept into a flood and kept underwater for longer than he can hold his breath, he will probably die. Likewise, the public generally knows that if a person is caught unprotected in a tornado or hurricane, he could be thrown violently by the wind or struck by flying objects. In contrast, people do not generally know very much about the consequences of radiation exposure.

We believe all parties agree that a person's perception of the risk of exposure will certainly influence his actions during an emergency. (See LILCO and Suffolk County Testimony on Contention 23). Yet, the LILCO brochure does not provide adequate information to help the reader form an accurate perception of the risk that could exist during a radiological emergency. If a person believes that he will die from a 5 rem dose, he may try to evacuate no matter what protective action LILCO recommends. Likewise, one who thinks that exposure to

200 rem does not sound so bad, and that evacuation is not worth the security risk of abandoning his home, might reconsider if he knew that exposure to such a dose would almost certainly make him ill and would double his chances of cancer induction as well. Furthermore, without some basic factual information about radiation doses and their effect, the data in LILCO's proposed EBS messages concerning projected doses would be meaningless. In short, the additional information we have proposed is crucial to the public's understanding of the risk, which in turn will help them understand, and make informed judgments about their response to, the protective action recommendations to be made by LILCO.

Q. Do you have any other concerns with respect to the LILCO brochure's discussion of the magnitude of potential doses during an emergency or the health consequences of such exposures?

A. [Radford, Saegert] Yes. On page 7 of the brochure, LILCO has included a very misleading drawing which depicts a family sheltering inside its home. Radiation, represented by arrows, is shown to hit the house and bounce off like rubber balls. No radiation is shown as entering the house. Thus, the drawing strongly implies that, no matter what the radiation level is outside the home, one will suffer no exposure (and consequently

experience no adverse health effects) if one stays inside. This is grossly inadequate and misrepresents the value of sheltering, which lies in dose reduction, not dose elimination.

[Radford] By LILCO's own admission, the average shielding factor from a cloud dose for a residential home in the EPZ is .7. (OPIP 3.6.1 at 36). That means that even if one shelters at home, one will receive on an average about 70 percent of the dose one would receive if outside the home. Thus, to be accurate, the drawing should show at least some of the arrows representing radiation penetrating the house. The way the drawing stands now, however -- with radiation depicted as bouncing off one's house -- is very misleading.

[Radford, Saegert] Indeed, a person looking at the picture would say, "Why evacuate? My house offers complete protection." In cases where evacuation was required, this LILCO-induced misconception could threaten the health of the public. Certainly it makes LILCO's brochure inaccurate and thereby reduces the chance that the public will take appropriate protective actions. Likewise, a person with some knowledge about the efficacy of sheltering would recognize that the drawing is misleading and, as a consequence, might dismiss the entire brochure as inaccurate. Again, this would reduce the

chance that the public will take appropriate protective actions.

Q. Does this conclude your testimony?

A. [Radford, Saegert] Yes.

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1 MR. MC MURRAY: Judge Laurenson, the panel is
2 now ready for cross examination.

3 JUDGE LAURENSEN: Ms. McCleskey?

4 CROSS-EXAMINATION

XX

5 BY MS. MC CLESKEY:

6 Q Drs. Radford and Saegert, have either of you ever
7 designed a public information brochure for a nuclear power
8 plant?

9 A (Witness Saegert) No, I have not.

10 A (Witness Radford) No, I have not.

11 Q What brochures for other nuclear power plants
12 have you reviewed?

13 A (Witness Saegert) Well, I have reviewed the one
14 for the Nine Mile plant in New York State and read excerpts
15 of the Indian Point and the Diablo Canyon brochures.

16 A (Witness Radford) I have just reviewed the
17 brochure for LILCO Shoreham reactor.

18 Q Dr. Saegert, could you please describe in as much
19 detail as you can remember, the contents of the brochures
20 for Diablo Canyon, Indian Point and Nine Mile?

21 MR. MC MURRAY: Judge Laurenson, I am going to
22 object. That question is vague and unspecific. I really
23 don't think they can render an appropriate answer that is
24 relevant to this proceeding.

25 JUDGE LAURENSEN: Overruled.

mm5

1 WITNESS SAEGERT: None of these brochures were
2 very explicit about health effects.

3 BY MS. MC CLESKEY:

4 Q Do you remember what they were explicit about?

5 A (Witness Saegert) You mean in the effects of
6 radiation area?

7 Q Yes. What do you recall about the contents of
8 the brochure?

9 A Well, they seemed to have used the exact same
10 sources LILCO used. At least the Nine Mile plant did.

11 Q Did any of the brochures that you have looked at,
12 Dr. Saegert, contain the type of information you have said
13 in the testimony is necessary to include in a brochure?

14 A I'm not completely sure about the Diablo Canyon
15 or the Indian Point brochures. The one on Nine Mile plant
16 did not.

17 Q You don't recall whether the Diablo Canyon or
18 Indian Point brochure contained that sort of information?

19 A I can't remember exactly the wording of that.
20 It was slightly longer ago when I reviewed those.

21 Q Dr. Radford, are you aware of any emergency
22 planning brochure that contains the type of information you
23 recommend in your testimony should be included in the
24 brochure?

25 A (Witness Radford) No, I am not aware of that

mm6

1 other brochures contain information of the type that I would
2 think should be.

3 Q Drs. Radford and Saegert, would you please tell
4 me what NRC or FEMA documents support your position regarding
5 the nature of information that a brochure must include?

6 A I'm not sure I got the whole question.

7 Q Let me repeat it for you, Dr. Radford.

8 I asked whether you could tell me -- whether you
9 could cite for me any NRC or FEMA documents or regulations,
10 criteria that would support your position regarding the
11 nature of the information, radiological information, that a
12 brochure should include.

13 MR. MC MURRAY: Ms. McCleskey, are you referring
14 to provisions other than those cited in the testimony
15 already?

16 BY MS. MC CLESKEY:

17 Q I am referring to any NRC or FEMA regulations,
18 criteria that would require the kind of information
19 that their testimony includes?

20 A (Witness Radford) I can only say that I am not
21 familiar with all of the regulations written by FEMA, for
22 example, or the NRC. But certainly they do not refer to
23 the fact that the information should be accurate and complete.

24 (Witness Saegert) In the LILCO testimony, I am
25 familiar with the regulations that are listed there. And it

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1 seems to me that while the exact content of the information is
2 not spelled out, that it is unlikely that a regulation
3 concerning what information should be provided in the context
4 of taking protective actions in the case of an accident at
5 a radiological plant, would be directed primarily at
6 radiation from the sun or wristwatches, and not at the kind
7 of radiation levels and exposures at different kinds of
8 accidents.

9 Therefore, it seems like a reasonable inference
10 that the kind of information we discuss in our testimony
11 should be provided.

12 Q And it is your view that 50.47(b)(7), for example,
13 which is cited in the contention and is in its entirety
14 in the LILCO testimony, requires that the information that
15 you would like to see in a brochure, be in the brochure?

16 A I think the regulation that is most specific
17 about information is the one below 50.47. It is 10 CFR
18 Part 50, Appendix E, et cetera.

19 And then also in the following NUREG 0654 there is
20 a reference to educational information on radiation.

21 Q Right.

22 A (Witness Radford) As I understand it, NUREG
23 0654 stipulates that there shall be educational information
24 on radiation. And obviously the present information is how
25 radiation would affect people.

mm8

1 Q Yes, sir.

2 Dr. Radford, my question was whether 50.47 or NUREG
3 0654 requires that that radiation information be in a
4 brochure?

5 A Well, if the brochure is intended as the means
6 by which the public is informed about these issues
7 associated with potential accident consequences, then I
8 would assume that it should be in the brochure.

9 Q Dr. Radford, is it your understanding that
10 according to the LILCO transition plan, that the brochure
11 is the only means by which public information will be
12 disseminated?

13 A No. No statement is made that there will be
14 periodic information released. This is my understanding
15 and also consistent with the regulation. As for example,
16 LILCO just put in evidence the statements in a document
17 called "Keeping Current," which they indicated additional
18 information to supplement that in the brochure.

19 Q Dr. Radford, have you reviewed that article,
20 "Keeping Current," that is the attachment to the LILCO
21 testimony?

22 A Yes, I have.

23 Q Do you find that article is sufficient, in your
24 opinion, in describing potential radiation doses and health
25 effects?

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1 A Certainly not.

2 Q Do you like it better than the description in
3 the brochure?

4 A A considerable part of it is verbatim of what
5 is present in the brochure. And to the extent that it
6 differs at all, it differs in relatively minor ways and
7 really adds virtually no information pertinent to the
8 subject.

9 So, in effect, it really adds very little to
10 what is in the brochure.

11 Q Dr. Saegert, you state on page 3 of your
12 testimony that the purpose of a brochure such as LILCO's, is
13 to inform the public of the nature of the risk should an
14 accident occur requiring protective actions.

15 Do you see that?

16 A (Witness Saegert) Yes, I do.

17 Q In your view, is this the main purpose of the
18 brochure?

19 A It is one of the purposes.

20 I think the purposes of a brochure of this type --
21 and this is germane to your previous questions about the
22 regulations -- the first goal of the overall set of regulations
23 and of the information in general, would be to inform the
24 public of the conditions under which protective actions should
25 be taken, and what those protective actions should be.

mm10

1 Now, part of that information ought to be a clear
2 discussion of what amount of radiation is being released,
3 what the health effects of that amount of radiation might
4 be, and what the health effects of taking protective
5 action or not taking protective action should be. And this
6 should cover the full range of possible accidents giving
7 some idea of frequency of possible distribution. And possibly
8 giving not more than a tenth, I would think, of the amount
9 of space devoted to that, of some kind of comparison
10 levels both at the severe and at the moderate and low ends.

11 Q Well, you characterize the purpose that we were
12 talking about on page 3 of your testimony as "a purpose."
13 What do you see as the main purpose of the brochure?

14 A I just described the overall purposes, I thought,
15 and tried to put the purpose of giving health information
16 in that context.

17 Q All right.

18 Dr. Saegert, you also say on pages 3 through 4
19 of your testimony, that only if the public is informed of
20 the true nature of the risk, is it reasonable to expect that
21 people will attempt to take protective -- excuse me --
22 appropriate protective actions.

23 Do you see that?

24 A Yes.

25 Q What empirical research supports that proposition?

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1 A Well, I think that the research on accidents at
2 nuclear power plants is not extensive, as we have discussed
3 frequently. One reason that people at TMI gave for taking
4 their own course of action rather than relying on information
5 they were provided is that they were not sure as to the
6 meaning of that information. And subsequent investigations
7 that are referenced in my testimony on credibility and our
8 testimony on the shadow phenomenon, describe problems the
9 public had in interpreting the meaning for them in terms of
10 their health and well being, of information about millirems.
11 And in fact, the mess that was created when lay persons in
12 the media tried to make that interpretation for them and
13 further compounded the level of misunderstanding and
14 confusion surrounding the situation.

15 Q I'm not sure I understood your response. If I
16 understand what you just said correctly, the data that
17 you referenced stands for the proposition that people did
18 not understand the information that was being given to them.
19 Am I right?

20 A They were confused. There are different ways
21 of -- not understanding is one aspect of being confused, I
22 think. Not knowing what it means to your health is
23 probably more to do with lack of adequate information,
24 familiarity with that information.

25 Q And how is the lack of understanding of the

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1 information that was being given to them, related to public
2 information of the true nature of the risk, which is the
3 quotation that I was asking about in your testimony?

4 A The risk -- as a person interprets radiation, the
5 risk to them is risk to bodily harm. Information that
6 simply specifies millirems released is only part of what
7 is needed to understand the true risk.

8 Q What else do they need to understand the true
9 risk?

10 A What the range of consequences for physical
11 well being and possible well being of their progeny or future
12 progeny might be.

13 Q How would you define the true risk?

14 A I think this is an area that Dr. Radford is more
15 expert in than I am, and that is why we are testifying
16 together. Perhaps he could answer that.

17 Q Dr. Radford, did you follow all that?

18 A (Witness Radford) Yes.

19 I would like to make a general comment and then
20 comment in answer to the question.

21 The general comment is that there is now in the
22 general public -- at least on the part of some individuals --
23 a failure of understanding about radiation effects. That is
24 people know that radiation can cause cancer, for example and
25 they may have some general idea of how much radiation will

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1 produce how much cancer, or at least some indication of that.

2 So, there is already an awareness on the part of the public
3 of certain kinds of health effects that might be expected.

4 So that I think this makes it doubly important
5 for the utilities or anyone else who is concerned with
6 emergency planning for a nuclear reactor to be as forthright
7 and open about these matters as they can. The alternative
8 being treating or otherwise attempting to minimize or
9 play down the risk, will have very much the opposite effect
10 from what it would achieve. That is, it would have the
11 effect -- playing down the risk would have the effect of
12 raising the suspicions of the people.

13 This is a general phenomenon that is going on
14 everywhere.

15 So, the first point I would make then is that
16 it is important to be as open and forthright in these
17 matters as possible. This is, to my mind, one of the
18 major defects of the brochure that is presently written,
19 because it doesn't really say anything about what the risks
20 are.

21 Now, the specific question as I understand it is:
22 What are the risks from radiation and how should they be
23 expressed?

24 Now in my view the most straightforward way to
25 get these ideas across is to give an indication of what

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1 the change in risk was. Comparing an individual not exposed
2 to radiation to an individual exposed to radiation.
3 And that is best put in the form of a change in the percent
4 chance of something happening. For example, with regard to
5 the genetic defects of radiation, we can say that the
6 normal chance of having some genetic defects for any child
7 that is born is about 10 percent. This is what is believed
8 to be the case for any individual that is born.

9 Now, the possibility of an increase in that risk
10 from radiation is believed to be, say for an exposure of
11 15 rads, that increase -- that might increase the risk by
12 10 percent. In other words, from a 10 percent overall
13 chance to about 11 percent.

14 People can understand this idea, I think if it
15 is presented carefully.

16 So also for cancer risk. Again, an increase of
17 15 rads would increase the cancer risk from, say, 28 percent
18 chance of ever getting cancer other than skin cancer, to
19 about 30 percent. In other words, a 2 percent increase risk
20 or perhaps a 3 percent, up to 31 percent.

21 Now I haven't necessarily explained it very
22 carefully now, but I believe by such an approach it is
23 possible to make it clear that on the assumption of a low
24 threshold dose response curve which all regulatory bodies
25 adhere to, and which the industry recognized as being the

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1 the proper thing, that it is possible to make statements of
2 this general kind.

3 Now it serves two purposes. One is to emphasize
4 that when the doses are low, the increase in risk is also
5 low. When the doses are high, the increases in risk are
6 high.

7 I think some such statement of fact ought to be
8 incorporated in the brochure because people know that these
9 kinds of things exist. And to omit them means that they
10 are going to be very suspicious and ready to discuss the
11 information they are being given.

12 To include them means they don't have a basis on
13 which to decide whether it is not so bad or whether it is
14 bad.

15 A (Witness Saegert) From a psychological point
16 of view, I would like to add that when a person is receiving
17 the Emergency Broadcast System messages, there is a point
18 at which information about the effects of radiation are
19 most likely to be salient. And at that point no further
20 information about health effects is given.

21 So, someone who happens to remember or have
22 this brochure in hand, would be in a much better position if
23 it contained information of the sort Dr. Radford was
24 describing to assess the seriousness of the situation
25 and understand why the protective action should be taken

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1 whether they apply to that person, and in general to take a
2 rational approach to the information that was being
3 disseminated at that time.

4 That seems to me the intent of including this
5 kind of information in a public information campaign or
6 brochure or any other form. If that were not the intent,
7 then I can't imagine why any information on radiation
8 should be provided in a brochure.

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1 Q Dr. Radford, on pages 6 and 7 of your testimony,
2 you discuss the information available on the range of potential
3 radiological exposures, including the two Shoreham specific
4 PRAs.

5 How would you include that information from the
6 PRAs in the brochure?

7 A (Witness Radford) Well, I think the idea would
8 be presented somewhat as follows. That for certain types of
9 accidents, which are estimated to have a probability of say
10 one in ten thousand or something like that, these could be
11 the release that might occur, say, two miles, five miles
12 or something like that. For certain other times, less
13 likely, and again, a specific number could be placed on them
14 according to information that has been provided to LILCO,
15 the doses might be substantially higher and they could be
16 stated in terms of rad units.

17 Q So, what you basically have in mind is perhaps
18 two or three paragraphs of information that would generally
19 describe the ranges, and would include a discussion of the
20 probabilities, am I correct?

21 A Yes.

22 Q Dr. Saegert, in your opinion, could that information
23 be made clear and concise so that people could understand it?

24 A (Witness Saegert) Yes, I think it could be.

25 Q Have you ever undertaken to write up those sorts

1 of paragraphs?

2 A I have not undertaken such a task. I don't see
3 any reason, however, why high levels of radiation could
4 not be an effort to describe radiation that is in the range
5 that people are concerned with in an accident, wouldn't be harder
6 to write up than the kind of doses that information is
7 provided about.

8 Q Dr. Saegert, is it your opinion that the
9 information that Dr. Radford and you suggest regarding the
10 range of potential radiation doses and health consequences
11 were to be included in the brochure, that the public would
12 attempt to take appropriate protective actions in response to
13 it?

14 A That proportion of the public that read the
15 brochure and believed it, yes, and followed it as a guideline
16 in these cases.

17 Q And when you say that with that kind of information,
18 the public would attempt to take appropriate protective
19 actions, do you mean the protective actions recommended by
20 LERO?

21 A Well, I think that the public would be in a much
22 better position to judge the appropriateness of the protective
23 actions that were recommended if they had that kind of
24 information.

25 Q Dr. Radford, I have enjoyed participating in this

7-3-Wal

1 experiment with you, and Judge Laurenson, I have no further
2 questions.

3 JUDGE LAURENSON: Mr. Zahnleuter?

4 CROSS EXAMINATION

5 BY MR. ZAHNLEUTER:

6 Q Dr. Radford, this is Richard Zahnleuter representing
7 the State of New York. I presume that you and Professor
8 Saegert have read LILCO's testimony on the brochure, including
9 the attached brochure and the attached Keeping Current article.
10 Am I correct in that presumption?

11 A (Witness Saegert) Yes.

12 A (Witness Radford) Yes, that is correct.

13 Q On page 8 of LILCO's testimony, the testimony
14 states that the public information in the brochure should
15 give people an accurate perception of the risk. There are
16 several references in the answers to Questions 10 and 11 in
17 LILCO's testimony, to the Keeping Current article. Those
18 references, for example, are that the Keeping Current article
19 states that in a severe accident at a nuclear power plant,
20 people could be exposed to dangerously high levels of radiation,
21 or that exposure to very large amounts of radiation over a
22 short period of time, several minutes to several hours can
23 cause serious injury to cell tissues, and even death.

24 Or that animal studies show that large doses can
25 cause genetic damage, which continues through several generations.

1 of offspring.

2 Do you agree that these references to Keeping
3 Current, or Keeping Current in general, provides people with
4 an accurate perception of the risks?

5 MS. McCLESKEY: Objection. Asked and answered
6 during my cross examination of Dr. Radford.

7 JUDGE LAURENSEN: Overruled. You may answer
8 the question, Dr. Radford.

9 WITNESS RADFORD: Well, that seems to be the
10 contention of LILCO that the information in this Keeping
11 Current article does convey significant information to the
12 public.

13 In fact, in my view, it doesn't. Specifically,
14 for example, it says that people could also be exposed to
15 dangerously high levels of radiation as a result of a nuclear
16 accident. But they don't say what a high level is, nor do they
17 say that a high level could cause cancer, for example.

18 They only refer to -- can cause serious injury
19 to cell tissues and even death. But they no where mention
20 the fact that ten years later it can cause cancer.

21 So, that is one serious limitation to the very,
22 I think, minimal kind of information that the Keeping Current
23 document contains. So, I consider it only a very superficial
24 kind of statement, and has practically nothing to the comments
25 that are in the original brochure.

1 A (Witness Saegert) I would just add that the
2 major import of both articles is that radiation is usually
3 not harmful, and that accidents usually would not contain
4 harmful radiation, and that that is only part of the story,
5 and certainly not the part of the story that is most related
6 to taking protective actions.

7 Q Dr. Radford, Dr. Cordaro, who was one of the
8 LILCO witnesses, stated earlier this morning that giving
9 people information about the percent increase in risk from
10 exposure to radiation would confuse the public. Do you
11 agree with that statement?

12 A (Witness Radford) No, I don't. I think the
13 public can understand a good deal more than the industry
14 recognizes. I think that failure to take into account the
15 ability of the public to understand is a serious mistake
16 that the industry consistently makes.

17 I think people can understand the idea where you
18 have a certain chance of getting cancer, for example. This
19 has long been taught in medical schools and so forth, and I
20 think the public understands it, too. There is a chance --
21 say one chance out of four, or one chance out of five, or
22 one chance out of three -- that a person will eventually get
23 cancer some time in their life, and if that chance changes
24 by a certain amount, certain small percentage, say, people
25 can understand that. It is not a difficult concept.

7-6-Wal

1 Q I take it that is the finishing part of your
2 answer, Dr. Radford?

3 A Yes. That is the point I think ought to be given
4 a good deal more attention in the brochure.

5 Q Professor Saegert and Dr. Radford, I am now looking
6 at a statement in your testimony at the bottom of page 3, that
7 says only if the public is informed of the true nature of the
8 risk is it reasonable to expect that people will attempt to
9 take appropriate protective actions.

10 I would like to refer you to the LILCO brochure,
11 specifically page 4 of the LILCO brochure. Specifically, the
12 portion which says that the release into the air would most
13 often be relatively small, and it would move with the wind
14 until dilluted to such a low level that it would not be a
15 hazard, and also on page 16, the LILCO brochure states that:
16 We know that radiation can be hazardous at high levels.
17 However, at the levels of these standards, if there is an
18 effect on health, it is so small that we cannot even detect
19 it.

20 In light of those statements in the brochure and
21 the surrounding context, do you think that the public has been
22 informed of the true nature of the risk and that they will
23 attempt to take appropriate protective actions?

24 A Certainly not. Both give no quantitative
25 information, and the implication is clear in both those sections

7-7-Wal

1 you read, that the effect would be extremely small.

2 Now, with regard to the material on page 16, for
3 example, where it says: However, at the level of these
4 standards, that is the doses given in the paragraph above,
5 5,000 millirems a year for workers, and 500 millirems a year
6 maximum for the general public, that no effect -- that it
7 would be impossible to detect any health effect from these
8 doses. Now, that simply is not correct. That is a flat
9 wrong statement, because at 5,000 millirems a year, perhaps
10 for two or three years even ----- we would expect to be
11 able to detect effects if the population exposed to that
12 were sufficiently large. And we have detected effect of
13 a few thousand millirems given at one time already.

14 So, this is an example of how in an apparent
15 effort to minimize the risk to the point where they are trying
16 to tell the public that there are no risks at all, I think
17 they have been led into erroneous statements.

18 A (Witness Saegert) I would just like to add that
19 the implication implied through omission of information about
20 possible health effects at higher levels and over continuous
21 periods of time will give the impression -- does give the
22 impression that the risk to health are either non-existent
23 or minimal, which will conflict with the publics knowledge
24 and information provided in the media over time about the
25 possible effects of radiation, and therefore, would appear

1 inaccurate, because the public will be looking for straight-
2 forward information, not attempting to wind its way through
3 a lot of double talk that tries selectively to leave out
4 anything that might be threatening or frightening about
5 radioactive material, which is what this brochure attempts
6 to do.

7 I think the import of the whole section of what
8 you should know about radiation is that radiation is everywhere
9 and it is not very dangerous, and don't worry about it, and
10 if there is an accident, it is unlikely that you will receive
11 a health-threatening dose.

12 Now, that is not probably going to appear to be
13 the full story to the public that is exposed to information
14 about radiation, not just from LILCO but from other sources,
15 and, therefore, people will attempt to take what they consider
16 to be effective protective action, but they will not necessarily
17 take effective protective action that is being recommended to
18 them in this particular brochure.

19 MR. ZAHNLEUTER: Thank you, Professor Saegert
20 and Dr. Radford. I have no other questions.

21 JUDGE LAURENSEN: Mr. Bordenick?

22 CROSS EXAMINATION

23 BY MR. BORDENICK:

24 Q Dr. Radford, my name is Bernard Bordenick, and I am
25 an attorney for the NRC Staff.

1 A (Witness Radford) You are the attorney for which
2 staff?

3 Q The Nuclear Regulatory Commission staff.

4 A Yes, okay.

5 Q Thank you. Dr. Radford, are you able to state
6 or do you have any knowledge as to whether or not LILCO
7 intends to issue future editions of Keeping Current? That
8 is future over and above the one that is attached to the copy
9 that is attached to their testimony, which I believe you
10 indicated you had read? Did you understand my question?

11 A Could you repeat the question. I heard the part
12 about did I understand that LILCO would provide additional
13 information in other issues of Keeping Current.

14 Q Well, I asked you whether or not you had any
15 knowledge as to whether or not LILCO would be issuing any
16 future editions of Keeping Current?

17 A Well, I can't answer that. I don't know.

18 Q You have no knowledge either way?

19 A My assumption is that they would presumably have
20 additional information being submitted from time to time in
21 accordance with regulations.

22 Q Dr. Radford, in one of your earlier answers, I
23 believe you start off with a general statement, whereby you
24 indicated your opinion that you felt that the public in general
25

7-10-Wal

1 was more informed about radiation risk than was commonly
2 thought. Is that your testimony?

3 A Some members of the public are. It varies a good
4 deal. There are many people who don't know much about it at
5 all, but within the community it has been my experience that
6 the people will tend to look to those in the community who
7 have educated themselves on the subject, and rely on what
8 they say.

9 Q Well, I believe earlier you testified, and I may
10 be incorrect, and if so, please let me know, but I thought I
11 heard you testify that in general the public was not given
12 enough credit for understanding the risks from radiation,
13 specifically the risk of getting cancer.

14 Was my understandind incorrect?

15 A That is correct. That is my feeling. The
16 public knows in general more about this than I think the
17 authorities have given them credit for.

18 Q Well, given that testimony, it seems to me that
19 that contradicts the thesis of your written testimony filed
20 with this Board. If the public is not given enough credit
21 for knowing about the risk of radiation, specifically the
22 risk of the -- the cancer risk, why is it that you are
23 contending that the LILCO brochure does not have enough
24 information in it. It seems to me that the positions
25 are inconsistent. I wonder if you could clarify that for me.

7-11-Wal

1 A Yes. I am not saying that the public knows all
2 there is to know about radiation risks. Far from it. But
3 they do know, for example, that cancer has been observed
4 as a result, after a period of time, of having been exposed
5 to radiation of various types. This has certainly been a
6 very widely publicized subject.

7 So, they should at least be given information
8 on what these cancer risks are likely to be, given the
9 exposure to certain amount of radiation, and I think they
10 expect when they come to a brochure like this, they certainly
11 expect that kind of information, and not just some statement
12 to the effect that, well, radiation exposure, during normal
13 operations are very low, and, therefore , are not of any
14 great health consequence.

15 End 7.
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2 That kind of thing only makes the public quite
3 suspicious. So, what I'm saying is that the brochure should
4 deal on the kind of general knowledge of the subject that
5 is available and give more precise information which will
6 then enable the average citizen to be able to understand
7 a little bit at least why it is that under some circumstances
8 they might be asked simply to shelter in their home for a
9 period of time and/or other circumstances why they might
10 have to evacuate.

11 Q Wouldn't you agree that in the case of those,
12 or that segment of the population that is presently aware
13 of the risks that as to them, giving them additional infor-
14 mation would be redundant while as opposed to those persons
15 who may not be as conversant with the risks, that giving
16 them too much information might be -- might tend to confuse
17 them?

18 Would you agree with that?

19 A Well, this is a problem that you run into I
20 think in any situation where you are trying to give the
21 public information. Undoubtedly, some people will misunder-
22 stand, and there is not a great deal you can do about this.

23 But it certainly is far better to give more
24 information rather than to give less, because whatever else
25 might happen, the people are very suspicious if they feel
they are being given less than the total truth. I am a firm

#8-2-SueT1

2 believer that by telling the truth the nuclear industry
3 would be far more -- would be given a good deal more trust
4 if the public felt they were being given the truth than if
5 they are not.

6 (Witness Saegert) I would just like to add that
7 when you talk about confusing someone, the issue is not only
8 the quantity of information but it's also the qualities
9 that the information has. If you want someone to understand
10 the occurrence and the consequences of an event, it is
11 very important that you give range information and you give
12 distributional information, and you make the various points
13 on both continuums clear. And that if you only focus on
14 one particular part of the continuums, you are more likely
15 to raise the suspicion that something is being concealed
16 than you are to have provided complete information for the
17 person or to be understood clearly.

18 Q Dr. Saegert, I take it though that you don't
19 disagree that at least with respect to some segments of the
20 population within the EPZ that providing too much informa-
21 tion, either quantitatively or qualitatively, could tend
22 to actually confuse those people?

23 A I think, as I just said, really that providing
24 obviously incomplete information is more likely to confuse
25 the public than making some effort to provide clear and
concise information that covers the full range of issues,

#8-3-SueT1

2 particularly issues of which the public will be at least
3 vaguely aware, like the relationship between cancer and
4 radiation.

5 I doubt that there are very many people who have
6 no awareness at all of some relationship between exposure
7 to radiation and the increased possibility of cancer.

8 Q Dr. Saegert, are you able to tell me whether or
9 not at the time of the accident at Three Mile Island there
10 was an emergency preparedness brochure in existence, or if
11 people within the Three Mile Island EPZ --

12 A I don't believe there was. I could be wrong on
13 that, but I don't --

14 (Witness Radford) There was no emergency plan
15 available, no. No brochure.

16 Q Dr. Radford again, getting back to the earlier
17 question about the general public's awareness of cancer
18 risks from radiation, was your answer based on your opinion
19 as opposed to any statistical or other type of study?

20 A Is the question were the proportions that I
21 stated based on my understanding of information that is
22 available at this time? Is that -- that is, scientific
23 information? Is that the --

24 Q No. The question was, going back to your original
25 answer, and I unfortunately don't recall who put the
question to you. I think it was the attorney for LILCO

#8-4-SueT

1 but in your answer, you in effect gave a two-part answer.
2 You made a general observation first. And I'm just wonder-
3 ing whether that general observation was simply based on
4 your overall experience and opinion, or was it based on any
5 sort of a statistical survey or study? I'm not talking about
6 a scientific study.

7 A Oh, yeah. I see. Yeah. It's based on
8 experience that I had over the years with the training
9 materials, including specific tech material that is provided
10 for various courses that are taught to workers, to technical
11 personnel such as doctors and nurses, in a variety of
12 situations where it is necessary to acquaint them with
13 radiation effects.

14 It has not been a systematic evaluation of all
15 these kinds of training programs, just a personal observa-
16 tion that when I have to question how is the information
17 presented that talks about radiation effects, I find it
18 consistently deficient. It does not take the information,
19 as we know it today, or knew it at the time.

20 Q Dr. Radford, let me try my question one more
21 time. I will try to simplify it.

22 When you gave your earlier answer when you
23 indicated that the general public was not given enough
24 credit for understanding cancer risks from radiation, what
25 was the basis for that answer? Was it --

#8-5-SueT 1

2 A Oh, well that's a result of experience working
3 with lay groups all over the world, in fact, other countries
4 as well as the U.S.A. where I had an opportunity to discuss
5 these matters in some detail with people in, for example,
6 environmental groups that are concerned about the particular
7 issues related to nuclear power, for example. I have found
8 many of these people to be very well informed on many
9 aspects of radiation technology, particularly with regard to
10 the health effects. They have even frequently read technical
11 journal papers and so forth.

12 And while they don't necessarily have the com-
13 plete knowledge that an expert who has worked in the field
14 for a long time would have, still they have a very reasonably
15 accurate evaluation of what the risks are. So, it is based
16 on my own experience.

17 As I say, I've worked with these kinds of groups
18 now for fifteen or more years. And I have come to respect
19 the kind of dedication and intelligence that these people
20 bring to this issue.

21 Q Dr. Radford, have you had occasion to discuss
22 what it is that a person or groups knows or doesn't know
23 about cancer risks from radiation within the Shoreham EPZ?

24 MR. MC MURRAY: Objection. I think the question
25 is vague. We are going to have to get some specificity on
what people or what groups Dr. Radford is talking about.

#8-6-SueT1

MR. BORDENICK: Anyone.

2 JUDGE LAURENSEN: The objection is overruled.
3 You may answer the question, Dr. Radford.

4 WITNESS RADFORD: I have not discussed specific
5 issues with all of the groups, or let's say people from the
6 whole area. I have in the past been contacted by the group
7 at Lloyd Harbor, for example, and they were concerned about
8 the possible location of the nuclear reactors in the Lloyd
9 Harbor area. And so I am familiar with some of the people
10 that were associated with that.

11 More specifically, with regard to the current
12 discussion I have worked primarily with the Suffolk County
13 executive staff, and I quite -- again, I have become
14 impressed with the range of knowledge that some of these
15 people have now achieved in this particular controversy.

16 So, again it's a local group, I mean a specific
17 group, but again I would reinforce this in the same context
18 that I've just expressed in my earlier answer, namely that
19 people who do get involved in this become, even though they
20 may not have academic credentials and things like that,
21 nonetheless they can become quite knowledgable about these
22 issues, and they do.

23 Q This Lloyd Harbor group that you referred to, is
24 that what is known as the Lloyd Harbor Study Group?

25 A Yes.

#8-7-SueT

2 Q Do you know whether any members of that Study
Group reside within the Shoreham EPZ?

3 A Well, it depends on how far you go with the EPZ.
4 We drew the EPZ at twenty miles, and I believe Lloyd Harbor
5 does fall within twenty miles of Shoreham.

6 Q How about ten miles?

7 A (No reply.)

8 Q Do you know whether or not any of the members of
9 the Lloyd Harbor Study Group reside within a ten mile
10 radius of the proposed Shoreham plant?

11 A I don't know that for a fact, no.

12 Q Do you know whether any of the members of the
13 Suffolk County Executive's Office that you have conferred
14 with reside within a ten mile radius of the Shoreham Nuclear
15 Plant?

16 A I don't know for a fact where they actually reside.
17 I would be surprised if at least a few didn't.

18 Q But you don't know for a fact one way or the
19 other; is that correct?

20 A (No reply.)

21 Q You don't know where the members of the Suffolk
22 County Executive's Office that you conferred with actually
23 reside, do you?

24 A No, I don't.

25 Q Dr. Saegert, I will ask you the same. Going back

#8-8-SueT1

2 to the first question, have you conferred with anyone concern-
3 ing what they would expect or not expect to see in a
4 brochure, any person or groups of persons that reside within
5 the Shoreham EPZ?

6 A (Witness Saegert) The only contact that I can
7 think of that might be relevant there is that I did appear
8 before the Marburger Commission, and there were people on
9 that Commission who I believe live in Suffolk County. I
10 don't know whether they lived in the EPZ or not, and they
11 did seem to express concern, extreme concern, about the
12 possible health effects and the amount of information and
13 the intelligibility of the information being provided.

14 Q In the brochure?

15 A Not specifically in the brochure, in the public
16 education in general.

17 MR. BORDENICK: Dr. Saegert and Radford, thank
18 you. I have no further questions.

19 JUDGE LAURENSEN: Any redirect, Mr. McMurray?

20 MR. MC MURRAY: Yes, Judge Laurenson, just some
21 brief questions.

22 REDIRECT EXAMINATION

23 BY MR. MC MURRAY:

24 Q Dr. Radford, there has been some discussion about
25 the public's knowledge of health effects of radiation. I
believe, correct me if I'm wrong, your testimony has been

#8-9-SueT1

2 that there have been some groups of people who have taken
3 it upon themselves to learn a great deal about radiation;
4 is that true?

5 A (Witness Radford) Yes.

6 Q You weren't referring to the population as a
7 whole, then, when you said that there are segments out there
8 who had detailed knowledge of health effects?

9 A Well, some people have much more knowledge than
10 others naturally. But I think even the average citizen
11 has at least some perception. They may not have it in very
12 quantitative terms, but they know that radiation causes
13 cancer, for example.

14 Q Thank you. Is there -- in your opinion, is
15 the knowledge of the general public the same as the level
16 of detail which you would -- have said in your testimony
17 you would like to see in the LILCO brochure?

18 A Oh, no. I don't think people in the general
19 public would have the detailed kinds of information that I
20 think should be in the, more detail anyway, brochure that
21 gives the factual information which then could put in
22 perhaps more quantitative terms what the general public has
23 as a rather vague qualitative understanding.

24 So, in other words, the brochure should definitely
25 have a good deal more information than the public has right
now, even though I'm fairly optimistic about what the public

#8-10-SueT1

2 does know, nevertheless I certainly would agree that they
3 don't know everything, or they don't even know as much
4 of the quantitative aspects that they would need to know
5 if they were going to make rational decisions at a time
6 of an emergency.

7 Q Then, you would agree with me, wouldn't you,
8 that some members of the public may know nothing at all
9 about the health effects of radiation?

10 A Oh, yes, that's true.

11 Q Professor Saegert, there has been some discussion
12 about -- I believe with Ms. McCleskey -- what would be the
13 effects if the information that you desired was placed into
14 the brochure.

15 Did you mean to imply at all in your responses
16 that if the information was put into the brochures, as you
17 have described, that the public would therefor respond as
18 LILCO expects?

19 A (Witness Saegert) I'm sorry if my answer is
20 confusing. I tried to qualify it, in that I said that those
21 people who read the brochure, who remembered it, and who
22 believed it, might be effected by -- in a positive direction
23 toward greater rationality and better ability to assess the
24 utility of the protection action guidelines and, therefore,
25 act reasonably. That's what I was trying to say.

It's, I think, known in this forum that I think

#8-11-SueT₁

1 many people would not read the brochure and that many
2 people would not believe the content of the brochure.

3 MR. MC MURRAY: Judge Laurenson, I have no
4 further questions.

5 JUDGE LAURENSEN: Any further questions for
6 these witnesses?

7 MS. MC CLESKEY: No, sir.

8 MR. ZAHNLEUTER: No questions.

9 MR. HASSELL: The Staff has no further questions.

10 JUDGE LAURENSEN: All right. That completes the
11 questioning of the County's witnesses on the public
12 information brochure.

13 Thank you, Dr. Saegert, Dr. Radford.

14 MR. MC MURRAY: Thank you, Judge Laurenson,
15 for letting us extend the morning so that we could accommodate
16 Dr. Radford.

17 Dr. Radford, thank you very much, and we will be
18 in touch.

19 WITNESS RADFORD: Very good.

20 (The witnesses stood aside.)

21 JUDGE LAURENSEN: All right. At this time, we
22 will take our belated luncheon break, and we will reconvene
23 with the FEMA panel of witnesses and begin with the cross-
24 examination of the County.

25 Is that the order which has been agreed upon?

#8-12-SueT₁

MR. MC MURRAY: Yes, sir.

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MR. GLASS: Yes, sir.

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JUDGE LAURENSEN: Fine. We will take our lunch
break now. We will reconvene at ten minutes to 3.

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(Whereupon, the hearing is recessed at 1:16 p.m.,

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to reconvene at 2:50 p.m., this same day.)

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AFTERNOON SESSION

2:55 p.m.

1 JUDGE LAURENSEN: The hearing is resumed.

2 Mr. Glass?

3 MR. GLASS: The witnesses have been previously
4
5 sworn.

6 JUDGE LAURENSEN: That is correct.

7 Whereupon,

8 THOMAS E. BALDWIN

9 ROGER B. KOWIESKI

10 PHILIP MC INTIRE

11 JOSEPH H. KELLER

12 were resumed as witnesses on behalf of FEMA, and having
13 been previously duly sworn, were further examined and
14 testified as follows:

15 JUDGE LAURENSEN: Maybe for the record we can
16 identify the witnesses who are still under oath.

17 MR. KELLER: Joseph H. Keller.

18 MR. MC INTIRE: Philip McIntire.

19 MR. KOWIESKI: Roger B. Kowieski

20 MR. BALDWIN: Thomas Baldwin.

21 MR. MC MURRAY: Judge Laurenson, I think there
22 is a Motion to Strike pending, and I would like to address
23 that issue.

24 JUDGE LAURENSEN: Do you want to go ahead with
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1 your Motion to Strike?

2 MS. MC CLESKEY: Sure.

3 JUDGE LAURENSEN: We have finished identifying
4 the panel of FEMA witnesses, and now that Mr. Glass is here
5 we can take up the question of the LILCO Motion to Strike
6 this testimony.

7 Ms. McCleskey?

8 MS. MC CLESKEY: Yes, sir.

9 LILCO has moved to strike one sentence in the
10 FEMA testimony, and that appears on what is now numbered
11 page 8a. It is regarding question and answer 17 on
12 Contention 16. The sentence that LILCO moves to strike is:

13 "It should be noted that in the process of
14 reviewing the public education brochure, the FEMA
15 witness panel identified other concerns which are
16 not part of this contention."

17 It is LILCO's contention that this sentence
18 is outside the scope of the testimony as is conceded on
19 the face of the sentence. And LILCO, of course, is
20 interested in the concerns of FEMA and will respond to them.
21 But that is not a matter that is appropriately before this
22 proceeding. Therefore, we would like to strike that
23 sentence from the testimony.

24 JUDGE LAURENSEN: Mr. Glass?

25 MR. GLASS: FEMA concedes that on the face it is

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1 beyond the scope of the contention.

2 FEMA felt that it was under an obligation to
3 inform the Board of the concerns of the panel and leave it
4 purely to the discretion of the Board and how it wishes to
5 proceed on this particular matter.

6 JUDGE LAURENSEN: Mr. McMurray?

7 MR. MC MURRAY: Yes, Judge Laurenson. I think
8 that while it does appear that the specific wording in the
9 contention and the testimony does, maybe, address issues
10 outside the scope of Contention 16, the FEMA witnesses have
11 raised the issue that they have concerns and I think that
12 those concerns should be discussed -- maybe there should be
13 an offer of proof or some sort of brief statement about
14 what those concerns are so that the Parties will know and
15 the Board can determine how it should proceed from there.

16 I just don't think that we can turn our backs on
17 the fact that some problems seem to exist in the brochure
18 that are not specifically addressed in the contention.

19 JUDGE LAURENSEN: Throughout the course when we
20 have discussed the FEMA findings and so forth, the position
21 that the Board has taken is that it is not the FEMA findings
22 that are at issue in the litigation, but it is the contentions
23 of the intervenors that we are trying.

24 So, what relevance would these other concerns have
25 in the present state of the record?

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1 MR. MC MURRAY: Well, apparently FEMA holds
2 itself out to be expert in the area of emergency planning.
3 They have some problems with the brochure, and we don't
4 know what those problems are. And we think the Intervenors
5 should be given the opportunity to know what those problems
6 are. And the Board cannot just turn its back on FEMA's
7 statement that there are some concerns about this brochure.

8 Maybe there will be some contentions after the
9 FEMA witnesses make their concerns known.

10 I am not saying that we should be allowed to
11 cross-examine the witnesses today on their concerns. Of
12 course, if their concerns deal with Contention 16 or any
13 of the other contentions, then we can. What I am saying is,
14 there should be a brief statement of the issues of concern
15 to FEMA, so that we can all address them. It seems like
16 the fair way to proceed.

17 JUDGE LAURENSEN: Mr. Zahnleuter?

18 MR. ZAHNLEUTER: This morning the Board ruled that
19 the public information program was the subject of the
20 hearings today. And I think that we should at first know
21 more about what the FEMA witnesses intend to say so that
22 we can at least determine if it relates to the public
23 information program.

24 I submit that if it does, then it should be fair
25 ground for the hearing today, because it was fair ground for

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1 the hearing this morning.

2 JUDGE LAURENSEN: Let me inquire of Mr. Glass
3 about this statement, and that is whether these other
4 concerns that you refer to in this sentence are matters that
5 are on the public record or are they not?

6 MR. GLASS: To be quite honest, I don't know.
7 The witnesses are the ones who would be the best source of
8 that. But I should indicate though that during the deposition
9 of the witnesses an opportunity was presented to proceed on
10 questions dealing with Contentions 16 and 18.

11 No opportunity was taken to inquire into this
12 particular question.

13 MR. MC MURRAY: The deposition was restricted to
14 the issues of Contention 16. Since the matters were outside
15 of the scope of Contention 16, the deposition couldn't delve
16 into those matters.

17 I just think that a brief statement can probably
18 satisfy the whole problem.

19 MR. GLASS: I would have no trouble with the
20 request for the offer of proof, at least for the witnesses
21 to state specifically what their particular contentions are,
22 and then we could determine if they want to proceed -- if
23 you want to proceed on those and make them a part of the
24 record.

25 MS. MC CLESKEY: I just have a concern, and that

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1 is, what are you offering to prove? There is no contention --
2 by the statement of the FEMA witnesses. There is no conten-
3 tion that goes to their other concerns, whatever they are.
4 And the matter is not properly before this Board.

5 JUDGE LAURENSEN: The question is, as
6 Mr. Zahnleuter mentioned, it could very well be that it
7 goes to the "Keeping Current" article that LILCO intends to
8 rely upon in conjunction with its brochure. In that case
9 it might very well be relevant to the contention.

10 But at this point we really don't know. So, I
11 think before we get around to deciding whether it should
12 be admitted into evidence or not, we should find out what
13 we are dealing with.

14 Who is the one who prepared this part of the
15 answer, or did all of you?

16 (No response)

17 Who wants to speak for the panel?

18 WITNESS KELLER: In review of the brochure,
19 some information which we normally like to see in other
20 brochures, we did not find in this brochure. It had nothing
21 to do with Contention 16.E.

22 JUDGE LAURENSEN: Did it have anything to do
23 with -- were you familiar with this article that they refer
24 to in their testimony about "Keeping Current?" Did you
25 have that?

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1 WITNESS KELLER: We had one issue of "Keeping
2 Current" which we referred to in the testimony also.
3 It had nothing to do with that, either.

4 It is basically information -- it is information
5 that we feel is generally appropriate or useful to the
6 public and is not currently in the brochure, in the
7 brochure that we reviewed, which I guess we should point out
8 is Revision 3 brochure. Specifically for Zone R.

9 JUDGE LAURENSEN: Let me go back to the specific
10 wording of the contention that we have before us and ask
11 you whether any of this language that you are talking about
12 relates to the issue of the magnitude of doses that the
13 public might receive during a severe accident?

14 WITNESS KELLER: No, sir.

15 (Board conferring)

16 JUDGE LAURENSEN: The Board has conferred, and
17 based upon the statement by Mr. Keller concerning the nature
18 of the other concerns alluded to in the language which is
19 the subject of the Motion to Strike, the LILCO Motion to
20 Strike is granted. This is not relevant to Contention 16.E
21 that is before the Board.

22 DIRECT EXAMINATION

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23 BY MR. GLASS:

24 Q Mr. Baldwin, Mr. Keller, Mr. Kowieski and
25 Mr. McIntire, did you prepare the testimony before you, your

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1 testimony dealing with Contention 16, Contention 18,
2 Contention 33, Contention 49 and the training contention
3 dealing with Contention 39, 40, 41, 44, 98, 99 and 100.

4 A (Witness Baldwin) Yes, it is.

5 A (Witness Kowieski) Yes, it is.

6 A (Witness McIntire) Yes, it is.

7 A (Witness Keller) Yes, it is.

8 Q Do you wish to make any corrections or additions
9 to that testimony?

10 A (Witness Baldwin) Yes, we do.

11 Q Except for typographical corrections which are
12 already contained in the material that was distributed today
13 and which will be bound into the record, can you describe for
14 us or delineate the specific substantive changes that were
15 made between this testimony and the testimony originally
16 filed upon the Parties?

17 A There are only three substantive changes that we
18 have to this testimony, and all of them appear on page 101
19 of our written testimony.

20 In the second line of our answer we would like to
21 add module 6, between 5 and 7 which are listed, and module
22 13 between modules 12 and 14.

23 These are being added because they were neglected
24 to be included in the list as the testimony was developed.

25 Also, we would like to add a sentence to the end

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1 of our answer there, which ends "July 24, 1984."

2 The new sentence would read:

3 "We believe that the training material reviewed
4 by us was prepared by LILCO for an earlier version
5 of the LILCO Transition Plan."

6 Q With the corrections and additions you have
7 provided to us today, is your testimony provided to this
8 Board true and correct to the best of your knowledge and
9 belief?

10 A (Witness Baldwin) Yes, it is.

11 A (Witness Kowieski) Yes, it is.

12 A (Witness McIntire) Yes, it is.

13 A (Witness Keller) Yes, it is.

14 MR. GLASS: I would now move for the admission
15 of the direct testimony of Thomas Baldwin, Joseph Keller,
16 Roger Kowieski and Philip McIntire dealing with Contentions
17 16, 18, 33, 49, and the Training Contentions as above
18 delineated.

19 JUDGE LAURENSEN: Is there any objection to that?

20 MR. MC MURRAY: No objection.

21 MS. MC CLESKEY: LILCO has no objection.

22 MR. GLASS: The witness panel is now available
23 for cross examination.

24 JUDGE LAURENSEN: Does New York have an objection?

25 MR. ZAHNLEUTER: No objection.

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JUDGE LAURENSEN: The testimony will be received in evidence and will be bound in the record as indicated.

(The direct testimony of Witnesses Baldwin, Keller, Kowieski and McIntire dealing with Contentions 16, 18, 33, 49, and Training Contentions above delineated, follows:)

TRAINING CONTENTIONS

Q.121. In the preparation of the testimony that follows on the above contentions, what material was reviewed by the witnesses?

A. In addition to the LILCO Transition Plan, Revision 3, training modules 1,2,3,4,5,6,7,8,9,10,11,12,13,14,16,17,18 and 19 which included 11 video tapes and 12 scripts that were made available to FEMA; also a spot check of some training logs and workbooks was conducted at LILCO's Hicksville Office on July 24, 1984. We believe that the training material reviewed by us was prepared by LILCO for an earlier version of the LILCO Transition Plan.

CONTENTION 39

Q.122. 39.A-Does the LILCO Transition Plan adequately provide for training of LILCO personnel so that trained replacements will be available to account for personnel lost via attrition?

A. The RAC evaluated NUREG 0654 element 0.1 as adequate. The plan states that in addition to the ongoing regularly scheduled training, special accelerated training will be initiated to maintain staffing of key positions.

The LILCO training program utilizes the concept of overstaffing to insure the availability of adequate numbers of response personnel. According to their records LILCO has trained, or is completing the training of, approximately 50% excess staff. There is a tracking system whereby the numbers of fully trained individuals for each job function is maintained.

Q.123. 39.B-Does the LILCO Transition Plan adequately provide for training of non-LILCO support organization personnel including provisions to account for attrition within these organizations?

A. The LILCO Transition Plan adequately provides for training of non-LILCO support organization personnel. The plan designates the Coast Guard and ambulance personnel as examples of such

organizations but does not limit training to these organizations. In fact, as stated in the plan, LILCO suggests that the American Red Cross should participate in LERO training. Other organizations which are included in the plan as organizations which have to take action but are not support organizations, will be offered annual training.

Non-LILCO support organizations, which have indicated their willingness to provide specific response by signing letters of agreement, accept the responsibility for informing LILCO of their training needs.

CONVENTION 40

Q.124. 40-Does the training program described in the LILCO Transition Plan adequately prepare LILCO employees for their respective emergency functions as well as make provisions for maintaining this capability?

A. The training program described in the LILCO Transition Plan is designed to provide adequate training to LILCO personnel. The training program provides for classroom training, drills, table top exercise and full scale exercises. The LILCO Transition Plan contains a matrix of drills and exercises to be conducted. There is a tracking system whereby the numbers of fully trained individuals for each job function is maintained.

The ability of specific individuals to perform any particular job function during a real emergency cannot be evaluated. However, the specific duties of emergency response personnel are not in most cases complex nor do they require a job related experiences. Experiences in other types of emergencies have shown that emergency workers have performed their roles well in all types of emergency situations where stress and fatigue are involved.

CONTENTION 41

Q.125. 41-Does the LILCO Transition Plan provide for adequate training in the use of communications equipment for emergency personnel?

A. The LILCO Transition Plan provides for adequate training of emergency personnel in the use of communications equipment. The plan provides a listing of the radio system functions which are to be tested quarterly, and provides for a mechanism whereby problems are to be resolved by the Emergency Planning Coordinator. This portion of the procedure calls for radio system checks between the EOC (the communicators) and various field locations. It is our conclusion that the field locations to be involved in these tests must be staffed if this procedure is to be completed. It is our understanding that these quarterly communications drills have not been completed.

CONTENTION 44

Q.126. 44.D-Does the LILCO Transition Plan adequately provide for the testing of the understanding of the message content by recipients at the Federal and State response organizations?

A. The LILCO Transition Plan does not specifically address this issue. However, the Radiological Emergency Data Form which is used to transmit emergency information is a general form and is used by other reactor sites within New York State. It is our belief that the Federal Agencies and New York State, if they choose to receive such messages, will understand the content since in exercises for other sites this form has been successfully used. Connecticut, the other State involved in the ingestion pathway EPZ, is also involved with radiological emergency planning for other sites and has demonstrated the ability to comprehend such information.

Q.127. 44.E-Does the LILCO Transition Plan adequately address "free play for decision making"?

A. The RAC review of the LILCO Transition Plan found NUREG element N.3 to be adequate. The plan provides that scenarios for drills and exercises would allow for participant discretion and decision making. The exact details of how this "free play" would be accomplished depends on the specific objective(s) of a particular drill

or exercise. In the case of a Federally evaluated exercise, the offsite objectives of such an exercise must be reviewed and approved by FEMA.

Q.128. 44.F-Does the LILCO Transition Plan adequately provide for evaluation and critiques of the annual exercise?

A. The RAC review of the LILCO Transition Plan found NUREG 0654 elements N.4 and N.5 to be adequate. The plan correctly states that the comments from the FEMA Post Exercise Assessment Report will be available for use in revising the plan. However, changes to revision 3 of the plan are required to maintain consistency (see RAC review pages 54 and 55). It should be noted that the FEMA requirement is for biennial Federally evaluated exercises not annually as was required in the past. There are also FEMA provisions for Federally evaluated remedial exercises to insure that serious deficiencies have been corrected. In addition to the FEMA evaluations any participating organization may prepare an exercise evaluation.

CONTENTION 98

Q.129. 98-Does the LILCO Transition Plan adequately provide for initial training and periodic retraining of emergency organizations which will be required to "take actions during an incident"?

A. According to their records, LILCO has completed training of the Coast Guard and four of eleven ambulance companies. According to LILCO personnel, contact has been made with schools, hospitals, and nursing homes to arrange for training in accordance with the plan provisions. According to LILCO personnel the training for the Wading River School District is planned for the fall of 1984, when the full staff will be available. Also, see answer to Contention 39 B.

CONTENTION 99

Q.130. 99.C-Does the LILCO Transition Plan provide for adequate training of LILCO personnel by qualified instructors?

A. The LILCO Transition Plan does not address the qualifications of the training instructors. Proof of the quality of instruction, or lack thereof, is the ability of emergency response personnel to perform their job functions. This ability is traditionally evaluated in a Federally observed exercise.

Q.131. 99.G-Does the LILCO training program provide adequate information on how to perform various job functions?

A. The LILCO Transition Plan and the training program for LERO emergency response organizations contain adequate information for personnel to be able to carry out their emergency functions. The knowledge and effectiveness of emergency workers to perform their jobs, based on their familiarity with these materials, would be evaluated at a Federally observed exercise.

CONTENTION 100

Q.132. 100.B-Does the LILCO training program make adequate provisions for observing, evaluating and critiquing drills and exercise?

A. The plan defines drills as ..."supervised instructional periods ...". The plan lists drills which will be held as a part of the overall training program. In addition to the drills specifically required by NUREG 0654, provisions for additional drills are included in the plan. The plan specifies that drills are evaluated by designated observers. We believe that the objective of these drill evaluations will be in accord with the supervised instructional purpose of the drills as stated in the plan. The observation and evaluation of exercise is discussed in the answer to Contention 44.F.

Q.133. 100.D-Does the LILCO Training program adequately provide emergency personnel the opportunity to perform their job function?

A. The LILCO Transition Plan makes provisions for drills wherein the participants will utilize the facilities, equipment and procedures to respond to the simulated incident.

Q.134. 100.G-Does the LILCO Training program contain adequate provisions for evaluating the performance of individual emergency response personnel?

A. The LILCO Transition Plan is not specific with regard to the performance standards by which the adequacy of training would be evaluated. A Federally evaluated exercise includes objectives which constitute a type of performance standard. The FEMA evaluation is based upon specific exercise objectives which are keyed to NUREG 0654 planning standards. The FEMA Post Exercise Assessment would indicate if the exercise objectives were met. If the training of response personnel is evaluated as being deficient, there are provisions within the FEMA rules requiring remedial exercises to demonstrate correction of problem areas.

CONTENTION 49

Q.57. 49-Does the LILCO Transition Plan provide procedures for dealing with missing data, communications failures, and conversion of measurement units in the calculation of the dose assessment projections and downwind surveys?

A. The LILCO Transition Plan contains procedures to calculate dose projections using several different approaches, including the use of source term data and field survey data. The assessment and dose projection for release of airborne or waterborne radioactive material (Procedure OPIP 3.5.2) does not currently contain several nomograms which would be used in some of the methodologies. Ingestion pathway assessment and dose projection are covered in Procedure OPIP 3.5.3. The use of a 0.05 m/sec deposition velocity is applicable under a limited set of atmospheric conditions, however, it is a conservative value for most cases.

Both Procedures OPIP 3.5.2 and OPIP 3.5.3, include statements which allow for the use of technically equivalent procedures to those shown in the plan. Since the offsite response and dose assessment functions draw on DOE resources, procedures followed by the Federal response organization may be used.

CONTENTION 33

Q.52. 33-Does the LILCO Transition Plan discuss how communications with DOE-RAP field monitoring teams will be effected? Are the provisions for communications with the field teams adequate to ensure that off-site accident and dose assessment actions (include those necessary to promptly determine the appropriate protective action recommendations) would be taken?

A. The primary means of communication with the DOE-RAP field teams is by radio. The normal channel would involve radio contact with the Brookhaven Area Office of DOE, followed by contact with the local EOC by use of a dedicated telephone line. The RAP Captain, who would report to the local EOC, will also have a hand-held radio on the same frequency as the field teams. If the range of the radios is sufficient to allow for direct contact with the RAP Captain in the EOC, the field team messages will not have to be relayed through the Brookhaven Office. The ability to directly communicate with the field teams would be evaluated in an exercise.

The LILCO Transition Plan makes the following provisions for communication for the second wave of DOE responders (see Attachment 2.2.1, page 5 of 17).

An extensive communications system is deployed with the special team. A memorandum of understanding between DOE and AT&T assures rapid telephone response for the communications system connection. The switching hardware for a twelve line telephone system, and radios for HF and VHF transmissions are installed in an airline cargo pod. In

addition, the system contains a portable microwave system to provide video, data, audio, telephone, and control communication between a field command post and an incident site, which may be up to 50 miles apart. Telephone with HF backup is the primary longer distance communication system. On-scene communication is assured with VHF radio, repeaters, and pagers.

Included in the communication array are all the basic support elements to establish a field command post. This includes typewriters, telecopiers, copy machines, status boards, etc.

CONTENTION 18

Q17B. 18-Has the FEMA witness panel reviewed the LILCO public information posters, telephone book inserts and Emergency Broadcast System (EBS) messages?

A. The only information available for review is the EBS messages.

Q17C. 18-Do the EBS messages contain a description of the emergency planning zones and the recommended evacuation routes for each zone?

A. The EBS messages contained in Procedures OPIP 3.8.2 provide for the insertion of narrative descriptions of each zone that may be affected by an evacuation (see attachment 4 of Procedure OPIP 3.8.2). The EBS messages do not contain provisions for the insertion of narrative descriptions of the evacuation routes described in the public information brochure. However, the text of the messages state:

To evacaute follow blue and white evacuation route signs posted on every major road. You will be directed along evacuation routes by trained traffic guides who know which way you should go.

Q17D. 18-Are there provisions in the EBS messages to accomodate persons who may be visiting an emergency planning zone within the 10-mile EPZ in which they do not reside, and are there provisions to inform such individuals of the proper evacuation routes?

A. As stated above in the answer to Question 17C, both EBS messages that deal with evacuation recommendations contain instructions for evacuees to follow blue and white evacuation route signs and the direction of trained evacuation guides. In addition, these EBS messages contain the following instructions for parents of school children:

Parents should not drive to school to meet their children since children are being safely transported outside the zone to relocation centers. Parents should not go to relocation centers until advised to do so.

CONTENTION 16

Q.17A 16.E-Does the LILCO public education brochure adequately discuss the health effects of radiation exposure that the public might receive in the event of a severe accident at the SNPS?

A. The public information brochure does contain educational information on radiation as required by NUREG-0654, Planning Standard, G.1. However, this brochure does not address the magnitude of doses that the public might receive during a severe accident and the health consequences related to such releases. Although, as stated above, there is no NUREG-0654 requirement for this type of information, its inclusion would be informative to the reader.

A review of the Spring 1984 issue of LILCO's newsletter, "Keeping Current", revealed that information on health effects related to potential doses resulting from a severe accident are discussed.

It should be noted that in the process of reviewing the public education brochure, the FEMA witness panel identified other concerns which are not part of this contention.

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1 JUDGE LAURENSEN: Now we are ready for cross
2 examination.

3 MR. MC MURRAY: Judge Laurenson, before I proceed
4 I would like to have a clarification of the Board's ruling.

5 Is it the Board's ruling that it does not intend
6 to inquire into the concerns that the FEMA witness panel has
7 raised even though one witness says that in his opinion
8 those concerns are not relevant to Contention 16?

9 JUDGE LAURENSEN: Do you want to give me that
10 question again? I got lost in the middle of it somewhere.

11 MR. MC MURRAY: Is it the Board's ruling that it
12 is not going to inquire into the problems raised by the
13 FEMA witnesses about the public information brochure even
14 though this witness, Mr. Keller, says those problems may
15 not be directly relevant to Contention 16?

16 JUDGE LAURENSEN: The language concerning the
17 other concerns which are not part of this contention was
18 stricken, so we are not going to go into anything outside
19 of Contention 16.E, if that answers your question.

20 So, if you have -- or the Board or anyone else
21 has questions concerning the 16.E aspect of the brochure,
22 that certainly is germane, or anything relevant to the
23 testimony we took this morning. But, insofar as it goes
24 beyond that into other areas, that is correct, we would
25 find that not to be relevant to the contentions at issue

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1 in the case.

2 MR. MC MURRAY: I guess my concern, Judge
3 Laurenson, is that the Board has taken it upon itself in
4 the past to determine that there are problems, safety
5 problems. The strike issue is probably the most striking
6 example. And, has taken it upon itself to raise sua esponte,
7 certain contentions, or at least inquire into the matter.
8 You did that on July 19, when you asked the Parties to
9 address the strike issue.

10 Now here we have FEMA saying there was a problem
11 with the brochure, and it sounds to me like the Board is
12 saying we are not interested in hearing what that problem is,
13 not even a statement of what that problem is.

14 JUDGE LAURENSEN: There are many, obviously,
15 problems that FEMA found in its findings concerning a review
16 of the LILCO plan, that may not be the subject of contentions
17 in this case.

18 The purpose of the hearing for licensing plants
19 is to resolve matters that are in dispute. And in the
20 areas where the Board does find that a significant
21 safety issue is presented, to pursue it.

22 MR. MC MURRAY: Is the Board determining here that
23 there is no significant safety matter?

24 JUDGE LAURENSEN: We haven't determined anything
25 at this point except that that is not relevant at this time

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1 in the case.

2 MR. MC MURRAY: I would like to move then that
3 the Board inquire into this matter to determine whether a
4 significant safety matter exists.

5 JUDGE LAURENSEN: There isn't any foundation at
6 this point for that. I don't know why the County didn't
7 pursue it if it was concerned about it at the deposition.

8 MR. MC MURRAY: The deposition was concerned with
9 Contention 16. That was our problem.

10 JUDGE LAURENSEN: But you had the testimony at
11 that time. They had already raised it in that testimony.

12 MR. MC MURRAY: But they said it wasn't relevant
13 to Contention 16.

14 JUDGE LAURENSEN: You mean they precluded you from
15 interrogating in that area?

16 MR. MC MURRAY: No. As an attorney you try not
17 to go outside the bounds of the admissible contentions in
18 the testimony.

19 JUDGE LAURENSEN: That is the position that we
20 are in at this point unless something comes to our
21 attention that would indicate otherwise.

22 So, our ruling is that based upon the contentions
23 that the County has submitted and that we have admitted to
24 this proceeding, this is not an area that is relevant now.

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CROSS-EXAMINATION

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BY MR. MC MURRAY:

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Q Mr. Keller, let me ask you, is the testimony that was stricken relevant to any of your other contentions before this Board?

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MR. GLASS: I have to object to that, your Honor. That is a rather broad conclusion requiring quite extensive --

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MR. MC MURRAY: The witness has already given his opinion about whether the testimony is relevant to Contention 16. I don't see why he is not capable of giving his opinion on the rest of the contentions.

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JUDGE LAURENSEN: At this point the FEMA witnesses have presumably reviewed at least the contentions that relate to the aspects of 0654. So I think he would be in a position to answer that.

end T9 17

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1 Q Mr. Keller?

2 A (Witness Keller) To the best of my recollection,
3 the issues -- the concerns that we had about the brochure,
4 are not directly addressed in any of the other Contentions.
5 That is from recall. I don't think so.

6 Q You don't think so. What do you mean by, 'not
7 directly addressed?'

8 A I don't remember any contention which would have
9 addressed any of the concerns that we raised -- that we found.

10 Q What area are you talking about. What area of
11 concern are you talking about?

12 A The concerns that we found --

13 MS. McCLESKEY: Objection. Mr. Keller, are you
14 about to list the concerns that you have?

15 WITNESS KELLER: No.

16 MR. McMURRAY: Judge Laurenson, this is just
17 shooting in the dark. Why don't we just get this out on the
18 table. I don't understand why the parties and the Board
19 aren't entitled to just a simple statement of what the concerns
20 are, and then the Board will have before it the fact to decide
21 the issue.

22 JUDGE LAURENSEN: Let me just ask one question of
23 Mr. Keller. It is the same question I asked Mr. Glass earlier,
24 and that is whether these other concerns that have been the
25 subject of this discussion so far are matters on the public

1 record at this time, either in the FEMA findings or whether
2 they have been disclosed at public meetings that have been
3 attended by interested persons?

4 WITNESS KELLER: I don't believe they have.

5 JUDGE LAURENSEN: Based upon the information that
6 we have available to us now, we assume that the fact that this
7 is not matters that have been placed in the public record in
8 FEMA findings or that have been discussed publicly, that there
9 is no indication at this point that this is an official FEMA
10 position of any deficiency or serious safety problem in
11 connection with the brochure that we are talking about.

12 And unless one of these witnesses cares to
13 contradict that, or disagree with that, I don't see any reason
14 to inquire further. Maybe I ought to ask Mr. Kowieski, who
15 is the spokesman here, as to whether or not this is a FEMA --
16 we are talking about a FEMA finding or a FEMA determination.

17 MR. KOWIESKI: That is a fair characterization.
18 As far as we know, to the best of our recollection, issues
19 raised or concerns raised by us or observed in the brochure
20 are not on the public record.

21 JUDGE LAURENSEN: But were they the subject of
22 the official action by your FEMA RAC committee?

23 WITNESS KOWIESKI: No, sir.

24 JUDGE LAURENSEN: Let's move on.

25 BY MR. McMURRAY: (Continuing)

1 Q Mr. Kowieski, was the public education brochure
2 reviewed by the RAC Committee?

3 A (Witness Kowieski) No, sir.

4 Q So, therefore, there couldn't be any RAC findings
5 on the content of the brochure, correct?

6 A That is correct. The brochure hasn't been reviewed
7 by this panel.

8 Q So that any FEMA finding would, of course, have
9 to come from this panel, correct?

10 A That is correct.

11 MR. McMURRAY: Judge Laurenson, it is clear there
12 is no way the FEMA Panel or the RAC review could have included
13 a review of the brochure, so I renew my motion.

14 JUDGE LAURENSEN: Let me hear from Mr. Glass as
15 to what the position of FEMA is in conjunction with this
16 panel testifying, where there has been no formal review of the
17 subject matter by your RAC committee.

18 MR. GLASS: The interim findings that we are
19 requested to provide, and the material provided by this panel,
20 are representative of FEMA. They have been authorized to
21 present testimony on behalf of FEMA, and we stand by that.
22 There are a number of issues that may have been raised in the
23 contentions that would not normally be carried out by the RAC
24 or another section of FEMA in the performance of their duties,
25 such as the particular material that was produced to respond

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1 to the training contentions. They were taken out of turn
2 and were handled solely by the panel, but these panel members
3 are authorized to represent FEMA as to that information to
4 this body.

5 JUDGE LAURENSEN: How do you compare then the
6 findings of the testimony of this panel on these issues, with
7 the FEMA RAC review on other issues? Are they, as far as
8 FEMA is concerned, of the same caliber, same weight, or do
9 you treat these matters differently?

10 MR. GLASS: We feel they are of the same weight,
11 but of course the ultimate decision as to what weight should
12 be given to the FEMA witnesses rests with this Board.

13 JUDGE LAURENSEN: This may come up again today
14 or tomorrow. Is this an area where the FEMA panel of witnesses
15 here have gone beyond the scope of several other contentions
16 to look for what they perceive as possible deficiencies in the
17 LILCO Plan?

18 MR. GLASS : In the normal course of FEMA
19 carrying out its work, it utilizes the RAC to carry out
20 certain functions. It utilizes observers to carry out
21 certain functions, and there are certain material that has
22 to be carried on by the FEMA regional and national office.
23 In order to respond to all the contentions, FEMA relied on
24 all the resources available to it.

25 It utilized the RAC material, and it utilized

1 the professional capabilities of the particular FEMA panel that
2 is before you today. But they are authorized to represent
3 FEMA in their presentation to you.

4 JUDGE LAURENSEN: What I am trying to find out
5 is this the only area where they have gone outside the
6 contentions to list potential deficiencies or problems with
7 the LILCO Plan, or has this been their review in all areas?

8 MR. GLASS: This is the only case, and it was
9 stated as such.

10 (Board confers)

11 MS. McCLESKEY: Judge Laurenson, perhaps it
12 would be helpful to explore for a minute with Mr. Glass or
13 the panel, whether and how these concerns might be communicated
14 to LILCO outside the course of this proceeding, so that we
15 don't have to go into it.

16 I mean, we don't know what the concerns are, and
17 presumably at some point FEMA might articulate them to us and
18 we would address them, but there is no contention before this
19 Board to talk about them under.

20 JUDGE LAURENSEN: What I am trying to find out, what
21 position in the overall structure of the FEMA review, how
22 do we treat these concerns identified by this panel of
23 witnesses? Does this amount to a finding by FEMA that the
24 brochure is deficient in certain regards? Is that --

25 MR. McMURRAY: Mr. Keller is nodding his head.

1 MR. GLASS: Yes.

2 JUDGE LAURENSEN: Okay. I am talking to Mr.
3 Glass.

4 MR. McMURRAY: I am sorry, Judge Laurenson.

5 JUDGE LAURENSEN: His answer was affirmative.

6 Now, Ms. McCleskey raised the question of how this deficiency
7 would then be communicated to LILCO, or have you already done
8 that?

9 MR. GLASS: No, we have not done that at this
10 time. I would rather speak to my witnesses and determine how
11 they would handle it in their normal course of business than
12 to try to make a comment for them at this particular time.

13 MR. BORDENICK: Judge Laurenson, could I offer
14 an observation? Unfortunately, this microphone won't reach
15 over here.

16 Like the Board, LILCO, the State and County, I
17 don't know what the deficiencies are either, but it seems to
18 me no one -- by, 'no one,' I mean state, -- well, the County
19 at the deposition, for whatever reason, or LILCO, has asked
20 FEMA where are the deficiencies. I think they are vehicles
21 outside of this hearing room by which whatever the deficiencies
22 are, can be listed and can be addressed, and I think the Board
23 ought to stick by its original ruling. It is outside the scope
24 of the contention. The witnesses have already testified to
25 that.

1 If it later turns out that when LILCO and the
2 County and the Staff, and parenthetically, I have just never
3 asked, and apparently the other parties haven't asked -- there
4 are procedures in place for the County or LILCO to get those
5 matters before the Board, if necessary.

6 I just don't think it is necessary to reach the
7 question today. I think we ought to move on with the testimony
8 that is before the Board.

9 MR. McMURRAY: Judge Laurenson, the witnesses
10 are here. They can give us the information. I think it is
11 not going to take very much time to just get these concerns
12 out in the open, and then everybody can address them, and I
13 don't think the concern should just be given to LILCO, as
14 Ms. McCleskey seems to suggest. All the parties are entitled
15 to that information, and the Board.

16 MR. GLASS: I assume the concerns that some
17 people have as far as the particular identification, is that
18 once they are in the record, they are in the record. Unless
19 the Board can come up with some sort of procedure that they
20 would feel comfortable with, wherein a limited examination
21 could be conducted to satisfy everybody that these are not
22 related to the particular contentions, and then if the Board
23 then stands by its ruling that no arguments in the proposed
24 findings or conclusion of law can be made based on that
25 information, that may be the best and most expeditious way

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1 to proceed.

2 JUDGE LAURENSEN: I spend more time arguing
3 about procedures than getting to the matter at hand, so we
4 will accept that suggestion, and do a limited voir dire
5 examination. That is what we are going to call it, a voir
6 dire. It is not part of the record to be relied upon for
7 findings at this point, but we want Mr. Keller to tell us
8 on the record, what are your other concerns?

9 WITNESS KELLER: Our concerns are centered around
10 three issues. First, in the brochure that we reviewed, there
11 were no EBS stations listed. There was a blank in the
12 brochure that doesn't have the EBS stations. There was a
13 statement that said that they would be included before being
14 mailed to the public, but that was a deficiency as far as
15 we were concerned in the brochure we were given to review.

16 Secondly, the map which is in the brochure that
17 we reviewed, which was for Zone R, is not complete. It does
18 not show the complete ten mile EPZ, okay?

19 We felt that this could inhibit the effectiveness
20 of this brochure, since people who live in this zone -- the
21 presumption is that this map would be sent to residents of
22 the Zone R -- if they were in another zone, evacuation zone
23 or planning zone, within the EPZ, should have available to
24 them information about the rest of the zone.

25 The third issue was a little more involved, in

1 that we would like to see at least some information given to
2 the populace that they might be instructed via EBS to take
3 action other than what is in the brochure at the current time.

4 For example, or specifically, there might be a
5 case where you do not wish the evacuees to leave the zone
6 and go either to a motel or the home of a friend or relative
7 as is recommended by the brochure. You might want to instruct
8 the evacuees to report to reception center first, and be
9 monitored, to assure that they have not become contaminated
10 during their evacuation. So, they should not be instructed
11 -- there should be something in the brochure which tells the
12 people, for example, under normal circumstances, you just
13 go to a friend -- if you have a friend, or you want to go
14 to a motel, go ahead. If you need housing, go to the
15 reception centers.

16 However, under some circumstances, the EBS message
17 may tell you, even though you intend not to avail yourself
18 of the public housing, or the housing provided by the reception
19 center, we may instruct you to go to the reception center to
20 be monitored to assure that you have not become contaminated,
21 and language of that nature we thought should be in the
22 brochure. We have found that to be a deficiency in other
23 brochures, and we would find it to be a deficiency in the
24 brochure that we reviewed.

25 We don't know what is in Revision 4 of the

1 brochure, if there is Revision 4 even. And those are the
2 three areas -- the three concerns.

3 JUDGE LAURENSEN: Is there something else?

4 WITNESS BALDWIN: There is one other minor one,
5 and that is that there is no information in the brochure
6 that we could find regarding the contact for additional
7 information. The Plan states that contact for additional
8 information is the customer service operators, who then in
9 turn call a rumor control number, and then get back with
10 that individual.

11 The number for customer services should be
12 in the brochure.

13 JUDGE LAURENSEN: Continuing with this voir
14 dire examination, we will first allow Mr. Glass to ask any
15 questions on direct examination that he may have based on
16 what the witnesses have said.

17 DIRECT VOIR DIRE

18 EXAMINATION BY MR. GLASS:

19 Q Just one, just to try to refresh their memory.
20 Was there any concern about -- in the brochure -- an indication
21 that they should retain the brochure. Was that one of your
22 concerns?

23 A (Witness Keller) No, that -- the indication that
24 the brochure should be saved is contained in the brochure.

25 MR. GLASS: No further questions.

ZX INDEX 2

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JUDGE LAURENSEN: Mr. McMurray?

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CROSS VOIR DIRE EXAMINATION

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BY MR. McMURRAY:

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Q Judge Laurenson, I see at least three of these

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issues are relevant to other contentions. For instance,

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the map issue I think is relevant to Contention 18. The

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issue of people going to decontamination centers before they

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go to relocation centers I think is probably relevant to the

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relocation center issues, and maybe we should address them

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then rather than now.

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JUDGE LAURENSEN: Well, the question is do you

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have any further questions at this time based upon what this

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panel has answered thus far on the limited voir dire exam-

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ination to develop further information as to what we do with

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these concerns.

16

MR. McMURRAY: Yes, I do.

17

BY MR. McMURRAY: (Continuing)

18

Q The second issue, Mr. Keller, regarding the

19

map, Zone R, there are -- there is an evacuation map and a

20

bus route map. I take it you are talking about the evacuation

21

map?

22

A (Witness Keller) No. What I said was, that there

23

is no map of the entire ten mile EPZ, or at least the land

24

area part of the EPZ in the brochure. We don't find any

25

problem with the map for Zone R that is in the Zone R booklet,

1 but we feel that each one of the booklets, right, for each
2 one of the individual zones, should have a map of the entire
3 zone.

4 Q And why is that?

5 A So that people would be familiar with the entire
6 zone.

7 MR. GLASS: I just want to know if you misspoke.
8 Do you mean -- we are using the term, 'zone.'

9 WITNESS KELLER: The entire EPZ, planning zone
10 in that case. People who live in one of the individual planning
11 evacuation zones might very well be visiting a neighboring
12 evacuation zone, and if they had at least general information
13 about the entire EPZ, they would be better informed.

14 BY MR. McMURRAY: (Continuing)

15 Q I would like to go to the third point. You say
16 that people, under some circumstances, might be told to go
17 first to a decontamination center before going to the relocation
18 center?

19 A (Witness Keller) If that is what I said, that
20 is not what I intended to say. I thought what I said was that
21 the booklet tells people that as they are evacuating they have
22 two options; they can either leave the EPZ and find housing on
23 their own, either at a motel or with friends or neighbors or
24 whatever, okay; or secondly, they can report to one of the
25 reception centers and then be housed by the LILCO organization.

1 If you report to a reception center, you will be
2 monitored. The plan calls for people who come to reception
3 centers to be monitored, okay. Our concern was that there
4 may be the potential, under some circumstances, that people
5 who do not wish to be housed by the LERO organization, and
6 they wish to avail themselves of housing at their own
7 discretion, that if an evacuation is in progress during the
8 passage of a plume, events catch up with them, et cetera,
9 or whatever happens, and there is the potential for people
10 to become contaminated while they are evacuating, these
11 people should be informed to report to the reception center,
12 at least the monitoring portion of the reception center,
13 assure themselves that they are not contaminated, or free
14 of contamination, and then go on and find housing on their
15 own, motels or friends or whatever.

16 And there should be in the brochure some language
17 which tells these people that they may be instructed to
18 follow this option, and that this instruction would come via
19 the ERS message.

20 There is no, I guess, warning that this may
21 occur.

22 End 10.
23 Sue fols.
24
25

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2 MR. MC MURRAY: I have no further questions,
Judge Laurenson.

3 JUDGE LAURENSEN: Any questions, Mr. Zahnleuter?

4 MR. ZAHNLEUTER: Yes, Judge Laurenson.

5 CROSS EXAMINATION

6 BY MR. ZAHNLEUTER:

7 Q Mr. Keller, why is it a deficiency for the
8 brochure to include the EBS stations later rather than
9 now?

10 A (Witness Keller) Well, at the time we reviewed
11 it, the brochure we had in hand was not acceptable.

12 Q The brochure that I have says the EBS stations
13 would be inserted prior to mailing.

14 A That's right.

15 Q Why is that a deficiency?

16 A Well, we don't know when they are going to be
17 mailed. We don't know whether we would have the opportunity
18 to review the brochure before it's mailed. We were given a
19 brochure and said: Review this brochure for adequacy. This
20 brochure, as it stands, is not adequate.

21 Will it be adequate when they add the EBS message,
22 the EBS stations? Yes, in that regard.

23 How will we know? Will we get a chance to look
24 at the brochure again to see that they are added before they
25 are mailed out? I would assume that they would, but what we

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2 have here needs to have that in it. And the Company, LILCO,
3 recognizes that fact and has stated so.

4 Q So, I take it that you are interested in the
5 particular EBS stations that will be identified?

6 A Yes. We know what the plan says. We don't know
7 what the brochure is going to say.

8 Q Mr. Kowieski, did you wish to add something?

9 A (Witness Kowieski) Mr. Keller covered it
10 pretty well.

11 MR. ZAHNLEUTER: No other questions.

12 JUDGE LAURENSEN: Questions, Ms. McCleskey?

13 MS. MC CLESKEY: Yes, sir.

14 CROSS EXAMINATION

15 BY MS. MC CLESKEY:

16 Q Mr. Kowieski, is there any formal mechanism by
17 which FEMA would review the brochure and issue written
18 findings that would include these sorts of concerns?

19 A (Witness Kowieski) Yes, ma'am. As a matter of
20 fact, when we review the plan usually we -- or at the time
21 when brochure is submitted, we review the public education
22 brochure.

23 What I would like to add when the question was
24 raised by Judge Laurenson, with regard to why this brochure
25 wasn't reviewed by RAC, first of all, I would like to point
out that FEMA has a primary role when we review the public

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2 education brochure. In other words, we have divided the
3 RAC responsibility based on their expertise. It doesn't
4 mean that not send the brochure to RAC members for review
5 and comments. Obviously it would be very helpful. But,
6 it is our primary role, we have a public information officer
7 who is a member of Regional Assistance Committee, and in
8 the past the public information officer had a major role.
9 We provided comments on the brochures, public education
10 brochures, for other sides and at certain point when the
11 brochure would be submitted, it would be submitted to
12 Revision 4, obviously we are going to review the brochure,
13 the entire RAC is going to review the public education
14 brochure.

15 Q And as part of that process, you would indicate
16 your concerns about the brochure, right?

17 A Not necessarily as a part of the NUREG 0654
18 review. It would be independent letter going to the State
19 or in this case, to LILCO.

20 Q And LILCO would be given the opportunity to
21 respond by perhaps fixing the problems, right?

22 A Yes, ma'am.

23 Q Would you look at the brochure during the
24 exercise as well?

25 A Well, we would -- what we would do during the
exercise would be the spot check on the public awareness

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2 among the residents. So, what we would do, we would
3 question the residents within ten mile EPZ, first of all,
4 did they receive a copy of the brochure, did they under-
5 stand, did they know what to do in case of emergency.

6 Q Would that of necessity involve someone from
7 FEMA reading the brochure and determining whether the EBS
8 stations were now listed, a complete map of the EPZ was
9 included, the number for customer service was included,
10 that sort of thing?

11 A That's most likely would happen. Prior to the
12 exercise, whoever would be responsible for this particular
13 element, public education portion, of the exercise would be
14 responsible for a detailed review of the brochure.

15 MS. MC CLESKEY: I have no other questions,
16 Judge Laurenson.

17 JUDGE LAURENSEN: Anything else on this matter
18 before we go back to the record on cross-examination?

19 All right. This completes the voir dire
20 examination. And to the extent that some of the concerns
21 identified during this questioning may be the subject of
22 contentions that are before the Board, of course, they may
23 be inquired into on the cross-examination or redirect
24 examination.

25 Mr. McMurray.

MR. MC MURRAY: Thank you, Judge Laurenson.

#11-5-SueT1

CROSS-EXAMINATION

2

BY MR. MC MURRAY:

INDEXXX

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Q Mr. Kowieski, let me refer you to your testimony on Contention 16 as long as we are talking about public education brochures.

6

A (Witness Kowieski) Yes, sir.

7

8

Q What is the purpose of a public education brochure?

9

A It's to educate the residents, citizens residing within ten miles EPZ as to what they should do in case of emergency. The brochure provides for general terms, discusses protective options like sheltering and evacuation, who will make from where, or where they should tune in to listen for emergency information, where to go, where are they located, and where they can be instructed to go when evacuation is ordered.

17

18

19

Q It's also generally one of the purposes of a brochure is, to give people an idea of the hazard that they may face in an emergency, correct?

20

21

A Brochure, NUREG 0654, Element G.1 states, should provide information on radiation.

22

23

Q Now, that is -- you basically paraphrased the sum total of NUREG 0654 --

24

A That's correct.

25

Q -- Standard G.1, right?

#11-6-SueT

2 A Yes, sir. I will be glad to read for the
record.

3 Q No, no. There is no need to do that. Then,
4 when you, as a FEMA representative, looks at a brochure
5 what criteria do you have in your mind to determine whether
6 G.1, NUREG Standard G.1, has been met?

7 A Well, first of all, we go and review, compare
8 or measure the brochure against the requirements of NUREG
9 0654, Element G.1, A through D.

10 As stipulated in Element G.1, one of the require-
11 ments calls for educational information on radiation. We
12 look for it in the brochure. If this particular information,
13 piece of information is contained in the brochure.

14 Another piece of information, protective measures,
15 evacuation routes, relocation centers, sheltering. Well,
16 if the brochure contains the information on this particular
17 requirement.

18 Q Let me ask you this, with respect to Subsection A,
19 which is educational information on radiation, what criteria
20 do you have to determine whether the educational information
21 on radiation in a brochure is adequate?

22 A I will ask Mr. Keller to answer.

23 (Witness Keller) To my knowledge, there is
24 no specific guidance on what must or must not be included.
25 I think it becomes a matter of professional judgment as to

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2 whether or not there is general information and how much
3 information. It varies from brochure to brochure. Some are
4 more specific than others.

5 I think that what we should also remember is that
6 the requirement of 0654 is an information program. It does
7 not, in my view, specifically require that all information
8 be in one, as we have been calling it, brochure. It is a
9 public information effort which may consist of several compo-
10 nents. Certainly the brochure is part of it.

11 Q Let's focus on the brochure for a second. You
12 say some brochures are more specific than others.

13 Would you say that some brochures from other
14 plants are more specific than the LILCO brochure on the
15 issue of health effects and doses?

16 A Yes.

17 Q You have reviewed the Keeping Current article,
18 correct?

19 A As we stated in our testimony, that's correct.
20 The one issue, the one that is labeled Spring of '84, I
21 believe.

22 Q That was Attachment 2 to LILCO's testimony,
23 correct?

24 A I received this from Mr. Glass. I don't know
25 anything else.

Q And you've read the article in the Spring 1984

#11-8-SueT 1

2 issue of Keeping Current entitled "Radiation, Where It Comes
3 From and How it Affects Us?"

4 A That's correct.

5 Q Did you review it for the accuracy of its
6 content?

7 A That's a difficult question to answer. The
8 numbers which are given in the -- for example, on Page 3 of
9 that article, there is a table or a block that says "Typical
10 Radiation Sources on Long Island," I did not review and I
11 have no indication that those numbers are either correct or
12 incorrect.

13 However, they are in the range of kinds of numbers
14 which are generally found throughout most of the United
15 States with the exception of the Rocky Mountain area and
16 the higher elevations that have the higher cosmic component,
17 there is more natural radioactivity in much of the earth out
18 in that part of the country, so the numbers from that part
19 of the country are higher than these.

20 I don't know that these numbers are correct, but
21 they seem to be reasonably accurate. If that's what you meant
22 by accuracy.

23 Q Did you review the text, for the accuracy of the
24 text as opposed to this table?

25 A The numbers which are given, the 25,000 millirem
and 50,000 millirem, for observation of changes in the blood,

#11-9-SueT

2 are generally quoted numbers. The LD-50-30, the lethal dose
3 to fifty percent of the population in thirty days, is in
4 the range which is generally quoted to be that dosage re-
quired.

5 Q Are you talking about the 350,000 millirem?

6 A Right. That's correct, yes. There are some
7 people who contend that should be 450,000 millirem but it's
8 in the range.

9 Q In your opinion, did this discussion under the
10 heading of "Effects of Radiation" which begins on Page 2 of
11 Keeping Current and goes over to Page 3 give the reader
12 a sufficient understanding of the hazard that might be
13 confronted during a radiological emergency?

14 A I guess I don't understand how you are defining
15 hazard.

16 Q The radiation that would be confronted during a
17 radiological emergency, the risk that would be confronted.

18 A The risk, now that -- okay. My understanding
19 of risk is a product of the consequence times the probability.

20 Q Well, let me then restate my question, because
21 I'm talking about the hazard that would be confronted given
22 the fact that an accident occurs.

23 A In other words, consequence only?

24 Q Consequence.

25 A The discussion indicates that doses in excess of

#11-10-SueT 1

2 twenty-five to fifty rem over short periods would cause
3 minor reversible blood damage, okay. The discussion
4 indicates that doses in excess of 350 rem could cause a
5 serious illness or death. The discussion also states that
6 people, the likelihood of people being exposed to these
7 levels, high radiation levels, would be extremely remote.

8 A short brochure is certainly not going to make
9 radiation specialists out of anybody. This is a rather
10 complex field. In order to give a thorough discussion of
11 it, it's going to take a treatise, books, manuals, courses.
12 I think that for the type of thing that it is, it's not
13 bad.

14 Q It's not bad?

15 A No.

16 Q You would have done it differently?

17 A Probably.

18 (Witness McIntire) Let me supplement, if we
19 can, I think we have got to get back to the main purpose
20 and focus on who the audience is and what the purpose of
21 this material is. And we are talking to a lay audience,
22 to provide general emergency preparedness information, to
23 prepare them to take actions in case of an accident.

24 Q So, you don't think it's important then, Mr.
25 McIntire, to also give information so that people will
understand the nature of the hazard?

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2 A I think there is a point of diminishing marginal
3 returns, whereas if you get too specific then you may lose
4 the audience and they may not pick up other parts of the
brochure which are of importance.

5 So, again it's expert judgment, it's a professional
6 call; and, as Mr. Keller said, probably most people would
7 treat brochures in their own personal style a little bit
8 different but within the same general ground rules and
9 points of information that they believe are important to
10 get across, particularly those enumerated in Element G.1.

11 Q Mr. Keller, let me ask you this. What would you
12 have added to the Keeping Current article that's not
13 there?

14 A (Witness Keller) Well, I'm not sure I would
15 have added anything. I think the approach may have been
16 different. Okay.

17 There is an approach to use 25,000 millirem and
18 50,000 millirem and 350,000 millirem. I think I would
19 have used the 25 rem and 50 rem and 350 rem.

20 Q I know why. Why don't you say why?

21 A Well, I think psychologically the idea of these
22 very large numbers is -- the author is using it to reinforce
23 his point of view.

24 Q Which is that this is really unlikely?

25 A No, that these are very large numbers.

#11-12-SueT

2 Q Let me ask you about the wording at the bottom
3 of Page 2 in the right-hand column, Page 2 of the Keeping
4 Current article. The statement is made that exposure to
5 very large amounts of radiation over a short period of
6 time, several minutes to several hours, can cause serious
7 injury to cell tissues and even death.

8 Then, it goes on and talks about the possibility
9 of an impact on the unborn child and genetic damage.

10 What do you think about -- well, strike that.
11 Did it occur to you in reviewing this that the word "cancer"
12 appeared to be glaringly omitted from this paragraph?

13 A No.

14 Q What do you think is meant by the term "serious
15 injury to cell tissues?"

16 A I took it to mean cancer.

17 Q You understand it to be cancer?

18 A Right. One of the potential results of injury
19 to cell tissue.

20 Q What do you think the layman understands when he
21 reads "serious injury to cell tissues?"

22 A I don't know.

23 Q Let me ask you, Mr. Kowieski, I take it from
24 our previous discussion during the voir dire that during
25 the RAC review of a plan -- and correct me if I'm wrong --
the content of the public information brochure may or may not

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be reviewed?

2 A (Witness Kowieski) If I recollect my statement,
3 what I said was that NUREG 0654, Element G.1, A through D,
4 does not require that we review public education brochure
5 and provide comments on the public education brochure under
6 this particular element, because this is only plan review.

7 However, it has been practice of our office that
8 we review public education brochure on annual basis for
9 other sides. And we provided our comments to the utility as
10 well as the State.

11 Q When you say your office, you are talking about
12 your region?

13 A That's right.

14 Q Can you speak for other regions as to whether
15 or not they do -- well, they require a review of the
16 brochure during a RAC review?

17 A Well, I cannot speak on behalf of all ten regions.
18 Based on my conversation, even a week, a week and a half ago,
19 when I was in Washington, I understand some regions are look-
20 ing at the public education brochure. To what extent, in
21 what form they present their comments to the State and
22 utilities, I don't know.

23 Q So the fact that a brochure has gone through
24 the RAC process does not necessarily mean that the public
25 education brochure has been reviewed completely by the RAC

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Committee, correct?

2 A I don't understand. Would you please rephrase
3 your question? When you are saying completely --

4 Q That its substance has been reviewed?

5 A When we review the brochure, public education
6 brochure, we do review for content, sure.

7 Q I'm talking about all of FEMA, all of the RACs?

8 A No, however --

9 Q You said no, you mean that conclusion cannot be
10 drawn?

11 A That conclusion cannot be drawn. However, I
12 think it's important to note that FEMA Headquarters Office
13 contracted with consultant recently to review the public
14 education brochures from other regions, and including
15 Region II, our region. It's my understanding, if I
16 recollect, the contractor is looking at seventy-five
17 brochures for various sides and will be providing the
18 preliminary finding to FEMA Headquarters very soon.

19 Obviously, the document will be still in draft
20 form subject to review and approval by project officer at
21 the FEMA Headquarters Office. But there is an effort on
22 the way by FEMA Headquarters to check the public education
23 brochure, especially for its -- their readability of
24 written text.

25 Q Their --

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A Readability of written text.

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1 Q The readability?

2 A Right.

3 Q Is this contractor going to review the discussion
4 of health effects and how that is treated in the brochure?

5 A (Witness McIntire) It is our understanding that
6 the only review the contractor will make will be of school
7 level for readability, not of the technical.

8 Q Mr. Keller, if there was a discussion in the
9 current -- in the "Keeping Current" article on cancer
10 induction, a simple discussion of cancer induction and how
11 one might increase one's chances of contracting cancer through
12 exposure to radiation, do you think that would confuse the
13 public?

14 A (Witness Keller) I think it could very well.

15 Q Why is that?

16 A Well, for example, the natural risk of incurring
17 cancer are statistically founded. X number per 10,000 people,
18 or Y number, whatever it turns out to be. There is a
19 significant error bar, it's like 10- to 20,000 per million
20 people in a certain region, or whatever.

21 The increased incidence of cancer for radiation
22 exposure. The additional cancer which is likely to be
23 incurred by one manrem, or ten manrems, or a thousand manrems
24 is extremely small, until you get to very, very large doses.
25 Many, many thousands of manrem.

mm2

1 And, finding those additional cancers in this
2 20- to 30,000 which are going to occur naturally, or by
3 other causes -- naturally may be a bad term -- but from other
4 causes both natural and perhaps from other chemicals, or
5 other irritants, or other threats to the organism, is
6 very difficult to point out. I believe after TMI it was
7 stated that the exposure from TMI was going to cause on the
8 average of one additional cancer. And, I believe Mr. Califano
9 said at the time, "and we are going to find it."

10 And that is patently ridiculous. You expect to
11 find 20- to 30,000 cancers in that population, and one or
12 two additional you can't find. You don't know whether that
13 is in the noise from the other -- it is a very complex
14 field, and it is rather esoteric.

15 Q Are you saying then that any discussion of
16 cancer and the possibility of inducing cancer due to radia-
17 tion would be too confusing for the public?

18 A I didn't say that. I said it could be confusing
19 to the public.

20 Q So that it could be set forth simply, if somebody
21 really put their mind to it, so that the public could be
22 given some information about the possibility of incurring
23 cancer?

24 A That is correct.

25 In addition, on the other side of the coin, it

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1 can be used to frighten people because of the fairly complex
2 nature of it. By stating less than all the facts you can
3 frighten people.

4 Q So, what you are saying is somebody drafting
5 something like that would have to be sensitive to both the
6 need not to confuse and the need not to incite undue fear?

7 A That is correct.

8 Q Is that task impossible?

9 A Nothing is impossible, I don't think.

10 Q Is that task something worthwhile pursuing?

11 A It could be, yes.

12 Q Would such information be useful in a brochure,
13 assuming that both sides of the coin were addressed?

14 A As Mr. McIntire said, we have to be very
15 careful here. I think that type of information would be
16 useful in a public education program.

17 The brochure that we are talking about, the
18 Emergency Procedures, is only one segment of the public
19 education program. And, to put that kind of discussion in
20 that depth, I think would be inadvisable in this kind of a
21 document.

22 This document is hopefully something that the
23 population would keep, would have some understanding of what
24 is in it. It is going to tell them what to do in case of
25 emergency. Where to get information -- EBS; where to go --

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1 the relocation centers; how to get there -- either their
2 own evacuation routes or the bus routes.

3 This other kind of information, while useful
4 and helpful, and might be beneficial if properly done, valid,
5 technical basis and with an even hand, not pointing -- leaning
6 either to make it sound too safe or overly unsafe, would be
7 good in an overall public education program.

8 But, it doesn't belong in the Emergency
9 Procedure; what to do in case there is an accident and how
10 to get out.

11 Q Let me refer you to your testimony on page 8a.
12 You say that this -- inclusion of this type of information
13 would be informative to the reader.

14 Would you explain that? What do you mean by that?

15 A Well, some of the other brochures, and in the
16 "Keeping Current" article, a simple statement that high
17 exposure, which if our planning goes properly you would not
18 be exposed to, can be injurious to your health. And it can
19 be stated more in the light of, we are going to make a
20 recommendation which is going to try to protect you from
21 exposure. You should follow it, because if you don't follow
22 it, you may be exposed -- and there is the potential for
23 exposure to potentially significant amounts of radiation,
24 which can be injurious to your health.

25 A (Witness McIntire) If I may supplement that; this

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1 is a common problem in disaster planning, is a significant
2 percentage of the general population will deny a threat
3 no matter whether it is natural or technological.

4 So, a concern that we have is that some people
5 won't take warnings seriously and would not be inclined to
6 act in the event of an accident.

7 Q So you don't want to downplay the hazard, correct?

8 A Yes, that's why we try to strike a balance in
9 the information process to the lay audience.

10 Q Mr. Keller, do you think that balance has been
11 properly struck in this brochure?

12 A (Witness Keller) Not bad.

13 Q Average. You are not thrilled?

14 A Yes, that's right.

15 Q Do you think that perhaps it downplays the risk
16 too much?

17 A No, not really.

18 If I had to come down on it, I would lean toward,
19 it downplays a little more than I would like to see it
20 downplayed, but it is not strictly a PR bulletin, you know.

21 Q Do you believe that the public in general has
22 a good understanding of the risk of exposure to radiation?

23 Maybe I didn't really phrase that right. The
24 consequences of exposure to radiation.

25 A Well, I think that discussing only consequence,

mm6

1 right, is --

2 Q We are not talking about probability here.

3 A That's right.

4 Discussing only consequence is misleading. And
5 that is one of the things that I find a problem with,
6 discussing only consequences.

7 I fly in airplanes a great deal. The consequences
8 of flying in airplanes if one crashes are very, very serious.
9 Most of the time you are going to die, because people don't
10 walk away from plane crashes.

11 Q People understand that. Most people know that.

12 A But I understand that the probability of a plane
13 crashing is low. And I think dwelling only on the discussion
14 of the consequence of radiation exposure is misleading and
15 unfair to the public.

16 Q Now if you include a statement though that the
17 threat of an accident is low -- and I think the LILCO brochure
18 does that ---

19 A That's correct.

20 Q -- then do you think that a statement about the
21 consequences is misleading?

22 A Well, a statement about the probability of an
23 accident is low, and a statement about the consequence is
24 fine. But, three pages about the consequence, and a statement
25 about the probability being low is not fine.-

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1 A (Witness McIntire) If I may supplement, again
2 I think it goes back to the point we previously made, in a
3 technical subject such as this, it has been our experience
4 that we found other elements of the public education program
5 to be more effective in providing good, accurate information
6 to the general public, and also give the general public a
7 chance to ask their own specific questions to recognized
8 experts in the field.

9 Q How has that been done in this case, in the
10 Shoreham case?

11 A It hasn't. I said in other sites it has been
12 our experience.

13 Q Mr. Keller, getting back to consequences, assume
14 that the issue of probability is fairly address, do you
15 think that the public has a good understanding of the
16 consequences of exposure to radiation?

17 A (Witness Keller) No.

18 Q "Keeping Current" is a newsletter, correct,
19 Mr. Keller?

20 A I gather that is what it is.

21 Q Do you know how it is sent to the -- do you
22 know who it is sent to?

23 A Only that on the masthead it says that it is
24 "for the neighbors of the Shoreham Nuclear Power Station,"
25 and I presume it is produced by LILCO and somehow or other

mm8

1 distributed to the people who live in the area.

2 Q Do you have any idea of -- you don't know how
3 it is distributed, correct?

4 A None.

5 Q You don't know what percentage of the people in
6 the EPZ read "Keeping Current," correct?

7 A (Witness McIntire) We have no information on
8 "Keeping Current," except that we have seen a copy of this
9 one issue.

10 Q Are you familiar with similar newsletters of
11 other sites, Mr. Keller?

12 A (Witness Keller) I believe there is one -- I've
13 seen one in California. But, in most sites that I can
14 recall, I am not aware that there is a newsletter of this
15 type.

16 Q Based on any experience you have had with a
17 newsletter such as this one for radiological emergency
18 planning, what proportion of the people who receive such
19 a newsletter, actually read it?

20 A (Witness McIntire) We have no basis to make any
21 determinations of that nature. We have done no studies, we
22 have commissioned no studies or surveys.

23 Q So in essence, Mr. Keller, you don't know whether
24 anybody has read this newsletter?

25 A (Witness Keller) I have, and you obviously have.

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1 Q You don't know whether the people in the EPZ
2 have, is that correct?

A No.

3 Q Let's go to the next page, page 8b on Contention
4 18. In response to question 17b, you are asked whether
5 you have reviewed a number of things. And the answer is,
6 "The only information available for review is the EBS
7 messages."

8 Mr. Kowieski, is that still true?

9 A (Witness Kowieski) That's correct.

10 Q Would you explain why that is the only information
11 available for review?

12 A That's what was available to us when we reviewed
13 the plan. Only EBS messages contain the plan.

14 Q Did you ask whether or not posters, telephone
15 book inserts, whether those two items exist?

16 A I did not.

17 Q And if such items do exist, you have no way of
18 getting any information about their adequacy, correct?

19 A I'm not aware of it.

20 A (Witness Keller) I think this is a somewhat
21 different situation than normally exists. In this particular
22 situation the material, the plan was submitted to the NRC by
23 LILCO. NRC then gave to FEMA certain materials to review;
24 first the plan. We were then given the public education
25 brochure and asked to review that. Apparently along with it

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1 came this one issue of "Keeping Current."

2 We have not received either from the NRC or
3 anyone else for that matter, anything else other than this
4 one issue of the public education brochure and the one issue
5 of "Keeping Current." Telephone book inserts, we have not
6 received; posters for transients we have not received. We
7 don't know whether they exist or not. We haven't gone out
8 and asked for it.

9 Q Is the basis for your testimony on this contention,
10 Mr. Kowieski, the EBS messages, correct?

11 A (Witness Kowieski) On Contention 18, yes.

12 Q In response to the next question, you say "the
13 EBS messages do not contain provisions for the insertion of
14 narrative descriptions of the evacuation routes described
15 in the public information brochure."

16 To the best of your knowledge, is that response
17 accurate?

18 A Yes, sir.

19 Q You mention also that the text of the EBS
20 messages tells people to follow blue and white evacuation
21 route signs posted on every major road.

22 Have you been given any information about those
23 route signs other than what you can glean from the text
24 of the EBS messages?

25 A Our testimony is based only on the plan review.

1 We have not been provided with any additional information.

2 Q The plan, to the best of your knowledge doesn't
3 tell you where those signs are going to be posted, other
4 than on major roads?

5 A On evacuation routes.

6 Q But it doesn't give particular locations, correct?

7 A Whatever is designated in the plan as evacuation
8 route. I would expect the blue and white signs would be
9 posted along the evacuation route.

10 Q Have you inquired into whether these signs have
11 been acquired by LILCO?

12 A No, sir.

13 Q Have you -- without getting into how you disposed
14 of the issue -- have you raised the concern of whether or
15 not these signs can be posted by LILCO?

16 MR. GLASS: I object. I think this is getting
17 into possibly the legal issues that we had.

18 MR. MC MURRAY: I specifically asked them not to
19 give me their conclusion, but just whether that has been
20 addressed, Judge Laurenson.

21 MR. GLASS: I think the witnesses -- then it has
22 been asked and answered.

23 I think the witnesses have continually stated
24 what they have reviewed. They have reviewed the plan that
25 was provided to them, and that they have not done any

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1 additional independent inquiries besides the material
2 that they explain is contained in their training contention.

3 MR. MC MURRAY: The problem here is whether
4 having seen this information in the plan, it raised in
5 their mind the problem of LILCO's legal authority.

6 And I just want to know whether that is a problem
7 that they have perceived. It is not whether or not they
8 have gone out and looked for other information.

9 JUDGE LAURENSEN: The objection is overruled.

10 WITNESS MC INTIRE: Could you restate the
11 question, please?

12 BY MR. MC MURRAY:

13 Q Have you explored the issue of whether or not
14 LILCO has the legal authority to mount these signs along
15 the road?

16 MR. GLASS: For clarification, is that in their
17 mind?

18 That was the argument you just made with the
19 Judge. It appears to me -- and our argument as to the
20 objection as to the question, you may have changed the
21 question, I wanted to be clear.

22 JUDGE LAURENSEN: Let's do it over again. That's
23 a different question than the first one that we ruled on the
24 objection.

25 Which one do you want to ask?

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MR. GLASS: I assume he wants the one that was granted.

(Laughter)

BY MR. MC MURRAY:

Q I just wanted to know whether you have, either as a group or individually and as FEMA representatives, raised the issue of whether or not LILCO has the legal authority to mount signs, these signs along the roadway.

MR. GLASS: I will restate my objection.

MR. MC MURRAY: I don't understand the distinction.

end T12

1 JUDGE LAURENSEN: You asked if they raised
2 the question. My understanding it wasn't the way the
3 original question was phrased. I think you have now squarely
4 raised the legal authorities contentions, that is beyond the
5 scope of this testimony and these contentions. Objection
6 is sustained to this question.

7 BY MR. McMURRAY: (Continuing)

8 Q Did you raise in your mind the issue of whether
9 or not LILCO had the legal authority to mount these signs
10 along the roadway?

11 A (Witness Kowieski) When I reviewed the contentions
12 submitted by the Governors Office, one of the issues raised
13 was that LILCO doesn't have the authority to post signs.

14 Then, when I raised the question in my own mind
15 --

16 Q So, this is an outstanding issue in your mind?

17 A Well, again, to answer your question, if there
18 would be an exercise, it would verify whether the signs are
19 there or not.

20 A (Witness McIntire) I think to be fully responsive
21 that a number of concerns relate to the legal issue, and this
22 would be one of them.

23 Q What if the signs aren't there, Mr. Kowieski, during
24 an exercise?

25 A (Witness Kowieski) It would mean that the plan

1 would be deficient.

2 Q Thank you. As long as we are on the subject of
3 an exercise, Mr. Kowieski, I just want to ask you, has there
4 been any change in the status of an exercise for Shoreham? Has
5 there been any planning done? Anything more than what we talked
6 about the last time you were cross examined?

7 MS. McCLESKEY: Objection. Outside the scope of
8 the contentions.

9 MR. McMURRAY: The witness raised the issue of
10 an exercise. I think we are entitled to know, and it is also
11 in the testimony, I think, we are entitled to know whether or
12 not they are speaking just theoretically, or whether something
13 is imminent.

14 JUDGE LAURENSEN: I think we have always continued
15 on our schedule the question of whether or not a FEMA
16 exercise had been scheduled, so I think that is a relevant
17 inquiry, not necessarily in any of these contentions, but to
18 our overall concern.

19 Is there any change in that schedule?

20 WITNESS McINTIRE: Not to my knowledge.

21 BY MR. McMURRAY: (Continuing)

22 Q So, there is no exercise scheduled at the moment?

23 A (Witness McIntire) Not to my knowledge.

24 JUDGE LAURENSEN: I just want to follow up with
25 Mr. Kowieski your answer to one of the previous questions

1 about the pathfinder signs not being present.

2 You said the Plan would be deficient. What did
3 you mean by that? Does that mean that there is a deficiency
4 in meeting any of the NUREG criteria, or what specifically
5 did you have in mind with that answer?

6 WITNESS KOWIESKI: What I had in mind the Plan
7 relies on EBS messages that would instruct residents to go
8 to evacuation route, where blue and white signs are posted.

9 If LILCO intends to use this particular approach,
10 directing the traffic, the population, to relocation centers,
11 that is fine, that is one of the projects.

12 However, if LILCO Plan was relying on this
13 particular approach, and would go to the exercise, and we
14 find there are no signs, there would be a problem. Would
15 identify this as a deficiency. A plan deficiency.

16 JUDGE LAURENSEN: Suppose they change the EBS
17 message, and didn't refer to the signs. Would there still be
18 a plan deficiency?

19 WITNESS KOWIESKI: No. Obviously, the plan
20 would have to be revised to reflect this particular approach.

21 BY MR. McMURRAY: (Continuing)

22 Q Just one more question, so we can all have an
23 adequate amount of knowledge on this issue. Mr. McIntire,
24 are there any discussions going on right now, to wit, to
25 schedule a Shoreham exercise?

1 A (Witness McIntire) Not to my knowledge.

2 MR. McMURRAY: Judge Laurenson, this would be
3 a good time to take -- I don't know what the Board intends
4 to do, but it is a good time to take a break.

5 JUDGE LAURENSON: All right. We will just
6 take one today, so we will take a fifteen minute recess.

7 (Short recess taken)

8 JUDGE LAURENSON: Mr. McMurray?

9 BY MR. McMURRAY: (Continuing)

10 Q Gentlemen, let me ask you some questions on
11 issues relating to relocation centers. There is a NUREG
12 provision, J 10.G, which says that a plan shall include
13 means of relocation. Do you see that, Mr. Kowieski?

14 A (Witness Kowieski) Yes, I do.

15 Q What criteria does FEMA use to determine whether
16 or not a plan adequately addresses the issue of means of
17 relocation?

18 A Well, first of all, when we evaluate the plan
19 we check if the plan identifies the entire population within
20 the ten mile EPZ. If the plan provides for -- provides the
21 basis -- how these people will leave ten mile EPZ in case
22 evacuation would be required.

23 In other words, what percentage of population
24 would be transit dependent population, and what percentage
25 of population would leave the area using own transportation.

1 Q Would you look to see whether or not there are
2 relocation centers identified in the Plan?

3 A Sure. That is -- again, that is the next
4 criteria, H.

5 Q With respect to relocation centers, I assume
6 that relocation centers need not only be identified, but
7 there must be letters of agreement with them?

8 A That is correct.

9 Q It says for NUREG section, J 10.H, that relocation
10 centers in host areas should be at least five miles, and
11 preferably ten miles beyond the boundary of the plume
12 exposure emergency planning zone.

13 Do you see that?

14 A Yes, I do.

15 Q Let me ask you. In FEMA's collective mind, what
16 is the ideal distance for relocation center from a plant?

17 A (Witness Keller) I think the guidance is
18 clear. It should be greater than five, and preferably greater
19 than ten. The problem of having it much further than ten
20 miles away involves one of time. Some localities require
21 use of significant number of buses for transit dependent
22 populations, while other areas of the country have a very
23 small fraction of people who are transit dependent.

24 In the areas where you don't have many people
25 who require bussing, you can go ahead and have your relocation

1 center further away.

2 If you have large numbers of people who need to
3 be bussed, then the five to ten miles is probably a more
4 reasonable number, just because of time and resources.

5 A (Witness McIntire) And there is also another
6 factor that comes into this, and that is availability of
7 facilities to serve as these relocation centers.

8 There must be these facilities available, and
9 that becomes, I think in my mind, at least as important,
10 if not more important, than whether it is five miles,
11 seven miles, or ten miles.

12 Q When you use the word, 'available,' what do
13 you mean?

14 A I mean a facility that has the physical and
15 equipment needed to serve as a relocation center, and is
16 able to be utilized by the appropriate authorities as a
17 relocation center.

18 Q Could you specify quickly just what equipment
19 you are talking about? What sort of facilities -- I don't
20 want to use facilities, because we --

21 A (Witness Keller) Shower facilities. Space
22 to -- so many square feet for an individual cot, et cetera.
23 Facility to feed the people, that kind of thing. Communica-
24 tions.

25 Q Onsite power?

1 A The plan identified that that was one of the
2 considerations in the selection of the relocation center.
3 Certainly, the availability of onsite power for emergency
4 purposes would be highly desirable. I am not sure it is
5 an absolute necessity.

6 If you got the people outside of the risk for
7 the nuclear incident, okay, they are beyond the zone where
8 they are likely to become exposed to radiation, you would
9 certainly like to have power available to them, but they are
10 safe. They are not going to be injured by -- from the
11 nuclear accident. Power would be nice, but it is not
12 actually required. They are safe. They are housed, okay?

13 A (Witness McIntire) And it is not uncommon,
14 particularly in hurricanes, where there are relocations,
15 because of the force of the storm, to knock out power to
16 relocation centers. That does happen.

17 Q Let me go back to the one thing you said, Mr.
18 Keller, regarding square feet per cot. Is there some sort
19 of FEMA criterion that you use?

20 A (Witness Keller) It is my understanding the
21 red cross has a guideline that you must have, or you should
22 have, a certain area per individual in the relocation center.
23 I am not familiar with that number, but I understand there
24 is such a number.

25 Q Are there certain standards that a relocation

1 center should meet regarding its location -- and I am not
2 just talking about distance from the plant, -- but things
3 like access and egress, accessibility. Things along those
4 lines?

5 A I think this is what Mr. McIntire was alluding
6 to, that the availability of a suitable facility that a,
7 can be used by authorities; and , b, has these desirable
8 features.

9 Access would certainly be -- a facility that
10 had good access, both in and out, for traffic, and a large
11 park area, would be more desirable than one that didn't, but
12 if the only one that was available didn't have very good
13 access, you would use it anyway.

14 A (Witness McIntire) Along that same vein, is
15 a facility that is well known to the general public is
16 certainly preferable to one that is difficult to get to or
17 people have to be directed in great detail to get to.

18 Q Are there any FEMA criteria or criteria that
19 you have developed from your expertise regarding the size
20 of a relocation center? I am talking about its capacity.

21 A Basically, the -- most of the relocation centers,
22 if not all of them, are managed by the red cross, who do have
23 their own criteria. What we tend to look at the exercise,
24 is a facility in the plan that is capable of having so many
25 people to be relocated there. We do make an analysis, although

1 it be rough, of whether that facility can, in the observers
2 judgment, accommodate the number of people stated in the
3 plan.

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1 Q You take the number of people estimated in the
2 plan to need relocation and see whether or not that facility
3 can accommodate that many people?

4 A (Witness Keller) Well, essentially that, but
5 not quite the way you said it, I don't think.

6 I think what Mr. McIntire said is the plan may
7 identify four or five or six relocation centers and give
8 an indication that each relocation center has capacity of
9 X, Y and Z. During the exercise, the observer will go to
10 typically the Red Cross Supervisor of operating the reloca-
11 tion center and say: Okay, the plan says: (A) Are you aware
12 of how many people you are likely to have to handle here?
13 (B) How many people can you handle here? And compare that
14 number that the Red Cross individual who is running the
15 relocation center says with what's in the plan and see if
16 those numbers correspond.

17 Q Let me ask you this. If a plan such as LILCO's
18 uses as a rough estimate the possibility that 32,000 people
19 might need to be relocated, is it worthwhile having a
20 relocation center that can handle only 500?

21 What I'm getting at, is there a comparison
22 between the number of people who need to be relocated and
23 the capacity of an individual relocation center to determine
24 whether or not that is adequate?

25 A In your example, what that would mean, if you

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had all relocation centers that would only take 500, you would need 64 of them. Okay.

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That seems to be somewhat wasteful in terms of, for example, the way this plan is written that you have monitoring and decontamination at each one of the relocation centers. All right. A wiser choice, it would seem, would be that you have maybe primary relocation centers where monitoring and decontamination functions would occur and that you might not be able to house people, you were over full at that one relocation center. And you would then send these people who had been determined to be free of contamination to other areas, maybe a smaller one, maybe one that could only house 500 so as not to duplicate some of the necessary efforts.

I think in an ideal world, you would not like to have 64 relocation centers all handling 500. I don't know what the optimum size is. I would suspect the Red Cross might be able to give you better information on what they think an optimum size of a relocation center would be.

I would suspect that there is some upper bound that they would probably not like to exceed. I don't think you would want 5,000 people all in one kind of open area. I don't know what that number is. And, to my knowledge, we don't use any number. We basically depend on the Red Cross people to tell us, yes, this is the right amount.

#14-3-SueT

2 Q Under NUREG 0654, Mr. Kowieski, the relocation
centers have to be identified on maps; isn't that correct?

3 A (Witness Kowieski) That's correct.

4 Q If there were a separate monitoring and
5 decontamination facility such as Mr. Keller just alluded
6 to, I take it you would also say that that would have to be
7 on a map?

8 A That's correct.

9 Q There would have to be a letter of agreement
10 with that sort of facility?

11 A That's right.

12 (Witness Keller) I think to clarify, I believe
13 what I said was that the monitoring and decontamination
14 in the context of the way the LILCO plan is written would
15 most likely be in association with one of the relocation
16 centers.

17 Now, that relocation center could obviously not
18 handle 32,000 people. Okay. And in taking your number of
19 500 per relocation center, that would come out to be 64
20 relocation centers. You might not want to put monitoring
21 and decontamination in each one of the 64 relocation centers.
22 You might designate one or two or three to be primary, if
23 you will, centers that everybody would clear through. Okay.
24 Be monitored, be decontaminated, if necessary, and once they
25 are assured that these people were not contaminated they could

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then be reassigned to another place for residence.

2 Q Would it be a good idea to have only one facility
3 assigned to the function of monitoring and decontamination?

4 I ask that because you noted a concern earlier
5 about perhaps in the brochure you might want to tell every-
6 body that they should be decontaminated or be monitored.

7 A I don't think one is enough here, because the
8 different evacuation routes out of the EPZ in general lead
9 in different directions, at least broadly based in general
10 directions, and I would think it would be a reasonable
11 idea to have a center at which monitoring and decontamination
12 can be accomplished in the general direction of at least the
13 major evacuation routes.

14 For example, you wouldn't want people to travel
15 east out of the EPZ and then have to swing all the way around
16 the EPZ to the south and then end up on the west side of the
17 EPZ to be monitored and decontaminated. That's just kind --

18 Q So, you think that there should be a monitoring
19 and decontamination center to the east of the EPZ?

20 A That was an example. If there are major evacua-
21 tion routes which go that way, there should be a monitoring
22 and decon center in that direction.

23 (Witness Baldwin) But, for purposes of clarifica-
24 tion, as I understand this plan, there is a monitoring and
25 decontamination center at each of the three primary relocation

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2 centers. There are not monitoring and decontamination
3 facilities at the backup relocation centers which would be
4 used only for housing the overflow if the primary centers
5 could not accommodate the population.

6 In addition, the transit dependent population,
7 which is according to Appendix A nine percent of the
8 seasonal population, which is assigned to relocation centers,
9 is assigned by sector as to which one they would go to.
10 So, there is a quantification in the Appendix by which you
11 can estimate the number of evacuees expected to arrive at
12 that relocation center. There is the basis, a numerical
13 basis, for questioning the operator of that facility, can
14 they accommodate that number of people.

15 Q We will get into the specifics of the plan in a
16 second. Mr. Keller, I just want to follow up on what we
17 have been discussing.

18 I take it then that if there was -- the situation
19 occurred where LILCO had identified only one place to conduct
20 monitoring and decontamination that you would have some
21 problems with that?

22 A (Witness Keller) It would certainly not be an
23 ideal situation. Whether it could work or not would have
24 to be evaluated based on the facility itself, you know.

25 There is one plan in this region which only uses
two monitoring and decontamination centers and relocation

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centers for their population. And that seems to be -- that seems to work all right.

Whether one would work is kind of an iffy kind of a question until you look at it specifically, where is it located, what are the routes to it, et cetera. It's my understanding that in the current status of the plan they have identified three. So, the one is kind of hypothetical I think.

Q Let me refer you, Mr. Kowieski, to J.12, NUREG Section J.12.

You say there each organization shall describe the means for registering and monitoring of evacuees at relocation centers and host areas.

Do you see that?

A (Witness Kowieski) Yes, I do.

Q So that every facility that conducts monitoring of the evacuees must also have the capability of registering those people; is that correct?

A If facility is designated as a reception center, sure.

Q Or, if it's designated to conduct monitoring and decontamination?

A That's right.

Q Is it your understanding, Mr. Kowieski, that monitoring and decontamination of evacuees is required

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before they are sheltered?

2 A That's my understanding.

3 Q Mr. Keller, we spoke a little bit earlier about
4 the distance from the plant. Is there a point at which
5 you would say a relocation center is too far from a plant,
6 from the EPZ?

7 A (Witness Keller) I would say yes.

8 Q In your mind, where is that distance roughly?

9 A I would think twenty miles would certainly be
10 too far from a plant.

11 Q Twenty miles from the plant or from the EPZ?

12 A I think you said from the EPZ I think.

13 Q From the edge of the EPZ?

14 A (The witness, Mr. Keller, nodded in the
15 affirmative.)

16 Q Okay. Thank you. Gentlemen, are you aware that
17 the LILCO plan with respect to relocation centers has
18 changed from Revision 3?

19 A Yes.

20 (Witness Baldwin) Yes.

21 Q What is your understanding now of how the
22 relocation centers -- what relocation centers have been
23 identified by LILCO?

24 A (Witness Kowieski) Based on our meeting, May 11
25 meeting, with LILCO in New York, it is my recollection at

#14-8-SueT1

2 least two facilities identified in LILCO's Transition Plan,
3 the Revision 3, are no longer have a function as a reloca-
4 tion centers and new facilities have been selected to be
5 relocation centers.

6 Q Which facilities do you understand have been
7 identified as relocation centers by LILCO?

8 A New facilities that have --

9 Q What are the facilities now being relied on as
10 far as you know?

11 A Well, I --

12 MR. GLASS: I have to object at this point. I'm
13 just trying to save us some time. To try to determine --
14 the witnesses have filed testimony based on information
15 that was previously available to them. To spend time trying
16 to determine what their understanding is of what changes
17 have taken place on this particular item or other items, I
18 don't think is productive.

19 If you want to tell them specifically what the
20 change is, or refer specifically to the change, and ask a
21 question on that, I probably will not object at this time.
22 But I think we could save a lot of time; going through trying
23 to determine, do you know, how do you know. We are going to
24 get situations that they have read the transcripts of the
25 hearing.

I just don't see where it is helping the hearing

#14-9-SueT1

at all.

2 MR. MC MURRAY: Not at all. It's going to be a
3 lot faster, Judge Laurenson, if I find out what their
4 understanding is so that we can correct any misunderstandings
5 that they have rather than give them a lecture about LILCO's
6 intentions.

7 JUDGE LAURENSEN: We will allow a limited inquiry
8 into this. Overruled.

9 BY MR. MC MURRAY: (Continuing)

10 Q Do you recall the question, Mr. Kowieski?

11 A Yes, I do. I would like to make it clear that
12 although we are in the process of reviewing Revision 4 of
13 LILCO Transition Plan, the review has not been finalized.

14 We have in the front of us some bits and pieces
15 of information related to Revision 4. If you want us to
16 verify this particular information, how Revision 4 has been
17 changed with respect to reception centers, I will be glad
18 to.

19 Q My question is, what is the latest information
20 you have on the facilities that LILCO intends to rely on
21 as relocation centers?

22 A In the front of me, I have a summary of responses
23 to consolidated RAC review of LILCO Transition Plan for
24 Shoreham. Items graded inadequate. Document dated 6/29/84.
25 And on Page 8 of 13, it states: Resolution. The American

#14-10-Su4T

2 Red Cross of Suffolk County has informed LILCO that the
3 planned following location would serve as relocation
4 centers.

5 By comparing our list of relocation centers
6 presented in Revision 3 against this list, only BOCES
7 appears as a relocation center which has not been changed.
8 We have new relocation centers, St. Joseph College, Darwyn
9 (phonetic) College, SUNY Farmingdale.

10 Q You aren't aware of any changes to Revision 4
11 then of the LILCO plan as far as relocation centers go?

12 A Are you asking if I'm aware of actually the
13 relocation centers also are part of Revision 4?

14 Q No. My question is whether or not you are
15 aware of whether or not relocation centers have been
16 changed from those identified in Revision 4, whether there
17 has been a subsequent change from Revision 4?

18 A No, sir, I'm not aware of such a change.

19 Q Mr. Keller, I believe earlier you said that
20 one criterion for an adequate relocation center would be
21 cafeteria facilities.

22 A (Witness Keller) A way to feed the people you
23 are going to shelter there, yes.

24 Q Would that generally be cafeteria facilities of
25 some sort?

A Not necessarily cafeteria but --

#14-11-SueT

(Witness McIntire) Usually it would be cooking

2 facilities, some provision to cook, serve at least some
3 hot food.

4 Q I take it, Mr. Kowieski, from your testimony
5 about the requirements of NUREG 0654 and the fact that
6 relocation centers need to be identified that it wouldn't
7 be -- it would not comply with NUREG 0654 to identify
8 relocation centers on an ad hoc basis in the face of an
9 emergency?

10 A (Witness Kowieski) Well, I'm referring or
11 implying that there is no relocation center at this point
12 and during the emergency and last minute relocation center
13 will be identified, is that what you --

14 Q That's right, that there isn't one identified
15 to the public like in a brochure or in the plan?

16 A We require -- we are very clear that when we
17 review the plan we require that relocation centers identify
18 in advance.

19 Q Under NUREG 0654 J.10.A which says maps should
20 show the evacuation routes and relocation centers, is
21 that for the benefit of the public so that they will know
22 how to get to the relocation centers?

23 A (Witness Keller) It's for the plan user. For
24 example, the public will not see the plan, by and large.
25 Okay. But in the event of an accident, the decision-maker,

#14-12-SueT

2 the people working in the emergency response area, are
3 going to be expected to use the plan. If you have an
4 evacuation route from a zone toward a particular relocation
5 center that you expect to have heavy traffic on and you get
6 a traffic problem, okay, the map is very helpful in deciding
7 alternate routes, okay, in arranging for ways to get around
8 the impediment, for example.

9 The maps are primarily -- a map and the plan is
10 primarily there for the benefit of the emergency responders,
11 not for the benefit of the public.

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2 A (Witness McIntire) If I could just supplement that
3 a bit.

4 Basically, if it is going to be a selective
5 evacuation, then that decision would be made. And then by
6 having the map show which relocation centers will probably
7 handle those evacuees, that will enable the decisionmakers
8 to alert those people responsible for staffing the
9 relocation centers.

10 A (Witness Kowieski) I would like to add, obviously
11 some of the information required by J 10.a would also appear
12 in the public information brochure.

13 Q Just to make sure that we have got things clear,
14 Mr. Kowieski, you are saying in the brochure there should
15 also be a map showing the relocation center, and the route
16 to that relocation center?

17 A That's right. But it is not required by J 10.a.

18 Q What is it required by?

19 A By another element we already discussed, G.

20 Q Do you mean J 10.g?

21 A Under G.

22 Q Element G?

23 A Element G.

24 Q With respect to agreements for facilities that
25 must be included in the plan. Should those agreements
specify that the facilities have adequate space and food

mm2

1 preparation facilities, and shower facilities et cetera, so
2 you can tell whether or not they are adequate?

3 A No. It is not specifically required.

4 What is required is this particular facility
5 would be available in case of emergency.

6 Q So you leave it to someone else to determine
7 whether or not there is adequate space?

8 A That is already testified. The Red Cross has a
9 great expertise in this area.

10 Q FEMA, just to get this clear, does not inquire
11 into whether or not a relocation center has adequate
12 shower facilities, space, et cetera?

13 A I think Mr. Keller already testified. When we
14 go to the exercise we verify, we question the
15 administrators, the Red Cross personnel, how many people
16 they expect to accommodate, and we compare the numbers
17 with the numbers presented in the plan.

18 Q During the exercise, or whatever, you don't
19 actually attempt to verify the information given to you by
20 the administrators that you have spoken about?

21 Is that correct?

22 A (Witness McIntire) Could you be a little more
23 specific on what you mean by "verify"?

24 Q Go and see.

25 A Well, we will have an observer at the scene

mm3-

1 and he will see what the physical facility is like,
2 and what facilities and capabilities are there. To that
3 degree, that is a verification.

4 Q So that is for every relocation center identified,
5 correct?

6 A (Witness Kowieski) Well, during the exercise we
7 not necessarily would exercise every relocation center.
8 Again we select at random. We agree that certain relocation
9 centers would be exercised, and we will try, obviously
10 next year when we have another exercise, we would like to
11 select a different facility than that one selected in the
12 previous year, during the previous exercise.

13 But, to answer your question, if we -- it depends,
14 -- sometimes have 15, 20 or more relocation centers. So
15 we do not make an attempt during an exercise to follow every
16 single facility.

17 A (Witness McIntire) I will say the Red Cross
18 has a very fine record of running relocation centers. In
19 my judgment, and I think the other members of the panel, they
20 have a very high degree of credibility.

21 Q What Red Cross chapter do you understand would be
22 involved in the implementation of the LILCO Plan? The
23 Suffolk County Chapter?

24 A (Witness Kowieski) If you would like us to
25 verify the plan, the letters of agreement or the letter

mm4

1 contained in the plan, we would be glad to do so, to be
2 more specific.

3 Q Your answer would be based on whatever letter you
4 saw in Revision 4 of the plan?

5 A Revision 3.

6 The letter says the communication between LILCO
7 and the Red Cross was sent to Executive Director of
8 American Red Cross in Patchogue, New York.

9 Q That's Suffolk County, right?

10 A That's correct.

11 Q Now, just to wrap this up, if during an
12 exercise the observer, the FEMA observer saw that there
13 weren't adequate facilities or food preparation facilities,
14 et cetera, or space, I assume that there would be a
15 deficiency noted with respect to that portion of the plan,
16 correct?

17 A That's correct.

18 Q Is the letter that you referred to the only one
19 that you are aware of from the Red Cross in the plan?
20 Actually, it is not from the Red Cross -- regarding the
21 Red Cross in the plan?

22 A As far as Revision 3 is concerned, it is the
23 only letter which was presented to us for review.

24 Q With respect to letters of agreement for
25 relocation centers, gentlemen, should those letters of

mm5

1 agreement be between the facility and the Red Cross, or
2 between LILCO and the Red Cross, or between LILCO and the
3 facility?

4 A We would expect a letter of agreement, or letters
5 of agreement between the utility and facility.

6 A (Witness McIntire) That is for the use of the
7 facility.

8 Q Thank you.

9 Mr. Kowieski, is that what you understand is
10 required by NUREG 0654? Is that why you would expect it?

11 A (Witness Kowieski) That's correct.

12 If I may just ask a question, I am sort of --
13 the panel is confused on which contention we are right now.

14 Q We are generally covering the three relocation
15 center issues; 24.0, 74 and 75. And specifically, I was
16 talking about your statement on page 20 that any relocation
17 center would need to be arranged for and these arrangements
18 would need to be supported by letters of agreement.

19 MR. GLASS: As far as I remember, 24 was included
20 in our last appearance.

21 MR. MC MURRAY: 24.0 is not one of the issues
22 we have litigated yet.

23 MR. GLASS: As far as I know, we agreed that 24,
24 including 24.0 would be included in our last appearance.

25 MR. MC MURRAY: I am through with my questions --

mm6

1 not all of my questions, just on relocation centers.

2 BY MR. MC MURRAY:

3 Q Gentlemen, let me refer you to your testimony
4 on Contention 61, beginning on page 57.

5 On page 59 of your testimony, Mr. Keller, you
6 state that -- and I am looking towards the middle of the
7 page -- "it is projected that the schools would be sufficient
8 to accommodate the sheltering of their students in the
9 event of a radiological emergency."

10 Do you see that?

11 A (Witness Keller) That's correct.

12 Q What's the basis for your statement, please?

13 A The previous portion of the sentence that you
14 didn't read.

15 "Within the definition of sheltering given in
16 the plan, it is projected that the schools would be sufficient
17 to accommodate the sheltering of their students in the
18 event of a radiolgoical emergency."

19 Q I'm afraid that doesn't clarify the matter for
20 me.

21 What do you mean then "within the definition
22 of sheltering given in the plan"?

23 A Sheltering in the plan says to keep people
24 indoors, to reduce the ventilation. On page 58 of our
25 testimony as we quoted from the plan -- I will read it to

1 you:

2 "Sheltering is to remain indoors with all
3 windows and doors closed. Air conditioning, heaters
4 should be turned off, fires should be extinguished
5 and fireplace dampers closed. The people who
6 should shelter are in planning zones which would
7 be given to them on the EBS."

8 Within that definition we project that any
9 school which has children in the school for normal school
10 activities would have sufficient space, would have enough
11 room to keep the children indoors, close the windows, et
12 cetera.

13 Q Do you know whether or not since you do project --
14 made some projections about the abilities of these schools
15 to accommodate their students -- do you have any knowledge
16 about the ability of these schools to shut off outside
17 ventilation?

18 A No specific knowledge. No, I don't.

19 Q You would agree, wouldn't you, that it is better
20 to shelter in a basement than in a room with windows?

21 A If the basement is available, yes.

22 Q Do you have any specific knowledge about whether
23 or not basements are available for any of these schools?

24 A (Witness McIntire) We have testified that we
25 have only done a plan review.

mm8

1 Q I'm trying to find out the basis for these
2 projections. The projections that schools would be
3 sufficient to accommodate the sheltering of students.

4 A (Witness Keller) Okay. As I think I said, we
5 feel that they have enough room to keep them inside.

6 You then went one step further and said it would
7 be better to have them in the basement than a room with
8 windows. And I agree, it would be better. But, it is not
9 necessarily required.

10 Q Wouldn't there be a difference in the shielding
11 factor offered by the school?

12 A That is correct.

13 Q I take it then you are defining shelter as just
14 staying inside, correct?

15 A I believe that the testimony says that within
16 the definition of sheltering given in the plan, which you
17 have quoted from the previous page, that we think that the
18 schools have adequate space to take care of their children.

19 Q And as Mr. McIntire has said, your projection
20 here is not based on any actual knowledge you have of the
21 features of any of the schools, correct?

22 A Merely a review of the plan and what the plan
23 says.

24 And we find that what the plan says is
25 reasonable. We don't have any problem with that.

mm9

1 Q Does FEMA have any intention of, in the future,
2 reviewing the schools specifically to determine whether or
3 not your projection is correct?

4 A I don't think so. I think as we have stated,
5 that we feel that the schools which normally house children
6 for the significant portion of the day would have sufficient
7 space if they closed the windows, if they shut off the heat,
8 et cetera, to keep the children indoors, the dose reduction
9 factor that would be appropriate for a particular building
10 would be specific to that building.

11 The decisionmaker who is going to make a decision,
12 would have to know that, that school A has no basement,
13 therefore you would have to use a sheltering factor of X.
14 School B has a basement that they can put the children, you
15 can use a different sheltering factor.

16 Q Does the plan include that information, to your
17 knowledge?

18 A The table is there as to what sheltering
19 factors are to be applied.

20 But, the information as to what the
21 construction of an individual school is, is not in the plan,
22 to my knowledge.

23 Q I take it from what you said though, that that
24 is knowledge that the decisionmaker must have?

25 A If he intends to use that option he would,

mm10

1 because the plan does say that he would only use the
2 sheltering option if it did not exceed the PAGs. And you
3 must have the appropriate sheltering factor to do the
4 calculation to decide whether you have exceeded the PAGs or
5 not.

6 Q So, in the situation where sheltering would be
7 called for under the PAGs, it would be necessary for the
8 decisionmaker to have either in the plan or elsewhere,
9 information regarding the specific shielding factors of the
10 specific buildings, correct?

11 A To have the construction of the building so
12 he could select the proper shielding factor.

13 Q And to your knowledge that information is not
14 in this plan?

15 A Not to my recollection.

16 Q To your knowledge is that information -- has that
17 information been obtained by LILCO or LERO?

18 A Not to my knowledge, no.

19 Q Are you aware of the shielding factor that LILCO
20 uses to determine the shielding that would be afforded by
21 your average residential home in the EPZ?

22 A There is a table which describes different types
23 of structures, and I don't recall the numbers. I recall a
24 range of numbers, but a specific one I don't recall.

25 Q Would a table of 3.6.5 --

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A That's the table.

Q Do you have that with you?

MR. GLASS: Just so I can follow, would you tell me which contention you are dealing with now?

MR. MC MURRAY: 61. It begins on page 57.

BY MR. MC MURRAY:

Q Do you recall now what the shielding factor is that LILCO uses for the average residence, Mr. Keller?

MS. MC CLESKEY: Objection.

The shielding factor for an average residence is not pertinent to Contention 61, which deals with sheltering for schools.

MR. MC MURRAY: I don't think that's right. I think it deals with sheltering in general.

#16-1-Wal 1

JUDGE LAURENSEN: I think schools is just part
of the selective sheltering. Isn't that what you are
talking about?

MR. MC MURRAY: We are talking about sheltering,
not just selective.

WITNESS KELLER: The table --

JUDGE LAURENSEN: The objection is overruled.

WITNESS KELLER: Excuse me. Table 3.6.5 lists
for different types of structures different shielding
factors that range all the way from point one to point nine
for different types of facilities, houses to large offices
or industrial buildings.

BY MR. MC MURRAY: (Continuing)

Q Do you know which type of structure on this
table represents the average home on Long Island, in the
EPZ?

A I do not.

Q Do you agree with these shielding factors on
Table 3.6.5?

A I have seen the Sandia report which is referenced
at the bottom. I see no problem with the methodology that
went into it, that they seem to be reasonable.

Q You don't seem real enthusiastic.

A Well --

Q Do you have any problems with that?

#16-2-Wal 1

2 A For example, if you look at the next to the
3 last listing in the table where it says a basement of a
4 masonry house, and the representative range is from point
5 one to point five, that's a factor of five variation. I --
6 what's to be excited about? What it says -- that's a
7 pretty big range.

8 Q Do you know whether the decision-makers under
9 the LILCO plan in making protective action recommendations
10 rely on the shielding factor or the representative range
11 in Table 3.6.5?

12 A My recollection of the procedure is that he is
13 to take this table and its contents into account when he
14 makes his decision. Since we have not seen an exercise, we
15 don't know what he is going to use.

16 Q You would agree with me, would you not, that
17 cars offer virtually no protection from cloud dose?

18 A According to the table, the protection shielding
19 factor is one. That is correct.

20 Q You have no quarrel with that?

21 A That's correct.

22 Q On Page 57, Mr. Keller, you say that instructions
23 for people in affected zones who are not at home should
24 seek shelter inside buildings are contained in the draft EBS
25 messages.

Do you see that?

#16-3-Wal1

A Yes, that's correct.

2 Q And in your mind that provides adequate provisions
3 for taking care of people who may be in their cars and not
4 at home at the time that an accident occurs?

5 A The primary means of informing people of the
6 proper protective actions which should be taken are the
7 EBS messages. And the plan has made provision to instruct
8 people through the primary means of information flow what
9 actions to take if they are not in their home. In their
10 vehicles, for example.

11 Q And there is a problem, you will agree, if they
12 are not listening to the radio or to the EBS system,
13 correct? When I say EBS system, I'm talking about the
14 system that LILCO has set up.

15 A That is a common thread problem. If people
16 do not recognize the sirens as a signal to turn on the EBS
17 system -- let's call it the EBS system whether that's the
18 proper terminology or not, for simplicity, if they don't
19 listen to the EBS broadcast they don't know to evacuate.
20 They don't know to shelter. They don't know to anything.
21 Okay.

22 So, if the people don't listen to the EBS
23 system they have no information concerning the emergency.
24 This is no different than any other case.

25 Q You state -- well, the question at the top of

#16-4-Wal 1

2 Page 58 asks whether the LILCO plan contains adequate
3 provisions to indicate that the necessary pre-planning
4 for the sheltering of school children is satisfactorily
addressed.

5 Do you see that question?

6 A Yes.

7 Q Other than the fact that some schools have
8 accepted tone alert radios, are you aware of any pre-
9 planning on the part of any schools or school districts
10 to implement LILCO's sheltering recommendations?

11 A As we testified at our previous appearance, we
12 have done a plan review. And all we know is what the plan
13 says. Okay. We have done a few additional things, the
14 training issues and on the information brochure.

15 But, in addition to that, all we have done is
16 a plan review and that was a review of Revision 3. Some
17 of us have initiated the review of Revision 4. Mr. Baldwin
18 has started. I know I've started. We have not completed
19 it. We have done no independent verifications of anything.

20 What we know is what the plan says.

21 Q Let me just ask you when are you going to complete
22 your review of Revision 4, Mr. Keller?

23 A I intend to have my finished by hopefully the
24 end of next week.

25 Q Is there any intention on the part of this panel

#16-5-Wal 1

to submit revised testimony?

2 A (Witness McIntire) No, because our commitment
3 to have the final review of Revision 4 transmitted to the
4 NRC is November 15th of this year.

5 (Witness Kowieski) As we explained, as we
6 testified a week or two weeks ago, we will follow the
7 same process that we followed when we reviewed Revision 3.

8 I intend to have a RAC Committee meeting. We
9 intend to discuss our review comments, and we intend to
10 come out with a final document which hopefully will reflect
11 consensus of the RAC Committee. And such a meeting will
12 take place some time in September, hopefully by the end
13 of September.

14 Q I'm sorry, the meeting will be to discuss your
15 individual findings or to break down the revision and
16 assign responsibility for review?

17 A To consolidate the comments, RAC comments.

18 Q That will be in September?

19 A Hopefully the end of September.

20 But, again the report will be provided to FEMA
21 Headquarters. At least, it's our intention to provide our
22 report to FEMA Headquarters by October 16th and will allow
23 some time for Headquarters Staff to go through the report
24 just in case they would have any question.

25 Q Have all the RAC members begun reviewing

#16-6-Wal 1

Revision 4, to the best of your knowledge, Mr. Kowieski?

2 A To the best of my knowledge, yes. As a matter
3 of fact, already I started to receive the first comment
4 of this one RAC member submitted comments.

5 Q Mr. Baldwin, have you begun your review?

6 A (Witness Baldwin) Yes, I have.

7 Q Mr. Kowieski, have you begun your review?

8 MR. GLASS: Judge, I've let this go on quite a
9 bit. I don't know where we are heading in this particular
10 item.

11 JUDGE LAURENSEN: Sustained.

12 BY MR. MC MURRAY: (Continuing)

13 Q Mr. Kowieski, or anybody on the panel, when will
14 you determine whether or not schools, all of the schools,
15 in the EPZ have in fact undertaken pre-planning to implement
16 LILCO's sheltering recommendations?

17 MR. GLASS: I think the witnesses have stated
18 for the record a number of times where they stand at a
19 particular point in time on their review --

20 MR. MC MURRAY: Is that an objection?

21 MR. GLASS: Why don't you rephrase the question
22 and let me see again where we are?

23 BY MR. MC MURRAY: (Continuing)

24 Q This is for all members of the panel. When,
25 if ever, does FEMA intend to determine whether there is the

#16-7-Wal 1

2 necessary pre-planning for the sheltering of school children
3 under the FEMA plan -- I'm sorry, the LILCO plan?

4 A (Witness McIntire) Could you cite us something
5 that makes it necessary? Are you referring to a certain
6 section of 0654, or is that --

7 Q I'm just asking the question.

8 MR. GLASS: Where are we related to the testimony
9 that we are dealing with today?

10 MR. MC MURRAY: Question 66.

11 MR. GLASS: Give me a second. I'm having trouble
12 drawing a relation from your question to Question 66.

13 MR. MC MURRAY: My question stands.

14 MR. GLASS: I will object.

15 JUDGE LAURENSEN: The response to Question 66
16 already indicates, after reviewing the procedure, that the
17 procedures will enable schools to shelter their students, at
18 the top of Page 59.

19 MR. MC MURRAY: (Continuing)

20 Q I take it that's based only on a plan review,
21 correct, Mr. McIntire?

22 A (Witness Kowieski) That's correct. But, again
23 to expand or to add to whatever was said already, we mentioned
24 pre-planning such as tone alerts, radios, and during the
25 exercise there would be spot check if the tone alerts actually
are there. There also will be to some extent verification

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1 how communication or messages, sheltering or evacuation,
2 whatever exercise scenario will call for, will be effectively
3 communicated to the schools.

4 Q So, you don't really intend to look at it from
5 the school's point of view as to whether or not they have
6 planned to implement LILCO's plan?

7 A (Witness McIntire) Could you define the school's
8 point of view?

9 Q Do you intend to look at whether or not the
10 schools, as opposed to LILCO, have pre-planned to implement
11 LILCO's sheltering recommendations?

12 A I think the proper characterization that has
13 been made is that we will evaluate at selective schools
14 the ability to implement the plan.

15 Q You won't review all schools or school districts?

16 A (Witness Kowieski) If you asked, if I understand
17 your question -- correct me if I'm wrong, are you asking us
18 if we are going to visit every single school and --

19 Q Well, let's put it this way. Do you intend to
20 find out whether each school district that's within the EPZ
21 has conducted the necessary pre-planning to implement
22 LILCO's plan? That narrows it down to a much smaller number
23 of units.

24 A Well, we don't --

25 (Witness McIntire) I don't think we are in a

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1 position at this time to speculate on what we are going to
2 do in the future with regard to the school districts.

3 (Witness Kowieski) We can only add, if the --
4 the -- if the problem would be brought up to our attention,
5 we will follow up on it.

6 Q You would follow up if the schools indicated
7 that they were not prepared to pre-plan or to implement
8 LILCO's sheltering instructions?

9 A It would raise a concern in our minds.

10 Q Have you seen any materials that would raise
11 such a concern in your mind at this time?

12 A I don't recall any correspondence or information
13 that came from my desk.

14 Q You haven't seen any school board resolutions
15 saying they won't implement the LILCO plan?

16 MR. GLASS: Again, I would have to object. We
17 are well beyond the scope of the testimony, the contention.

18 JUDGE LAURENSEN: Overruled.

19 WITNESS MC INTIRE: I believe I testified last
20 time that we were here that I thought that I might have seen
21 one or two resolutions of this nature. I can't be any more
22 specific than that.

23 BY MR. MC MURRAY: (Continuing)

24 Q Well, does that raise the necessary concern in your
25 mind to go out and check as to whether or not the schools have

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2 the necessary pre-planning to implement LILCO's sheltering
3 recommendations?

4 A We are not at that point in the process now.
5 We are in the process of doing Revision 4.

6 Q Well, do you see coming to that point after you
7 finish your review of Revision 4?

8 A Again, at this time it would be complete
9 speculation. We don't have any firm plans for a course of
10 action after completion of Revision 4 review.

11 Q Let me just make sure that we are all working
12 from the same data base. And this is for all of our cross-
13 examination today and tomorrow, and that is that your
14 written testimony and your testimony before the Board here
15 today is based on your knowledge of Revision 3 of the plan,
16 not Revision 4, correct?

17 A (Witness Kowieski) That's correct, with one
18 exception. You asked me if I'm aware of -- if some of
19 the reception centers had been changed.

20 MR. MC MURRAY: All right. Judge Laurenson, I
21 believe I am finished with Contention 61. I think this is a
22 good breaking point.

23 As the Board noted earlier, we have negotiations
24 that we have to take up with other counsel on issues that
25 will be helpful to the Board once they are resolved. So,
I think this is a good time to break for the day.

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2 JUDGE LAURENSEN: What is your estimate as to the
3 amount of time that the County expects to spend with this
4 panel?

5 MR. MC MURRAY: I would say we are right on
6 track, Judge Laurenson, with respect to our estimate. I
7 see absolutely no problem with finishing up -- everybody
8 finishing up this panel by the end of this week.

9 JUDGE LAURENSEN: The other parties have only
10 estimated a total of three hours for the panel. So, I
11 want to know what the --

12 MR. MC MURRAY: We are on track with our one
13 and a half to two days.

14 JUDGE LAURENSEN: Are you going to finish
15 tomorrow?

16 MR. MC MURRAY: I really don't think so.

17 MR. GLASS: We would appreciate, just so we can
18 return Mr. Keller to his home state, that as people do
19 become aware of their schedules closer, so that Mr. Keller
20 can make alternate travel plans.

21 MR. MC MURRAY: We will keep counsel as informed
22 as possible.

23 JUDGE LAURENSEN: All right. At this point, I
24 think we will break for the day. We will reconvene at 9 a.m.
25 tomorrow morning.

We will expect a report from counsel at that time

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2 as to an agreement, if there is one, concerning the
3 schedule for disposing of the items on our agenda for this
4 week.

5 (Whereupon, at 5:48 p.m. the hearing is
6 adjourned, to reconvene at 9 a.m., Wednesday,
7 August 15, 1984.)

8 * * * * *

9 ENDDDD

CERTIFICATE OF PROCEEDINGS

1
2
3 This is to certify that the attached proceedings before the
4 NRC COMMISSION

5 In the matter of: Long Island Lighting Company

6 Date of Proceeding: Tuesday, August 14, 1984

7 Place of Proceeding: Hauppauge, New York

8 were held as herein appears, and that this is the original
9 transcript for the file of the Commission.

10
11 Mimi Meltzer

12 Official Reporter - Typed

13 *Mimi Meltzer*
14 Official Reporter - Signature

15
16 Myrtle Traylor

17 Official Reporter - Typed

18
19 *Myrtle Traylor*
20 Official Reporter - Signature

21
22 Garrett Walsh

23 Official Reporter - Typed

24 *Garrett J. Walsh, Jr.*
25 Official Reporter - Signature