

NUCLEAR REGULATORY COMMISSION

ORIGINAL

ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of:

LONG ISLAND LIGHTING COMPANY )  
(Shoreham Nuclear Power Station) ) DOCKET NO. 50-322-OL

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DATE: August 4, 1982 PAGES: 8893 thru 9133

AT: Riverhead, New York

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

4 - - - - -x

5 In the Matter of :  
6 LONG ISLAND LIGHTING COMPANY : Docket No. 50-322-OL  
7 (Shoreham Nuclear Power Station) :

8 - - - - -x

9

10 Riverhead County Complex  
11 Legislative Hearing Room  
12 Riverhead, N.Y.

13 Tuesday, August 3, 1982

14 The hearing in the above-entitled matter  
15 convened, pursuant to notice, at 9:05 a.m.

16 BEFORE:

17 LAWRENCE BRENNER, Chairman  
18 Administrative Judge

19

20 JAMES CARPENTER, Member  
21 Administrative Judge

22

23 PETER A. MORRIS, Member  
24 Administrative Judge

25

## 1 APPEARANCES:

2 On behalf of Applicant:

3 W. TAYLOR REVELEY III, Esq.

4 ANTHONY F. EARLEY, Esq.

5 Hunton &amp; Williams

6 707 East Main Street

7 Richmond, Va. 23212

8

9 On behalf of the Regulatory Staff:

10 RICHARD BLACK, Esq.

11 DAVID A. REPKA, Esq.

12 Washington, D.C.

13

14 On behalf of Suffolk County:

15 KARLA J. LETSCHE, Esq.

16 Kirkpatrick, Lockhart, Hill,

17 Christopher &amp; Phillips

18 1900 M Street, N.W.

19 Washington, D.C. 20036

20

21

22

23

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|   |                        |               |              |                 |                             |
|---|------------------------|---------------|--------------|-----------------|-----------------------------|
| 1 | <u>C O N T E N T S</u> |               |              |                 |                             |
| 2 | <u>WITNESSES</u>       | <u>DIRECT</u> | <u>CROSS</u> | <u>PEDIRECT</u> | <u>RECROSS</u> <u>BOARD</u> |
| 3 | William P. Sullivan,   |               |              |                 |                             |
| 4 | John A. Rigert,        |               |              |                 |                             |
|   | Leonard J. Calone,     |               |              |                 |                             |
| 5 | Harry T. Carter,       |               |              |                 |                             |
|   | Eugene C. Eckert,      |               |              |                 |                             |
| 6 | Henry C. Pfefferlen,   |               |              |                 |                             |
|   | Marvin W. Hodges       |               |              |                 |                             |
| 7 | By Mr. Reveley         | 8906          |              |                 |                             |
| 8 | By Mr. Black           | 8909          |              |                 |                             |
|   | By Ms. Letsche         |               | 8911         |                 |                             |
| 9 | By Mr. Reveley         | 8943          |              |                 |                             |
|   | By Ms. Letsche         |               | 8964         |                 |                             |

10

(AFTERNOON SESSION P. 9007)

11

|    |                      |  |      |  |  |
|----|----------------------|--|------|--|--|
| 12 | William P. Sullivan, |  |      |  |  |
|    | John A. Rigert,      |  |      |  |  |
| 13 | Leonard J. Calone,   |  |      |  |  |
|    | Harry T. Carter,     |  |      |  |  |
| 14 | Eugene C. Eckert,    |  |      |  |  |
|    | Henry C. Pfefferlen, |  |      |  |  |
| 15 | Marvin W. Hodges     |  |      |  |  |
| 16 | By Ms. Letsche       |  | 9012 |  |  |

17

E X H I B I T S

|    |                    |                   |                 |
|----|--------------------|-------------------|-----------------|
| 18 | <u>Number</u>      | <u>Identified</u> | <u>Received</u> |
| 19 | Suffolk County #36 | 9012              |                 |
|    | Suffolk County #37 | 9015              |                 |
| 20 | Suffolk County #38 | 9054              |                 |

21

MATERIAL BOUND IN TRANSCRIPTPAGE

|    |   |      |
|----|---|------|
| 22 | Letter from Mr. Bordenick dated August 2nd, and the .....                         | 8895 |
| 23 | County and LILCO reports each dated August 3rd                                    |      |
| 24 | Suffolk County Exhibit number 36 .....  | 9042 |
| 25 | <u>RECESSES:</u> <u>Morning</u> - 8959 <u>Noon</u> - 9006 <u>Afternoon</u> - 9082 |      |

P R O C E E D I N G S

1  
2 JUDGE BRENNER: We have a few matters we want  
3 to take up prior to launching into the County's cross  
4 examination of the staff and LILCO witnesses on the next  
5 contention, which is ATWS SC 16.

6 The first matter is the status of negotiation  
7 on the security issues. We have received and appreciate  
8 the three reports filed separately by LILCO, staff, and  
9 the County, the staff's report in the form of a letter  
10 from Mr. Bordenick dated August 2nd, and the County and  
11 LILCO reports each dated August 3rd. I would like to  
12 bind those three status reports into the transcript at  
13 this point.

14 [The material referred to follows.]

15  
16  
17  
18  
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21  
22  
23  
24  
25



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

Lay-in #1

August 2, 1982

Lawrence Brenner, Esq.  
Administrative Judge  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dr. James L. Carpenter  
Administrative Judge  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dr. Peter A. Morris  
Administrative Judge  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

In the Matter of  
Long Island Lighting Company  
(Shoreham Nuclear Power Station, Unit 1)  
Docket No. 50-322 (OL)

Dear Administrative Judges:

Pursuant to the Board's request (Prehearing Conference Order dated July 27, 1982, at pp. 25-26), the Staff submits this status report concerning the security contentions settlement negotiations.

As the Board may know, representatives of Applicant, Suffolk County (SC) and the Staff met at Yaphank, New York on July 28, 1982. It is my understanding, based on telephone conversations, that a listing of attendees and general subject areas discussed at the meeting will be set forth in the respective status reports being filed with the Board by Applicant and SC.

As a result of the meeting held last week which was generally broad in scope and not overly lengthy, I am optimistic that there are many issues that can and should be resolved between the Applicant and SC without resorting to litigation. It is, however, too early in the negotiation process to know whether all issues can be resolved between the parties.

It is difficult for Staff at this time to quantify the time frame which may be required to conclude the negotiation process. However, I believe

that within the next few weeks the parties should be in a position to provide the Board with a more definitive status report.

Sincerely,

*Bernard M. Bordenick*

Bernard M. Bordenick  
Counsel for NRC Staff

cc: Michael S. Miller, Esq.  
Anthony F. Earley, Jr., Esq. ✓

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) |
|                                  | ) |                        |
| (Shoreham Nuclear Power Station, | ) |                        |
| Unit 1)                          | ) |                        |

SECURITY STATUS REPORT

This report on the status of settlement negotiations on the security contentions is submitted pursuant to the Board's Order of July 27, 1982. Though not a joint report, counsel for LILCO has discussed the contents of this report with counsel for the County and the Staff.

The parties filed their direct testimony on the security contentions on July 20, 1982. Thereafter, on July 28, 1982, a meeting was held at Suffolk County Police Headquarters to discuss possible settlement of the security contentions. Suffolk County Police Commissioner Donald J. Dilworth, Suffolk County Police Inspector Richard Roberts and Michael Miller, Esq. were present on behalf of Suffolk County; Bernard Bordenick, Esq., staff counsel, was present on behalf of the NRC Staff; and James RiveFlo, Plant Manager, Shoreham Nuclear Power Station, Robert Reen, Security Director, Shoreham Nuclear Power Station, Brian R. McCaffrey, LILCO's Regulatory Supervisor, Anthony F. Earley,

Jr. and T. S. Ellis, III were present on behalf of LILCO. The meeting, which lasted over two hours, was very productive. The parties' discussion covered the full range of issues raised by the security contentions and demonstrated, in LILCO's counsel's opinion, broad areas of general agreement on which a comprehensive resolution of the security contentions can be based. In particular, issues relating to weapons, communications, joint training and procedures and alarm response procedures may be susceptible to early resolution. Other issues are equally susceptible to resolution, but may require more time. In any event, counsel for LILCO believe a comprehensive settlement must be the goal of all parties because the various security contentions are strongly interrelated and constitute, in a real sense, a seamless web.

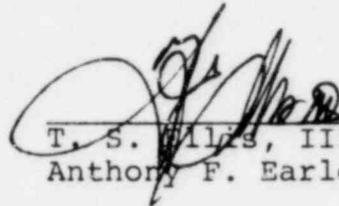
Consistent with all parties' desire to achieve a comprehensive resolution of the security contentions, additional meetings and contacts have been arranged and scheduled. Inspector Roberts of the Suffolk County Police and Mr. Keen of LILCO are responsible for ensuring that the appropriate contacts are made. Mr. Bordenick indicated that the Staff security reviewer would be available to participate in the discussions. Tentatively scheduled meetings include those involving Mr. Reen and the County's police communications specialists and further meetings of the parties during the week of August 9, 1982.

As a result of the July 28, 1982 meeting, counsel for LILCO believe settlement of all the security contentions is a

reasonable prospect. While it is doubtful that this can be accomplished by the August 17 reporting date, we believe that very substantial progress on a full settlement can be made and reported to the Board by that date.

Respectfully submitted,

LONG ISLAND LIGHTING COMPANY



T. S. Mills, III

Anthony F. Earley, Jr.

Hunton & Williams  
Post Office Box 1535  
Richmond, Virginia 23212

DATED: August 3, 1982

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:  
Lawrence Brenner, Chairman  
Dr. James H. Carpenter  
Dr. Peter A. Morris

\_\_\_\_\_  
In the Matter of )

LONG ISLAND LIGHTING COMPANY )

(Shoreham Nuclear Power Station, )  
Unit 1) )

Docket No. 50-322 O.L.

(Security Proceeding)

August 3, 1982

STATUS REPORT OF COUNSEL FOR SUFFOLK COUNTY

This Status Report is submitted by Suffolk County pursuant to the Board's Order of July 27, 1982. While it is not jointly submitted with the NRC Staff and LILCO, the County has discussed this Report with these parties.

Representatives of Suffolk County, LILCO and the Staff met in Yaphank, Long Island, at Suffolk County Police Headquarters, on Wednesday, July 28, 1982 to consider resolution of Suffolk County's security concerns. The County and LILCO had both experts/consultants and counsel present; only counsel was present for the Staff because its security reviewer had a commitment with regard to other Commission business.

The July 28th meeting was productive in setting forth the parties' positions. The parties reviewed and discussed in varying degrees of detail each of the contentions filed by Suffolk

County, particularly as these contentions were addressed in the testimony filed on July 20, 1982. With respect to certain matters, such as weapons, communications, screening and selection procedures and alarm response procedures, there appears to be a real possibility that LILCO will take specific actions requested by the County which will satisfy the County's concerns. Further meetings are planned at which time the parties will continue discussions.

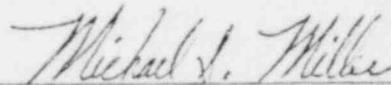
There remain certain contentions as to which the parties are in disagreement. The chief contention in this regard is Contention 1 concerning the number of armed responders. As indicated in the County's testimony on this matter, the County has very definite views regarding the number of armed responders which are required for LILCO to comply with 10 C.F.R., Section 73.55(h)(3). The County, thus far, has not been presented with any data which, in its view, would lead to a change in that position. There also remains a dispute between LILCO and the County on Contention 7 concerning the location of the SAS.

The County emphasizes that, in its view, Contention 1 is integrally related to Contention 3 concerning LILCO's failure to prepare adequately for the design basis threat. Moreover, Contentions 1 and 3 are necessarily related to Contentions 2 and 4 concerning LLEA assistance and guard training. Accordingly, it appears to the County that progress in resolving these interrelated Contentions will be likely only if the parties can first reach agreement on Contentions 1 and 3. Assuming such agreement can be reached, there would then have to be agreement by the parties to training programs in Contentions 2 and 4 that track the content of Contentions 1 and 3.

Further meetings are planned, and at these meetings the parties will continue discussions on these areas of disagreement. In the County's view, no prediction can be made at this time regarding the likelihood that these issues can be resolved prior to trial.

The Board has requested a further status report by August 17, "setting forth in detail any unresolved issues which remain." While the parties will schedule meetings in order to meet the August 17th deadline to the fullest extent possible, in the County's view that deadline may prove unrealistic in light of the nature of some of the issues to be discussed and considered.

Respectfully submitted,



---

Herbert H. Brown  
Lawrence Coe Lanpher  
Michael S. Miller  
KIRKPATRICK, LOCKHART, HILL,  
CHRISTOPHER & PHILLIPS  
1900 M Street, N.W.  
Washington, D.C. 20036  
(202) 452-7000

Attorneys for Suffolk County

Dated: August 3, 1982

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

I certify that copies of Status Report of Counsel for  
Suffolk County were served upon the following by hand, unless  
otherwise indicated, on August 3, 1982:

Lawrence Brenner, Esq.  
Administrative Judge  
Atomic Safety and Licensing  
Board Panel  
U.S. Nuclear Regulatory  
Commission  
Washington, D.C. 20555

Dr. Peter A. Morris  
Administrative Judge  
Atomic Safety and Licensing  
Board Panel  
U.S. Nuclear Regulatory  
Commission  
Washington, D.C. 20555

Dr. James H. Carpenter  
Administrative Judge  
Atomic Safety and Licensing  
Board Panel  
U.S. Nuclear Regulatory  
Commission  
Washington, D.C. 20555

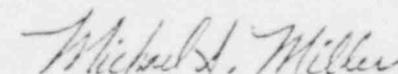
Kirkpatrick, Lockhart, Hill,  
Christopher & Phillips  
1900 M Street, N.W.  
Washington, D.C. 20036

Dated: August 3, 1982

\*Bernard M. Bordenick, Esq.  
U.S. Nuclear Regulatory  
Commission  
Washington, D.C. 20555

Anthony F. Earley, Jr., Esq.  
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Richmond, Virginia 23212

\*Chief, Records Service Branch  
Division of Technical Information  
and Document Control  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

  
\_\_\_\_\_  
Michael S. Miller

\* By mail.

1           JUDGE BRENNER: The Board thinks it is fair to  
2 characterize the reports as being on the optimistic side  
3 in terms of a substantial narrowing, at least, of the  
4 issues, although the degree of optimism varies somewhat,  
5 and in fact is perhaps less than the party that counts  
6 the most when we are assessing the optimism, that is,  
7 the intervenor, the County in this case. However, even  
8 the County is hopeful of further progress in its report.

9           Based upon that, we will wait until the next  
10 report on August 17. We are disturbed a little as to  
11 the predictions that we may not get much more as soon as  
12 August 17. We emphasize to the parties how important  
13 this time frame is for us, and while we are not saying  
14 unless every single thing is buttoned up by the 17th, we  
15 will have to make a decision as to who should hear it,  
16 we certainly need to see very tangibly what is left in  
17 the report on the 17th.

18           So, we hope that efforts are going to be quite  
19 intensive, bearing in mind our time frame considerations  
20 and not just the time frame for the overall case. It  
21 would be most useful, in fact, we are going to request,  
22 that the August 17 report be a joint one. The three  
23 reports were very helpful. We are not criticizing  
24 them. But we won't have the benefit over that week in  
25 which August 17 occurs of being able to discuss any

1 matters with the parties, so the process of having to  
2 file one report, we think, will require the parties to  
3 be jointly thorough and careful in the language used, so  
4 we will truly get a focusing on what is left.

5           The type of information contained in the  
6 County's report was most useful. That is, an  
7 ascertainment of what it is that is left in the  
8 dispute. To the extent the kind of detail that the  
9 parties think would be most helpful to us on August 17  
10 in order for us to decide what, if anything, is left  
11 will be safeguards information. It might be better, if  
12 possible, to somehow divide the report into a portion  
13 that can be filed in the case and an attachment that  
14 would be safeguards information which can be referenced  
15 in the cover sheet. We are not requiring that format.  
16 We are just suggesting that as a possible way to give us  
17 as much detail as you want, and we will take a look at  
18 it on the 17th, and perhaps decide before we have an  
19 opportunity to talk with the parties again, perhaps not,  
20 but that is why you want to try to tell us everything  
21 you think would be helpful to us.

22           Obviously, the narrower the dispute has  
23 become, the more likely it is that we could defer and  
24 give the parties some more time. It might be helpful,  
25 although we won't require it, that if you do get through

1 a very tangible narrow area of that which remains in  
2 dispute, if we could get a time estimate on how long it  
3 would take to litigate, because we don't want to go back  
4 through the testimony on our own and try to figure out  
5 what testimony might remain appropriate, and we are not  
6 asking you to do that precisely, either, but some time  
7 estimate, if we are talking about a week, or we are  
8 talking about two weeks, that type of thing, and be  
9 realistic. The purpose is to help us make a decision,  
10 and not to lull us into thinking we can handle it in X  
11 amount of time.

12 JUDGE CARPENTER: Mr. Repka, I would like to  
13 add a comment that is perhaps personal, but certainly  
14 not in disagreement with the other members of the  
15 Board. I know, first of all, Mr. Bordenick is not here  
16 this morning. I would like to express my concern that  
17 these meetings speak to a certain extent, in a very  
18 limited way, but to a certain extent to the merits of  
19 contentions, and as a Board member, I am very frustrated  
20 that the staff expert on security matters has not been  
21 available to participate in these meetings.

22 I note in Line 10 in the status report by  
23 Suffolk County that the security reviewer had a  
24 commitment with regard to other Commission business. I  
25 really hope that other business was quite important,

1 because as far as I am concerned, personally concerned,  
2 it certainly detracted from the effectiveness of this  
3 attempt to understand those issues that must be  
4 litigated and those issues which perhaps can be  
5 resolved.

6 I would also note in the LILCO status report  
7 on Page 2, Line 20 reads, "Mr. Bordenick indicated that  
8 the staff security reviewer would be available to  
9 participate in the discussions." I don't know whether  
10 the choice of that verb was deliberate. It seems a  
11 little weak to me, "indicated" rather than "said." I am  
12 trying to make it very clear that in the context of the  
13 points that Judge Brenner was just making in terms of  
14 trying to resolve what the dimensions of this litigation  
15 might be, we feel, and certainly I feel very personally  
16 that the staff security expert would be very useful to  
17 all the parties, and I would hope that the staff would  
18 agree with me that some priority should be given this.

19 Thank you.

20 JUDGE BRENNER: Well, it is not personal to  
21 Judge Carpenter. Why wasn't he there? Do you know?

22 MR. REPKA: He had a Commission meeting that  
23 day. He was going to be there, but the security  
24 negotiation conference was up in the air, and the final  
25 day that was finally resolved on just happened to

1 coincide with the expert's Commission meeting.

2 JUDGE BRENNER: All right. Well, between now  
3 and the 17th, we expect that at least one and probably  
4 more meetings are going to have to take place, telephone  
5 conferences, whatever. If this isn't a priority for the  
6 staff's experts, it better be.

7 MR. REPKA: It certainly is a priority, and he  
8 will be there in the future.

9 JUDGE BRENNER: I don't know who he is, nor do  
10 I care at this point. Whatever people need be involved  
11 should be, and it might be more than one person. I  
12 guess the theme is very consistent with what we  
13 expressed in the emergency planning context. There is  
14 an auto parts company that had a rather interesting ad  
15 campaign to the gist of, you can pay me now or you can  
16 pay me later. The staff experts can spend time in the  
17 meetings now or they can spend time at the hearing  
18 later, and those are the tradeoffs. I am sure staff  
19 counsel knows that, and I am not saying it for your  
20 benefit. I am saying it so that you can be reinforced  
21 in your message to your experts.

22 MR. REPKA: The experts have that message, and  
23 I don't really think it is a problem. It is a one time  
24 only thing.

25 (Whereupon, the Board conferred.)

1           JUDGE BRENNER: All right. We would like to,  
2 I guess, rule on the County's objections dated August  
3 2nd to the prehearing conference order and motion for  
4 reconsideration or, in the alternative, for  
5 certification to the Commission. This relates to the  
6 emergency planning matters ruled upon in our prehearing  
7 conference order of July 27th, 1982.

8           In part, the County objects to and moves us to  
9 reconsider our rulings with respect to the Board's  
10 separation of Phase I and Phase II issues and its  
11 deferral of certain contentions until Phase II of this  
12 proceeding, and also the Board's ruling that discovery  
13 is proper on Suffolk County's emergency plan, which has  
14 not been completed, is not a matter in controversy, and  
15 indeed is not the subject of any proffered or admitted  
16 contentions. That is the County's description at Page 2  
17 of its motion.

18           And as I say, that is only part of its  
19 motion. As to those two parts, the request for  
20 reconsideration is denied. We have extensively  
21 considered the County's arguments at previous  
22 conferences and in our previous rulings. The County's  
23 instant request makes no additional points or arguments,  
24 and for that reason, the request is denied.

25           In addition, the County makes the bare request

1 that we certify the issues to the Commission. The  
2 standards for certification are not addressed by the  
3 County. In any event, it is apparent to us that the  
4 standards for certification would not have been met here  
5 in this instance. So, that request is also denied.

6           The County in addition has asked that we  
7 reconsider our ruling that EP1 is not admissible at  
8 all. That ruling, you will recall, did not permit an  
9 opportunity for further specification of EP1. We did  
10 permit that opportunity with respect to other  
11 contentions. In our prehearing conference order of July  
12 27th, we found EP1 to lack particularization, to be  
13 overly broad, and also to be, at least in part,  
14 apparently redundant to the extent we could discern the  
15 subject of EP1 with other contentions.

16           We did, incidentally, thoroughly consider the  
17 responses, written responses of the County and the  
18 argument of counsel, contrary to the suggestion in the  
19 motion for reconsideration that we did not consider  
20 those. We did not cite them directly, but we certainly  
21 did consider them. On reconsideration, we stand by our  
22 ruling as to EP1 as it was then pleaded, but we will  
23 give the County in essence the other relief it requests,  
24 that is, an opportunity as part of the next filing and  
25 also as part of the discussions that we have required

1 take place among the parties before the next filing an  
2 opportunity to respecify EP1 similar to the opportunity  
3 we have permitted further contentions.

4           The County has begun to specify EP1,  
5 particularly at Pages 16 and 17 of its motion for  
6 reconsideration. We are not ruling now on whether that  
7 is sufficient specificity. In fact, as the parties  
8 know, we are insisting that contentions demonstrate  
9 satisfaction of the requirements of the bases and  
10 specificity requirements of the regulation in this area  
11 of emergency planning, and I guess I will provide the  
12 hint and a little more in a moment that more specificity  
13 could still be had with respect to that contention.

14           In addition, the County and, of course, the  
15 other parties should consider whether EP1 as it has  
16 begun to be specified and as it may finally be specified  
17 by August 20th is redundant to other contentions already  
18 pleaded and ruled upon, and whether, consistent with our  
19 rulings on other contentions, whether the specified  
20 subsections of EP1 are Phase I or Phase II issues. In  
21 fact, it is clear to us that at least many of the parts  
22 of EP1 are Phase II issues.

23           In the context of specificity, even in the  
24 County's motion for reconsideration, no attempt is made  
25 to allege the connection between local conditions,

1 assuming such conditions are adequately specified, which  
2 is just that, an assumption. No attempt is made to  
3 allege the connection between such local conditions and  
4 the failure of specific parts of LILCO's plan to meet  
5 specific provisions of the emergency planning  
6 regulations.

7 All right. That is our ruling on the motion  
8 for reconsideration. Judge Carpenter has some comments  
9 also.

10 JUDGE CARPENTER: Ms. Letsche, as Judge  
11 Brenner indicated yesterday, the Board did not feel a  
12 need for County counsel that was particularly cognizant  
13 of these matters to be present today, and I am not  
14 asking for a response to the comments I am about to make  
15 today, and I would hope that at least in the week  
16 following the break, the County could indicate what sort  
17 of response it might like to make.

18 I would like to take particular note of Page 3  
19 of the objections to the prehearing conference order,  
20 and draw attention particularly to the point raised in  
21 the last sentence of the first full paragraph -- I am  
22 sorry, the second paragraph, which reads, "The  
23 intervening parties noted especially the language of  
24 NUREG-0654, which states at 23, 'An integrated approach  
25 to the development,'" and I underline "development" --

1 that is my emphasis added -- "'of the response plans to  
2 radiological hazards is most likely to provide the best  
3 protection of the health and safety of the public.'"

4 I would like to ask that the Board be informed  
5 of the mechanisms that are presently being used to  
6 assure that there is an integrated approach to the  
7 development. In particular, I am interested to know  
8 whether there is a LILCO representative at the meetings  
9 in which the County plan is being developed, or some  
10 other such mechanism.

11 The Board is sitting here in the dark, if you  
12 will, as to what is going on, and so I am taking this  
13 just in the spirit as put forth by the County that as  
14 outlined in NUPEG-0654, an integrated approach at the  
15 development stage is very important, and I just leave  
16 that for after the break, and also, to the extent that  
17 they are involved at the present time, I would like  
18 identification of the FEMA and staff representatives  
19 that are contributing to the integrated approach of the  
20 development of the plan which represents the best  
21 efforts of all parties. That is the way I read the word  
22 "integrated."

23 (Whereupon, the Board conferred.)

24 JUDGE CARPENTER: Judge Brenner suggests  
25 perhaps August 20th would be a good time to submit that

1 along with the other filings that are due on that date.

2 MS. LETSCHE: Judge Carpenter, I will pass  
3 your comments on to people in Washington who are working  
4 on this matter, and I am sure they will respond.

5 JUDGE CARPENTER: Thank you.

6 JUDGE BRENNER: All right. Unless there are  
7 any further preliminary matters, we can launch right  
8 into the swearing of the panel and the cross examination  
9 by the County.

10 MR. REVELEY: The ATWS witnesses will come  
11 forward.

12 (Pause.)

13 Whereupon,

14 WILLIAM P. SULLIVAN,

15 JOHN A. RIGERT,

16 LEONARD J. CALONE,

17 HARRY T. CARTER,

18 EUGENE C. ECKERT,

19 HENRY C. PFEFFERLEN,

20 and MARVIN W. HODGES

21 were called as witnesses, and having been first duly  
22 sworn, took the stand and were examined and testified as  
23 follows:

24 DIRECT EXAMINATION ON BEHALF OF LILCO

25 BY MR. REVELEY:

1 Q Gentlemen, your prefiled written testimony was  
2 admitted into evidence yesterday by stipulation. It was  
3 admitted with the corrections and additions with which  
4 you are familiar. With those corrections and additions,  
5 is your prefiled ATWS testimony true and correct so far  
6 as you know?

7 A (WITNESS PFEFFERLEN) Yes, it is.

8 A (WITNESS ECKERT) Yes, it is.

9 A (WITNESS CARTER) Yes, it is.

10 A (WITNESS CALONE) Yes, it is.

11 A (WITNESS RIGERT) Yes, it is.

12 A (WITNESS SULLIVAN) Yes, it is.

13 Q Mr. Calone, do you have a crisp summary of  
14 that testimony?

15 A (WITNESS CALONE) Yes, I do.

16 Q Would you give it, please?

17 A (WITNESS CALONE) Our testimony on ATWS, our  
18 testimony on anticipated transient without scram  
19 demonstrates that Shoreham is well protected against  
20 ATWS events pending the implementation of the NRC's ATWS  
21 rulemaking. The Commission has already said that it is  
22 unlikely that an ATWS would occur in this interim  
23 period. The low probability of an ATWS coupled with the  
24 interim ATWS measures of RPT emergency operating  
25 procedures and operator training led the NRC to conclude

1 that nuclear power plants can be safely licensed and  
2 operated prior to completion of the rulemaking.

3 In our testimony, we show that LILCO has  
4 installed the recirculation pump trip feature at  
5 Shoreham. RPT is a highly reliable means of tripping  
6 the recirculation pumps in the event of an ATWS to  
7 reduce reactor power rapidly and to control primary  
8 system pressure.

9 LILCO has also developed an emergency  
10 operating procedure for ATWS. This procedure was  
11 developed based upon guidance provided by General  
12 Electric. In addition, LILCO has committed to  
13 incorporate future guidance into its operating procedure  
14 when such guidance is approved by the PWR owners and the  
15 NRC.

16 LILCO's training program ensures that licensed  
17 operators will promptly and correctly follow the ATWS  
18 emergency operating procedure. We believe, however,  
19 that prior to learning specific procedures, the operator  
20 must have a thorough knowledge and understanding of the  
21 design and operation of the systems he will use. In the  
22 course of LILCO's extensive training program, operators  
23 have received classroom instructions as well as plant  
24 walkthroughs on ATWS-related subjects. Only after the  
25 operators have a thorough knowledge of plant systems are

1 they given training on the ATWS emergency operating  
2 procedure itself. This training is enhanced further by  
3 plant walkthroughs of that procedure.

4           Finally, operators have been tested on their  
5 ability to handle an ATWS in simulator training. In  
6 addition to the interim ATWS measures relied upon by the  
7 Commission, LILCO has taken steps to reduce further the  
8 possibility that an electrical or mechanical failure  
9 will cause an ATWS. These steps are the installation of  
10 alternate rod insertion and improvements to the scram  
11 discharge volume.

12           With the changes just described, we agree with  
13 the Commission that it is very unlikely that an ATWS  
14 would occur in the interim period, but if it did, we are  
15 confident that Shoreham operators are trained and  
16 capable of responding in a rapid and correct fashion.

17           That ends my statement.

18           MR. REVELEY: Thank you, Mr. Calone.

19           Judge Brenner, LILCO's ATWS panel is available  
20 for cross examination.

21           JUDGE BRENNER: All right. The staff.

22           DIRECT EXAMINATION ON BEHALF OF THE STAFF

23           BY MR. BLACK:

24           Q     Mr. Hodges, your testimony has been previously  
25 incorporated into the record as if read on August 3rd,

1 in the transcript of August 3rd, 1982. Do you adopt  
2 that as your testimony in this proceeding?

3 A (WITNESS HODGES) Yes, I do.

4 MR. BLACK: Mr. Chairman, as a preliminary  
5 note, I would like to indicate that as the Board is well  
6 aware, the staff testimony on ATWS issues took an  
7 approach that was different from how evidently the Board  
8 viewed the testimony or the contention. We took a very  
9 simplistic approach with respect to the testimony, which  
10 basically was that a stand-by liquid control system  
11 needed to be added to give reasonable assurance of  
12 mitigation of ATWS events. We are aware of the Board's  
13 comments.

14 JUDGE BRENNER: You mean an automatic standby?

15 MR. BLACK: Excuse me. Automatic initiated  
16 standby liquid control system. We are aware of the  
17 Board's comments with respect to procedures and  
18 training, and we took those to heart, and went back to  
19 Bethesda and discussed that, and through those  
20 discussions with appropriate staff personnel, we have  
21 determined that Mr. Hodges was indeed the right witness  
22 to address procedures and training that would be  
23 applicable for ATWS condition and events.

24 And with that preliminary remark, I just wish  
25 to say that Mr. Hodges can be examined on procedures and

1 training, and we think that he will fully respond to the  
2 staff position with respect to those items, and with  
3 that preliminary remark, I submit that Mr. Hodges is  
4 available for cross examination as well.

5 JUDGE BRENNER: Okay. Well, we certainly  
6 appreciate that effort, and the parties have heard your  
7 comment, and the Board will be guided accordingly also.  
8 Thank you.

9 All right. The testimony now, after the fact  
10 of it being bound in, has been sworn to, and as I  
11 mentioned over the break, I hope the parties come up  
12 with a procedure whereby we can just stipulate  
13 everything in, and there are a few ways to do it, and I  
14 am sure the parties will come up with something to shave  
15 a few minutes off the day.

16 They are all yours, Ms. Letsche.

17 CROSS EXAMINATION ON BEHALF OF SUFFOLK COUNTY

18 BY MS. LETSCHE:

19 Q Mr. Calone, let me begin with you. You  
20 indicate in your statement of professional  
21 qualifications on Page 24 of your testimony that you  
22 have obtained an SRO certification. Have you ever had  
23 any actual operating experience?

24 A (WITNESS CALONE) During my training  
25 assignments at Brown's Ferry, on Page 25 of my resume,

1 Item F talks about a 30-week field assignment to TVA's  
2 Brown's Ferry nuclear plant. At that plant I was  
3 qualified as a nuclear engineer on shift for TVA, and  
4 during those 30 weeks I did work in the control room  
5 with the operators operating at Brown's Ferry 3.

6 Q When was that assignment of yours?

7 A (WITNESS CALONE) It began in June, 1976, and  
8 was completed in January, 1977.

9 Q You also indicate in Item H of that listing on  
10 Page 25 participation in Brown's Ferry refueling  
11 outage. When was that?

12 A (WITNESS CALONE) That was last summer, during  
13 the refueling outage for Brown's Ferry Unit 2.

14 Q And what did you do? What was your  
15 participation in that?

16 A (WITNESS CALONE) I worked with the outage  
17 coordinator in doing the repairs to the plant.

18 Q Had you participated at all in the preparation  
19 of LILCO procedure SP 29.02.01, which is attached to  
20 your testimony?

21 A (WITNESS CALONE) I am a member of the review  
22 committee that would have reviewed that procedure, yes.

23 Q Did you participate in that review?

24 A (WITNESS CALONE) Yes, I did.

25 Q Do you have any involvement in operator

1 training for the Shoreham operators?

2 A (WITNESS CALONE) Indirectly. I am the chief  
3 technical engineer, which is equivalent to assistant  
4 plant manager, and therefore I do have management  
5 responsibility in training.

6 Q Can you be a little more specific? What is  
7 your management responsibility with respect to  
8 training?

9 A (WITNESS CALONE) Training associated with  
10 technicians under my area of control has -- as a senior  
11 management person selected to obtain an SF license, I am  
12 in the training program itself. So if you ask from a  
13 training aspect at Shoreham, training incorporates more  
14 than just operator training. It is involved with the  
15 training and organization from a technician point of  
16 view. I am involved with the training program itself as  
17 a licensed operator.

18 Q Maybe "involvement" was a bad choice of words  
19 on my part. Let's talk first about what you do in the  
20 operator training program.

21 A (WITNESS CALONE) I am a participant in the  
22 operator training program.

23 Q That means you are trained in it?

24 A (WITNESS CALONE) Yes.

25 Q You don't do the training of other people?

1           A       (WITNESS CALONE) I did do training for the  
2 training organization when I was the reactor engineer.  
3 I gave training in reactor engineering subjects to  
4 operators.

5           Q       When was that?

6           A       (WITNESS CALONE) 1976, 1977.

7           Q       But you are not actively involved in the  
8 giving of training to operators now? Is that right?

9           A       (WITNESS CALONE) That is correct.

10          Q       Did you participate at all in demonstration of  
11 emergency operator procedures for the NRC that is  
12 referenced in your testimony?

13          A       (WITNESS CALONE) No, I was not present then.

14          Q       Other than training that you yourself  
15 received, do you participate at all in simulator  
16 training received by LILCO operators, Shoreham  
17 operators?

18          A       (WITNESS CALONE) As a participant in the  
19 training program, I have received simulator training  
20 along with the operators.

21          Q       Mr. Carter, have you had any BWR operating  
22 experience other than the simulator experience that is  
23 referenced in your professional qualifications?

24          A       (WITNESS CARTER) No, I have a certified, and  
25 I have just had the experience, but no other BWR

1 experience.

2 Q When did you receive your BWR simulator  
3 training?

4 A (WITNESS CARTER) The simulator training was  
5 in 1980, and also I have spent some time down at the  
6 Limerick simulator over the past two years on various  
7 things.

8 Q Let me come back to that in a minute. Where  
9 did you receive your simulator training?

10 A (WITNESS CARTER) At Dresden, Illinois.

11 Q Coming back to the time you spent at the  
12 Limerick simulator recently, what was it that you were  
13 doing there?

14 A (WITNESS CARTER) Well, in May of 1981 I was  
15 down at the simulator with three operators, and we  
16 checked out the emergency operating procedures that  
17 included the generic operating procedures and the ATWS  
18 procedure. We spent five days down there. In October  
19 of 1981, I went down there with the operators again, and  
20 we did the demonstration for the NRC.

21 Q You say with the operators. Other Shoreham  
22 operators?

23 A (WITNESS CARTER) Yes, they were.

24 Q Do you participate at all in the operator  
25 training, in the giving of operator training to Shoreham

1 operators?

2 A (WITNESS CARTER) Yes, I have. I taught the  
3 emergency operating procedures to the operators.

4 Q You have done that in the past? That was the  
5 past tense there?

6 A (WITNESS CARTER) Well, what do you mean by  
7 past tense?

8 Q Well, I was just trying to understand, is that  
9 something you are going to be doing or something that is  
10 being done?

11 A (WITNESS CARTER) That is something I have  
12 done.

13 Q You have?

14 A (WITNESS CARTER) Yes.

15 Q Do you have any involvement in the preparation  
16 of the lesson plans or training courses that are used in  
17 the operator training?

18 A (WITNESS CARTER) Well, there was no lesson  
19 plan. I taught the operators the procedures. I did  
20 that based upon previous knowledge. I am a member of  
21 the BWR owners' group, and I worked on emergency  
22 procedure guidelines and a lesson plan at this point in  
23 time. A lot of the procedures are still in a state of  
24 flux, and a lesson plan might not have been beneficial  
25 to write. I taught them based upon information that I

1 have from the owners' group.

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1 Q Is there a lesson plan in existence now?

2 A (WITNESS CARTER) No, there isn't. What I  
3 did, I took flimsies of the procedures and taught the  
4 operators line by line.

5 JUDGE BRENNER: Let me make sure. Are we  
6 talking about the same procedure, the identical  
7 procedure to that which is attached to your testimony?

8 WITNESS CARTER: No. I'm really lumping that  
9 all together with the generic BWR procedures and the  
10 ATWS procedure.

11 JUDGE BRENNER: Well, do your answers apply to  
12 that procedure also?

13 WITNESS CARTER: Yes.

14 BY MS. LETSCHE: (Resuming)

15 Q Mr. Carter, the procedures that you used in  
16 training the Shoreham operators, were those the generic  
17 GE or the owners group procedures, or were they  
18 Shoreham-specific procedures?

19 A (WITNESS CARTER) No, it was Shoreham-specific  
20 procedures. I think it is the procedure that is  
21 attached to the testimony, and those procedures that you  
22 have.

23 Q Mr. Eckert --

24 JUDGE CARPENTER: Ms. Letsche, might I ask one  
25 last question?

1           Mr. Carter, you said that you went to the  
2 Limerick simulator and checked out the Shoreham  
3 procedures. Could you help me a little bit? I don't  
4 quite understand what you mean by that. You tested the  
5 procedures or you tested the operators with the  
6 procedures?

7           WITNESS CARTER: No, the procedures  
8 themselves. After I had written the procedures from the  
9 BWR owners group generic guidelines and the ATWS  
10 procedure, I went down in May of 1981 and I spent five  
11 days at the simulator running through various scenarios  
12 on the simulator that I had developed myself and to  
13 demonstrate to myself that the procedures were  
14 adequate.

15           JUDGE CARPENTER: Thank you for the  
16 clarification.

17           BY MS. LETSCHE: (Resuming)

18           Q     Mr. Eckert, have you had any operating  
19 experience with a nuclear reactor?

20           A     (WITNESS ECKERT) I have been to operating  
21 reactors, but I am not an operator myself.

22           Q     Have you performed any of the work of the type  
23 you've described in your professional qualifications  
24 that relates specifically to Shoreham, or are the things  
25 described in your professional qualifications limited to

1 generic type studies?

2 A (WITNESS ECKERT) My group does the specific  
3 Shoreham licensing transient analysis and design  
4 specification work in the ATWS area. It is mainly the  
5 generic work for BWR-4's, that are very similar to the  
6 Shoreham plant.

7 Q In the early part of your answer you said "My  
8 group does" the plant specific analysis. Have you done  
9 any Shoreham-specific analysis yourself?

10 A (WITNESS ECKERT) I approve and review and  
11 check the work as done by the people working for me. I  
12 don't run the computer cases personally.

13 Q Is the Shoreham-specific analysis that you  
14 have reviewed reflected in some documentation  
15 somewhere? Is that in the FSAR?

16 A (WITNESS ECKERT) In chapter 15 of the FSAR  
17 mainly, some in chapter 5.

18 Q Have you had any -- have you reviewed any  
19 Shoreham operator procedures with respect to the  
20 mitigation of ATWS events?

21 A (WITNESS ECKERT) Yes, I have.

22 Q Have you reviewed any other than the one that  
23 is attached to the LILCO testimony?

24 A (WITNESS ECKERT) For Shoreham, you mean?

25 Q Yes, for Shoreham.

1           A       (WITNESS ECKERT) No, just what is attached  
2 here.

3           Q       How about training? Have you reviewed any  
4 information concerning the Shoreham operator training  
5 with respect to the mitigation of an ATWS event?

6           A       (WITNESS ECKERT) Well, I participated in and  
7 supported the BWR owners group, similar to Mr. Carter,  
8 and was a part of that development of the training that  
9 he referenced. I was not directly involved in the  
10 Shoreham training.

11          Q       I guess I'm not quite clear what statements of  
12 Mr. Carter you were referring to. Can you tell us what  
13 your participation was with the owners group effort?

14          A       (WITNESS ECKERT) Well, we supported them in  
15 the development of the steps that are included in the  
16 current guidelines for emergency procedures. And, as he  
17 mentioned, he taught, for example, line by line from the  
18 generic guideline as it had been developed there. And  
19 so I was a part of developing those actions.

20          Q       Developing the guidelines?

21          A       (WITNESS ECKERT) Yes.

22          Q       Your participation in the development of the  
23 guidelines, was it limited to areas of design and  
24 analysis, or did you actually get into the human factors  
25 elements of training and procedures?

1           A       (WITNESS ECKERT)   Primarily the design and  
2 analysis. We wanted to make sure what we asked an  
3 operator to do was a reasonable step, that he had the  
4 signals or things he needed to sense that situation.

5           Q       Mr. Pfefferlen, you mention in your  
6 professional qualifications at page 33 that you obtained  
7 a license to operate the Vallecitos boiling water  
8 reactor?

9           A       (WITNESS PFEFFERLEN)   That is correct.

10          Q       When did you obtain the license?

11          A       (WITNESS PFEFFERLEN)   That was in early 1960,  
12 1962, I believe.

13          Q       How big is that reactor?

14          A       (WITNESS PFEFFERLEN)   It's a very small  
15 breeder-type reactor, about 50 megawatts, I believe.

16          Q       Did it have a standby liquid control system?

17          A       (WITNESS PFEFFERLEN)   No, it did not.

18          Q       What was the purpose of the reactor? It was  
19 an experimental?

20          A       (WITNESS PFEFFERLEN)   It was a prototype and  
21 it was generating power. It was really an experimental  
22 prototype that GE was running.

23          Q       I notice you mentioned in your professional  
24 qualifications that you have responsibility for all  
25 licensing aspects of the ATWS issue within General

1 Electric. Have you performed any Shoreham-specific  
2 licensing compliance work?

3 A (WITNESS PFEFFERLEN) We reviewed the Shoreham  
4 work. I am involved with the generic ATWS licensing,  
5 and as such we input to Shoreham and review the work  
6 that comes out. My group does that.

7 Q You say "review the work that comes out." Do  
8 you mean review things that Shoreham sends to you?

9 A (WITNESS PFEFFERLEN) Yes, before they send  
10 them out. We are involved in the process of the review  
11 of the GE input to the Shoreham submittals.

12 Q What kind of input is it that you review? Do  
13 you review procedures, for instance, operating  
14 procedures?

15 A (WITNESS PFEFFERLEN) Yes.

16 Q Do you review training programs?

17 A (WITNESS PFEFFERLEN) Not the training  
18 program, no.

19 Q Have you reviewed Shoreham-specific procedures  
20 other than the ones that are attached to your  
21 testimony?

22 A (WITNESS PFEFFERLEN) I have looked at those.  
23 I was involved in the review of the emergency procedure  
24 guidelines that served as input to this. As Jean Eckert  
25 was, we were involved in that review.

1           Q     With respect to the Shoreham procedures now,  
2 setting aside the generic guidelines that you mentioned,  
3 you said you have reviewed some other than what is  
4 attached to your testimony?

5           A     (WITNESS PFEFFERLEN) No. I have looked at  
6 these. I was not in the official review process for  
7 these. I have seen these. But I'm not sure that I  
8 fully understand your question, have I looked at other  
9 than Shoreham's and the EPG's?

10          Q     Let's start again. There is a Shoreham  
11 procedure that is attached to your testimony?

12          A     (WITNESS PFEFFERLEN) Yes.

13          Q     You've looked at that?

14          A     (WITNESS PFEFFERLEN) I've seen that, yes.

15          Q     Have you looked at any of the Shoreham  
16 emergency operating procedures?

17          A     (WITNESS PFEFFERLEN) No, I have not.

18          Q     And all of the "these's" that you referencing  
19 in your last answer, the record isn't going to reflect  
20 what it is that you were talking about that you said you  
21 reviewed.

22          A     (WITNESS PFEFFERLEN) The Shoreham procedures  
23 that you had indicated as being attached to the  
24 testimony.

25          Q     That is what you have reviewed?

1 A (WITNESS PFEFFERLEN) Yes.

2 Q All right.

3 JUDGE BRENNER: It is one procedure, right,  
4 singular?

5 WITNESS PFEFFERLEN: One procedure, yes, sir.  
6 (Counsel for Suffolk County conferring.)

7 BY MS. LETSCHE: (Resuming)

8 Q Mr. Rigert, have you had any reactor system  
9 design experience?

10 A (WITNESS RIGERT) Well, in my job function I  
11 perform reviews, assessments, of design modifications.  
12 I have been involved in the design evolution of Shoreham  
13 since the early stages.

14 Q You say you've been involved in the design.  
15 I'm not sure what that means. Can you be more  
16 specific?

17 A (WITNESS RIGERT) Well, as an engineer for a  
18 company like LILCO, I would be responsible for the  
19 review and technical approval of design work being  
20 produced by Stone & Webster or General Electric. And in  
21 some cases I would produce my own conceptual designs or  
22 recommendations that would be sent back to Stone &  
23 Webster or GE.

24 We don't do highly detailed analytical work,  
25 as would be done at GE. We are also very much involved

1 in the hardware aspects, the specifying and procuring of  
2 equipment, either through GF or through Stone &  
3 Webster.

4 Q Have you had any operating experience.

5 A (WITNESS RIGERT) I was involved in a somewhat  
6 unrelated area. I started out in the gas production  
7 department of Long Island Lighting. I was involved in  
8 the startup of our liquified natural gas plant in 1971,  
9 and I got varied operating experience at that time in  
10 mechanical, electrical, instrument and control  
11 equipment, and a lot of process system operation.

12 I was a startup engineer at Shoreham for two  
13 years, from '76 to '78, and I have had some simulator  
14 training, Westinghouse and GE, short courses; nothing  
15 comparable to what the operators get, though.

16 Q When did you receive your GE simulator  
17 training?

18 A (WITNESS RIGERT) I think that was in February  
19 of '77.

20 Q '77?

21 A (WITNESS RIGERT) Right.

22 Q Where did you receive that?

23 A (WITNESS RIGERT) That was at Morris, at the  
24 Dresden simulator.

25 Q Have you had any design experience or

1 performed any work relating to the standby liquid  
2 control system at the Shoreham plant?

3 A (WITNESS RIGERT) That system's design has  
4 been fairly well fixed through the years. I was the  
5 test engineer on that system when I was at startup. But  
6 since then, the only changes of any significance have  
7 been -- I wouldn't even call them of significance --  
8 have been the incorporation of a couple of SIL's into  
9 the system, GE service information letters making  
10 certain improvements in circuits.

11 Like I say, other than that that system is  
12 pretty much -- has pretty much been unchanged through  
13 the years.

14 Q Did you participate in the incorporation of  
15 these GE service information letters, those changes,  
16 into the SLC system?

17 A (WITNESS RIGERT) I have reviewed and approved  
18 the change for incorporation or recommended that the  
19 change be made. It was made. I am not involved in the  
20 actual construction and implementation of the work.

21 Q In your position, do you have any  
22 responsibilities relating to emergency operating  
23 procedures?

24 A (WITNESS RIGERT) No official responsibility.  
25 We review them. Me and the people in my group, we try

1 to be as operationally knowledgeable as we can to do  
2 systems design. But no, we have no formal involvement.

3 Q I assume the answer is the same with respect  
4 to the training program?

5 A (WITNESS RIGERT) Right.

6 (Counsel for Suffolk County conferring.)

7 Q Mr. Sullivan, you indicate in your  
8 professional qualifications that you have participated  
9 as a reviewer in several BWR PRA's. Have you  
10 participated in a review of the Shoreham PRA?

11 A (WITNESS SULLIVAN) No.

12 Q How about the Limerick PRA?

13 A (WITNESS SULLIVAN) Yes, I have been a  
14 participant in the review of the Limerick, and I have  
15 had inputs into the Limerick PRA.

16 Q Did your inputs into the Limerick PRA include  
17 any information applicable to analysis of the standby  
18 liquid control system at that plant?

19 A (WITNESS SULLIVAN) Yes.

20 Q Can you describe what, in a little more  
21 detail, what it was that you did relative to that?:

22 MR. REVELEY: I'm going to object to the  
23 question. I don't think we're here to litigate the  
24 Limerick standby liquid control system.

25 JUDGE BRENNER: Well, we haven't gone that far

1 yet, so I'm going to overrule the objection. He is part  
2 of the panel and I could see where we are still on his  
3 qualifications and his qualification in this area could  
4 become pertinent to how the system at Shoreham would  
5 operate in terms of efficacy of interim measures and  
6 timing and such things.

7 So we will overrule the objection, but not  
8 necessarily disagreeing with your comments. We just  
9 don't think the question falls within the comment.

10 WITNESS SULLIVAN: My primary function was  
11 primarily in the review of the standby liquid control  
12 fault trees that were generated as part of the Limerick  
13 PRA.

14 JUDGE BRENNER: I'm sorry, Mr. Sullivan. For  
15 some reason I didn't hear you.

16 WITNESS SULLIVAN: As part of the Limerick  
17 PRA, my function was a review of the standby liquid  
18 control fault tree.

19 JUDGE MORRIS: If Ms. Letsche doesn't ask you,  
20 I will. Could you describe further what that involved?  
21 I mean, was this a six-month job, a three-day job, and  
22 what did you actually do?

23 WITNESS SULLIVAN: It was in terms of  
24 probably over a week's job. Other people had prepared  
25 these fault trees. My primary function was in the

1 review of these.

2 JUDGE MORRIS: In that review, did you ask  
3 yourself questions like, is the logic correct?

4 WITNESS SULLIVAN: Right.

5 JUDGE MORRIS: Did you look at interactions?  
6 Did you look at the probabilities at branch points?  
7 Just what did you do?

8 WITNESS SULLIVAN: Well, the fault trees, of  
9 course, were supposed to -- were to identify the failure  
10 modes, including the interfaces. And my function was,  
11 as part of the review functions, to review the fault  
12 trees for technical adequacy, that they truly reflected  
13 the design and probability values associated with that  
14 assessment.

15 BY MS. LETSCHE: (Resuming)

16 Q Mr. Sullivan, was this, the fault trees that  
17 you were reviewing for Limerick, did that relate to an  
18 automated or manual standby liquid control system?

19 A (WITNESS SULLIVAN) That was related to an  
20 automated standby liquid control.

21 Q Did you have any review function or other  
22 responsibility related to the human reliability  
23 information included in the Limerick PRA?

24 A (WITNESS SULLIVAN) What part of human  
25 reliability? That's a very broad subject.

1 Q You're right, it is. With respect to your  
2 review of the standby liquid control fault trees.

3 A (WITNESS SULLIVAN) Yes, that would be  
4 included as part of that review.

5 (Counsel for Suffolk County conferring.)

6 Q Mr. Sullivan, would an evaluation of fault  
7 tree for a standby liquid control system at the Shoreham  
8 plant involve the same failure modes success criteria  
9 that were involved in the Limerick fault trees that you  
10 reviewed?

11 MR. REVELEY: Judge, I object again. It seems  
12 to me, despite the fact that we are on a credentials  
13 inquiry, that we are preparing the way to go into  
14 forbidden areas.

15 (Board conferring.)

16 JUDGE BRENNER: We are going to overrule the  
17 objection. Obviously, she is not limited to  
18 qualifications. That wasn't the thrust of your  
19 objection. Going to the thrust of it, she is asking  
20 about the applicability to Shoreham in this instance.  
21 We will see if there is a bridge or not.

22 WITNESS SULLIVAN: Could you repeat your  
23 question again? I'm sorry.

24 MS. LETSCHE: I'm not sure, maybe the reporter  
25 could read it back.

1 (The reporter read the record as requested.)

2 WITNESS SULLIVAN: There would be some  
3 differences just due to the design configuration. That  
4 would be the primary differences.

5 BY MS. LETSCHE: (Resuming)

6 Q Would there be differences with respect to the  
7 human reliability data?

8 A (WITNESS SULLIVAN) In reference to what?

9 Q Comparing the fault trees that would be  
10 constructed for the two plants.

11 A (WITNESS SULLIVAN) In terms of human  
12 reliability, they should be essentially -- and I have  
13 not gone through a complete review of a Shoreham-type  
14 fault tree. But in my review of the Limerick, I would  
15 say yes, they would and should be very similar.

16 Q Mr. Sullivan, what was the data base for the  
17 human reliability information in the Limerick fault  
18 trees we have been discussing?

19 A (WITNESS SULLIVAN) This is primarily standard  
20 NRC failure rates used in PRA analysis.

21 JUDGE BRENNER: Ms. Letsche, could I hear your  
22 last question again?

23 MS. LETSCHE: I asked them what the data base  
24 was for the human reliability information in the  
25 Limerick fault trees.

1 BY MS. LETSCHE: (Resuming)

2 Q Mr. Sullivan, does your experience include  
3 work in analyzing operator reliability or reviewing  
4 operator procedures from that point of view?

5 A (WITNESS SULLIVAN) Yes, I have been involved  
6 in several assessments where we have reviewed operating  
7 procedures in relation to operator response.

8 Q Have you done that with respect to the  
9 Shoreham operating procedures?

10 A (WITNESS SULLIVAN) Which operating  
11 procedures?

12 Q Let me be more specific. Have you reviewed  
13 any Shoreham operating procedures relating to the  
14 mitigation of an ATWS event as part of an analysis of  
15 operator reliability?

16 A (WITNESS SULLIVAN) I have reviewed the  
17 operating procedures attached as part of the testimony.  
18 I have not performed a reliability analysis specific to  
19 Shoreham or reviewed a reliability analysis specific to  
20 Shoreham relating to the operating procedures.

21 Q And I take it that you haven't reviewed  
22 operating procedures for Shoreham other than the one  
23 that is attached to your testimony?

24 A (WITNESS SULLIVAN) I don't understand what  
25 you mean by "others."

1 Q Well, there is one procedure attached to your  
2 testimony, one Shoreham procedure?

3 A (WITNESS SULLIVAN) Yes.

4 Q Have you reviewed any other Shoreham  
5 procedures?

6 A (WITNESS SULLIVAN) No.

7 Q You said you haven't performed a reliability  
8 analysis. To your knowledge, has one been performed  
9 relating to the Shoreham procedure that you have  
10 reviewed?

11 A (WITNESS SULLIVAN) It's my understanding that  
12 there is a probabilistic risk assessment that is being  
13 conducted for Shoreham.

14 Q Aside from that, though, are you aware of any  
15 other reliability analysis relating to the Shoreham  
16 emergency operating procedures or any other procedures  
17 relating to the mitigation of an ATWS event?

18 A (WITNESS SULLIVAN) Specific to what is  
19 attached to the testimony?

20 Q Well, to that procedure or anything else, but  
21 specific to Shoreham, a mitigation of an ATWS event.

22 A (WITNESS SULLIVAN) Not specific to Shoreham.

23 JUDGE BRENNER: Ms. Letsche, let me offer the  
24 general comment that some of your questions are very  
25 broad, and it requires the witness to come back and say,

1 do you mean this, do you mean that. I don't want to  
2 talk about all procedures in general, nor do I want you  
3 to limit it necessarily to this one procedure. However,  
4 within those two extremes you can include words in your  
5 question that will focus on the procedures to deal with  
6 an ATWS.

7 MS. LETSCHE: Judge Brenner, I intend to do  
8 that. I intended this to be broad, since we were in the  
9 qualifications area, and I will certainly get more  
10 specific.

11 BY MS. LETSCHE: (Resuming)

12 Q Let me ask the GE witnesses --

13 JUDGE BRENNER: Excuse me. Are you finished  
14 with Mr. Sullivan's qualifications?

15 MS. LETSCHE: Yes, I am.

16 JUDGE BRENNER: Mr. Sullivan, although I  
17 recall your indicating many years of experience in  
18 reliability engineering, I don't recall any listing of  
19 your education in the qualifications. If you listed it,  
20 I'm sorry, I don't recall.

21 Could you tell us what it is, please?

22 WITNESS SULLIVAN: Yes. I am a bachelor of  
23 science in mathematics.

24 JUDGE BRENNER: Thank you. I wanted to find  
25 out if they were giving degrees in PRA work.

1 (Laughter.)

2 BY MS. LETSCHE: (Resuming)

3 Q Let me ask the GE witnesses sort of in general  
4 this question: Did any of you participate in the  
5 preparation of responses to the NRC regarding the ATWS  
6 issues, such as an analysis of NUREG-0460 responses?

7 A (WITNESS FEFFERLIN) Yes, we have. I think  
8 all three of us have participated in putting together  
9 our responses and submitting them to the NRC.

10 Q Who do you mean by "our responses"?

11 A (WITNESS FEFFERLIN) The GE responses.  
12 (Counsel for Suffolk County conferring.)

13 Q The responses that you have participated in,  
14 are those generic responses or Shoreham-specific  
15 responses?

16 A (WITNESS FEFFERLIN) They are generic  
17 responses.

18 Q Mr. Hodges --

19 JUDGE BRENNER: Ms. Letsche, I guess I would  
20 like to ask the LILCO witnesses a preliminary matter, so  
21 we don't possibly go too far off in the wrong direction  
22 once we get into the substance. I guess I should ask  
23 Mr. Calone, but anybody else can answer too if they  
24 think it is appropriate.

25 Is the procedure attached to the testimony the

1 one that is going to be in place? Is that the procedure  
2 we should focus on if we are going to judge the efficacy  
3 of procedures? Because I thought I heard something --  
4 we know that there is a transition period for developing  
5 new procedures, and I don't want to waste a lot of time  
6 on one procedure and then find out a month from now that  
7 that is not the procedure.

8           WITNESS CALONE: The procedure that is  
9 attached to the testimony is the procedure that is  
10 currently in existence and the operators are training to  
11 at Shoreham. We understand there are some revisions  
12 down the road a bit. Our commitment is to incorporate  
13 new revisions after they are approved by the appropriate  
14 entities, basically the BWR owners and the NRC.

15           At the present time, all we have to deal with  
16 is the procedure that is attached, which has been  
17 reviewed by the NRC and we are now using.

18           JUDGE BRENNER: That's not good enough. Do  
19 you know what the changes are going to be? Are you  
20 prepared today to tell us what they are likely to be,  
21 even though you kind of state certainly that all of the  
22 changes will be made?

23           WITNESS CALONE: Yes, I believe that we could  
24 discuss the changes that would have to be made.

25           JUDGE BRENNER: Maybe it would be appropriate

1 to get that up front. Mr. Reveley, what do you think?

2 (Counsel for LILCO conferring.)

3 MR. REVELEY: Mr. Calone, why don't you state,  
4 with all appropriate qualifications, your understanding  
5 of the current situation as to the evolution of the  
6 procedure, where it is going? And Mr. Carter can help  
7 you as necessary.

8 WITNESS CALONE: I think Mr. Carter would have  
9 a more detailed answer for that.

10 WITNESS CARTER: At the present time, the  
11 present ATWS procedure is based upon GE guidance that  
12 came out in July of 1980. Right now our generic GE  
13 guidelines are based on Revision 1.B, which was -- well,  
14 that came out around March of 1981.

15 Right now currently, Revision 2 is -- that is  
16 submitted by the BWR owners group to the NRC and is  
17 waiting for approval for use. Revision 2 incorporates  
18 the ATWS or reactivity control guideline into the  
19 generic BWR owners group guidelines, and once we write  
20 Revision 2 the ATWS will be incorporated into the  
21 generic guidelines. And that is what we're waiting for  
22 now.

23 The Revision 1.B I wrote somewhere around  
24 March of 1981, and the ATWS procedure is based upon the  
25 GE guidelines about the same time.

1           JUDGE BRENNER: I guess I wasn't very clear.  
2 I want to know what the new procedures are likely to be,  
3 what changes there are, and is there a draft procedure  
4 out, what the status of uncertainty is. That is, does  
5 LILCO and GE know what they want and is it just a matter  
6 of Staff approval, or is GE and LILCO -- do they still  
7 have a lot of uncertainty as to what they want to do  
8 with respect to the procedure?

9           WITNESS CARTER: No, Revision 2 has been  
10 submitted to the NRC. It is incorporating the  
11 reactivity control guideline which is the ATWS guideline  
12 into the procedures. We are just waiting for approval,  
13 and then we will incorporate or write our procedures to  
14 Revision 2, when we have all of the information. I  
15 think there are still a couple more drafts that need to  
16 be generated.

17           WITNESS HODGES: May I make a comment? I am  
18 the principal reviewer for those guidelines, and because  
19 of this hearing there has been somewhat of a hiatus in  
20 the review. My schedule had called for completing that  
21 review in August. It will definitely not be completed  
22 before September now. It may be slightly later, but I'm  
23 going to attempt to try to get it completed some time in  
24 September.

25           The ATWS procedures as they are outlined in

1 the guideline are very similar to the Shoreham  
2 procedures as they now exist. There are differences  
3 which I feel should be incorporated, and I don't know,  
4 at this point or later on in the discussion, if you want  
5 to get into the reasons for those. But there are not  
6 large differences. There are a few steps to be added,  
7 basically, from the procedures that now exist.

8           Once they are approved by the NRC, there would  
9 probably be some suggested changes to this Revision 2  
10 that he discussed. So the owners group would have to go  
11 back and incorporate that. I would estimate that it  
12 would probably take approximately a year's time to get  
13 all of the changes incorporated, procedures changed at  
14 various plants, and the training implemented that would  
15 be needed before the new revised procedures would be  
16 implemented. That is just a rough estimate based upon  
17 not jerking the operators around too much by changing  
18 their training in the procedures every few months.

19           JUDGE BRENNER: Well, as we said way back in  
20 the order admitting this contention, the efficacy of  
21 interim measures are going to turn very heavily upon  
22 procedures and training. So I'm open to suggestions as  
23 to how we make sure we are on the right track and not  
24 focusing on things that might importantly change.

25           WITNESS CALONE: If I may add, Judge Brenner,

1 I want it understood that LILCO does not consider the  
2 current procedure inadequate, and that we do understand  
3 that future revisions are in the right direction to  
4 improve the situation of an ATWS mitigation. And the  
5 revision also incorporates ATWS into the other emergency  
6 procedures which deal with containment and reactivity  
7 control.

8 Right now they stand as two separate entities  
9 and Rev. 2 puts them all together. So there is a bunch  
10 of revision that has to be done with Rev. 2, but as it  
11 stands right now we did not contemplate that the current  
12 situation is, shall we say, unsafe.

13 JUDGE BRENNER: Well, I understand that, and  
14 that is fine. But I think counsel knows what the  
15 Board's concern is. I don't want to litigate something  
16 and then find out the actual procedure -- and I'm not  
17 talking about unimportant details. Somehow we need to  
18 get a feel for what the changes might be, even if they  
19 are not finally in place.

20 MR. REVELEY: I think that is right, Judge.  
21 And I think this group is prepared to discuss what the  
22 changes might be, though, as Mr. Hodges pointed out and  
23 as Mr. Calone pointed out, the present situation is not  
24 thought to be inadequate, nor is it likely that whatever  
25 revisions come to pass will be implemented immediately.

1           So that I think the appropriate approach to  
2 take is the one on which we are embarked. People should  
3 ask this panel how they expect the procedure to evolve  
4 and they should ask this panel why in its judgment the  
5 present situation is acceptable.

6           But we do not confront the possibility, so far  
7 as I understand the situation, that we are going to  
8 litigate a particular procedure here this week and  
9 perhaps later in August, and then discover in a month  
10 that that procedure has changed and that Shoreham is  
11 proceeding with a new one.

12           This is part of the discouraging ambiguity  
13 that we confront all of the time in this process, and we  
14 are doing our best to cope with it. But we live in  
15 flux.

16           JUDGE BRENNER: Well, flux per se doesn't  
17 disturb is. It is getting a handle on the possible  
18 extent of that flux, as you know.

19           MR. REVELEY: I think this panel is prepared  
20 to help develop a record that defines the bounds of the  
21 flux.

22           JUDGE BRENNER: Well, my suggestion is, isn't  
23 it inefficient to extract it question by question?  
24 Let's get a draft written procedure available. I  
25 thought -- I guess I am not very articulate today. I

1 tried to ask one of those questions earlier, that is  
2 tell us where it's going to change.

3 MR. REVELEY: Well, I thought I asked that  
4 same question, too.

5 JUDGE BRENNER: I didn't hear the answer.

6 MR. REVELEY: Neither of us got the answer. I  
7 will ask it again.

8 JUDGE BRENNER: I want to first hear from  
9 LILCO how their proposal varies the procedure attached  
10 to the testimony, and then I want to hear from Mr.  
11 Hodges whether he agrees with that and what, in addition  
12 to the proposal, he envisions happening without any  
13 commitment that you are going to require these other  
14 changes or that you might not think of others, but to  
15 the best of your ability tell us what your thinking is  
16 at this time without being locked into it as your final  
17 review.

18 BY MR. REVELEY: (Resuming)

19 Q Mr. Carter, can you indicate, with whatever  
20 additional comments other panel members might have, your  
21 understanding of the way in which the procedures are  
22 likely to evolve, to change, if and when Revision 2  
23 becomes a reality?

24 (Panel of witnesses conferring.)

25 JUDGE BRENNER: Incidentally, I'm certainly

1 not hung up on what the witness answers, and maybe I was  
2 misled by something I read in the qualifications, but I  
3 thought I saw in Mr. Rigert's qualifications that he is  
4 the one who developed the procedure. And that is why  
5 I'm a little confused with respect to what he does on  
6 the procedures as compared to what Mr. Carter does on  
7 the procedures.

8 I was going to ask that at some point. Maybe  
9 as part of this answer I can hear that, too.

10 WITNESS CARTER: Well, as far as the ATWS  
11 procedure is concerned, I wrote it.

12 JUDGE BRENNER: So if I read words in Mr.  
13 Rigert's qualifications from which I inferred that he  
14 wrote it, that was a wrong inference?

15 WITNESS CARTER: Yes, I would say so.

16 I guess, to respond to the other question,  
17 essentially now we have essentially two separate  
18 procedures: the procedures based upon the generic BWR  
19 owners group and then the ATWS procedure. Revision 2,  
20 will incorporate the ATWS procedure into the generic  
21 procedures, and when that happens that will then delete  
22 the ATWS procedure as it exists today.

23 JUDGE BRENNER: I'm sorry, I lost you. You  
24 say the ATWS procedure. That is the procedure attached  
25 to your testimony?

1           WITNESS CARTER: Yes, the procedure attached  
2 to the testimony as it exists today will be deleted when  
3 Revision 2 is implemented. We will implement the  
4 Revision 2 as soon as possible when we get the okay to  
5 implement it.

6           There are some differences between the two  
7 procedures. Essentially, Revision 2 will have a step in  
8 there which will control reactor power by lowering  
9 reactor water level, and essentially will lower reactor  
10 water level down to about the top of the reactor fuel,  
11 And until we inject the boron into the core, and then it  
12 will raise the water level to cause a shutdown of the  
13 core.

14           The present ATWS procedure as it is now does  
15 not have that step in there. There are some other  
16 differences. Essentially, the Revision 2 will also  
17 integrate ATWS into the other procedures, and therefore  
18 you will have -- since ATWS also has to be sort of  
19 integrated with the containment control procedures, that  
20 is probably more beneficial to have the procedures  
21 integrated, and therefore essentially we will  
22 incorporate Revision 2 when available.

23           JUDGE BRENNER: Mr. Hodges, do you want to  
24 give us your views also?

25           WITNESS HODGES: For the most part, I agree

1 with what Mr. Carter says. There are a couple of --

2 JUDGE BRENNER: That also means you understand  
3 what he says?

4 WITNESS HODGES: Yes, I understand what he  
5 says.

6 JUDGE BRENNER: Don't be afraid to repeat it  
7 in your own words.

8 WITNESS HODGES: Because I have followed both  
9 the generic guidelines and the Shoreham procedures, I am  
10 familiar with what is going on. A couple of points.

11 First of all, the organization of the  
12 guidelines in Revision 2 is considerably different from  
13 the organization of the guidelines in the revision upon  
14 which the Shoreham procedures are based. This does not  
15 mean that the steps that are taken are that different,  
16 but just how the logic, the procedures, take the  
17 operator through in order to get to those steps is  
18 different.

19 And so any revision to the procedures based  
20 upon this Revision 2 of the guidelines I would expect to  
21 incorporate this organizational difference.

22 Secondly, I think Mr. Carter said that the  
23 current Shoreham procedures do not include lowering the  
24 water levels to the top of the reactor fuel. The  
25 revision that I have, which I think is Revision 0, does

1 include that step. What is not included is the raising  
2 the water level following that to back to the normal  
3 level.

4           The reason for lowering the water level is,  
5 following tripping of the recirculation pumps you are  
6 still generating on the order of 30 percent power.  
7 Because this is a large heat load on the suppression  
8 pool if the heat is going to the pool rather than to the  
9 condenser, the desire is to get the power level down  
10 even further.

11           You can do this by reducing the natural  
12 circulation flow rate, which has a very close link with  
13 the power because of the void. And once you've tripped  
14 the pumps, the only thing you can do to further reduce  
15 that is to lower the water level and thus reduce the  
16 driving head that is causing the natural circulation  
17 flow rate.

18           For that reason, the procedures do call for a  
19 lowering of the water level as indicated on the  
20 instruments to the top of the reactor fuel. This does  
21 not mean that the actual water level in the core would  
22 be at the top of the reactor fuel. It would mean that  
23 basically the solid level in the down region would be at  
24 a level equivalent to the top of the reactor fuel and  
25 you would have some two-phase mixture higher than that

1 within the core.

2 This greatly reduces the driving head for  
3 natural circulation. It would reduce the power level in  
4 the range of ten percent, and essentially buys time to  
5 get sufficient boron injected with the standby liquid  
6 control system.

7 JUDGE BRENNER: Okay. In terms of whether the  
8 step to lower the water level is included now, Mr.  
9 Hodges, I think what Mr. Carter meant is that that step  
10 is not presently included in the procedure attached to  
11 the testimony. Is that correct in your view, Mr.  
12 Hodges?

13 WITNESS HODGES: No, it is in the procedure  
14 attached to the testimony. What is not included is  
15 increasing the water level later in the event.

16 JUDGE BRENNER: Mr. Carter?

17 WITNESS CARTER: I probably misstated it a  
18 little bit. The entire power level control guideline is  
19 not in there. We do trip the feedwater pumps, which  
20 would have the effect of lowering the water level. But  
21 the entire step is not in there.

22 JUDGE BRENNER: With respect to the entire  
23 step, what does the operator have to do to lower the  
24 water level besides tripping the pumps?

25 WITNESS CARTER: Well, the guidelines -- well,

1 just from trying to remember them now, they are  
2 essentially, you secure feedwater flow into the vessel  
3 and you lower water level until you hit some  
4 predetermined power level. Then once all of the boron  
5 has been injected, then you raise the level back up.  
6 That specific step is not in the procedures as it is  
7 written now.

8 WITNESS HODGES: I think the biggest  
9 difference is that in the guideline Revision 2 you stop  
10 all injection to the vessel except with the standby  
11 liquid control system and the control rod drive system.

12 In the Shoreham procedures that now exist, you  
13 still have HPCI and RCIC operating, so that the level  
14 would be lowered more slowly and it might not get as low  
15 with the HPCI and the RCIC operating. So it might not  
16 get to the top of the reactor fuel. In fact, it  
17 probably would not get all of the way down to the top of  
18 the reactor fuel unless he throttled those systems to  
19 get it down to that point.

20 Now, if I recall -- and we could check the  
21 step -- there is a step that says, lower to the top of  
22 the reactor fuel, in the procedures. But it would  
23 require some throttling of those systems to do that.

24 JUDGE BRENNER: This is still in the limited  
25 preliminary context, and we're going to have the parties

1 have at that first. But Mr. Hodges, I'm trying to get a  
2 handle on what the Staff as part of your review might  
3 do. I don't want to pin you down into a review that you  
4 have not completed yet, and you've given us the time  
5 frame.

6 But is that a direction the Staff agrees  
7 with? That is, throttling back of these systems so as  
8 to increase the rate of lowering the level?

9 WITNESS HODGES: I think that, given the  
10 system design as it exists today, which is the 43 gpm  
11 manually-actuated standby liquid control system, that  
12 that is the best that you can do. You have got to lower  
13 the water level rapidly, and the more rapidly in this  
14 case the better because you are trying to get the power  
15 down and that is the means of doing it.

16 There may be problems associated with doing  
17 that, and just exactly what those problems are are not  
18 subject to analysis. The computer codes that exist are  
19 not capable of doing the calculations, and there are  
20 only limited experiments available to describe what goes  
21 on. And so some of what might occur is speculation.

22 But I do have concerns personally about  
23 oscillations and such that might occur as the water  
24 level is lowered and how that might affect the core, I  
25 think. But if you're looking at the tradeoffs as

1 opposed to what you buy with these procedures, as  
2 opposed to what happens if you don't do that, that these  
3 are the best procedures that you can get with the system  
4 as it exists today.

5 MR. BLACK: Judge Brenner, if I may point out  
6 something that may be of help to the Board just in  
7 further explanation. If you will look at attachment 1,  
8 which is the current procedures, attachment 1 to the  
9 LILCO testimony, page 3 of that procedure, there is a  
10 procedure number 3.6.1.2 at the top of the page there  
11 that says, "Terminate all injection into the RPV with  
12 the exception of CRD and RCIC or HPCI, to maintain  
13 reactor vessel water level above the top of the active  
14 fuel."

15 Now, that is currently in there. I think what  
16 Mr. Hodges just said is that the thrust of what the  
17 Staff wants to do is to get the water level down as  
18 quickly as possible, to get your water level down, to  
19 get natural circulation slowed down. And to do so you  
20 would have to throttle the RCIC or the HPCI.

21 And in the provision as now in 3.6.1.2 it says  
22 you do not throttle RCIC or HPCI, and that provision  
23 will be added in Revision 2, I guess.

24 MS. LETSCHE: Judge Brenner, I have not said  
25 anything during all of this because I have assumed the

1 Board was trying to find out where we stood with respect  
2 to this issue. But I really have to say something,  
3 first of all with regard to the counsel testifying over  
4 here. But more importantly --

5 JUDGE BRENNER: I don't think that was in the  
6 realm of testifying. That is, he drew our attention to  
7 part of the procedure that we can then begin to relate  
8 the witness' testimony, and that is the context we will  
9 accept.

10 But go on to where you really want to go.

11 MS. LETSCHE: More importantly, I just have to  
12 object to what is going on here. I mean, we have again  
13 found out that there is some other procedure that is in  
14 existence that this panel is familiar with. Mr. Reveley  
15 has said this panel is prepared to talk about it. The  
16 important point is that the County isn't.

17 We haven't heard anything about it and have  
18 not had any notice of the existence of these documents.  
19 It sounds like there are going to be, or at least there  
20 are some considerations being made of, some substantial  
21 changes, not only in the procedure that has been  
22 attached to the LILCO prefiled testimony, but also  
23 apparently in other procedures that thus far have not  
24 been relied upon by LILCO in mitigating an ATWS event  
25 during this interim period.

1           And I just have to reiterate the objection we  
2 have made on other occasions when it has come up that  
3 I'm not sure what we are doing here, when there is this  
4 new information coming out that the County has never  
5 been notified of. And we certainly are not -- we did  
6 not know that we were going to be litigating that this  
7 morning, this additional information.

8           MR. REVELEY: Judge, if I may, I think that it  
9 is not the case that the County is unaware that these  
10 guidelines, these procedures, are in the process of  
11 revision. Mr. Earley indicates to me that that point  
12 was made during the 7.B testimony. Mr. Earley thinks  
13 that in a meeting with the Staff and with LILCO people,  
14 with County people present, it was mentioned. That is  
15 A.

16           B, again, procedures stay in flux, guidelines  
17 stay in flux, regulations stay in flux. That is a fact  
18 of life. I think this panel is prepared, if people wish  
19 to know in what directions these guidelines and  
20 procedures are going, to discuss that direction. They  
21 are also prepared to discuss the adequacy of the  
22 existing regime.

23           I don't think Ms. Letsche's objection,  
24 complaint or whatever it was, is well taken.

25           JUDGE BRENNER: In your comments, Mr. Reveley,

1 did you mean to imply that the specific changes in this  
2 procedure were discussed in meetings? We know about the  
3 general flux, but we're not talking about that.

4 MR. REVELEY: Let Mr. Earley speak to that.

5 JUDGE BRENNER: Well, let me make a point to  
6 you, and then we're going to take a break. We asked you  
7 last week, the Board did, in the particular context of  
8 this contention -- we made the observation, which is in  
9 accordance with the observation you just must, that  
10 these procedures are in flux, and we want to make sure  
11 and hear that the procedure attached is the one that is  
12 going to be used. If there are any changes being  
13 considered, we want to know about them.

14 And we got resounding silence back from LILCO  
15 since that comment. And because -- of course we are  
16 aware of the general flux situation. And we reiterated  
17 the point, and it shouldn't have been necessary for us  
18 to reiterate it. The parties should be alert to  
19 apprising us of that kind of thing, and at a minimum we  
20 should have had an identification of the contemplated  
21 possible changes, the material ones, not every little  
22 itty-bitty thing and whether or not the procedure in  
23 terms of organization is going to be incorporated within  
24 a larger procedure in terms of the symptomatic approach,  
25 of which we have also heard much, as distinguished from

1 a separate procedure.

2 I'm not interested in that, and I guess the  
3 witnesses misunderstood my interest before. But as to  
4 the material changes, we want a very good chart of what  
5 the operator is going to have to do from the moment he  
6 starts entering an ATWS event. And this change being  
7 contemplated sounds important to that, and that should  
8 have been identified before this morning, particularly  
9 given the reminder we gave last week.

10 But we are going to take a break.

11 MR. REVELEY: I think your point is well  
12 taken. On the latter score, as to whether this  
13 particular change, if it is approved by the Staff and if  
14 it is implemented, will be in effect when this plant  
15 goes on line, if this plant is approved by this Board,  
16 that is another question, and I don't believe it will  
17 be, As I understand the situation accordingly.

18 JUDGE BRENNER: I understand that possibility,  
19 and it is certainly pertinent. But the point is to  
20 identify what might happen, and then we can more  
21 intelligently discuss when it might happen, whether the  
22 timing is important. We could assess the present  
23 procedure in light of what might happen.

24 It still might be an interim period in the  
25 sense of interim prior to the rulemaking, even if there

1 are changes over the interim period. So certainly all  
2 of that would have been pertinent to understand and get  
3 at. But it is not in derogation of the fact that we  
4 need the basic information in order to start focusing on  
5 the more sophisticated aspects of it than you just  
6 indicated.

7           It is very hard for us, when we hear this for  
8 the first time, even if you told the County everything  
9 in a meeting last week, which is not the case.

10           MR. LANPHER: Judge Prenner, let me just  
11 correct one thing. I certainly did not mean to say that  
12 the County did not know. We obviously read in the  
13 testimony and know that the emergency procedure  
14 guidelines are under review.

15           What we did not know is that there has been a  
16 revision of particular relevance to this contention that  
17 has been submitted to the Staff, that is out there, that  
18 everybody is looking at. That is what I meant in terms  
19 of new material.

20           WITNESS HODGES: May I make a comment or is  
21 this just for the lawyers?

22           (Laughter.)

23           JUDGE BRENNER: I was going to say, you may be  
24 a ray of sunshine in all of this. Go ahead.

25           (Laughter.)

1           WITNESS HODGES: In my opinion, the most  
2 significant change in the Revision 2 as far as the ATWS  
3 procedures is already incorporated in the LILCO  
4 procedures and is actually attached to the prefiled  
5 testimony by these witnesses. There is an unusual  
6 situation that LILCO has here in that Mr. Carter is a  
7 member of the subgroup that is working on these generic  
8 guidelines, and what he has incorporated into the  
9 Shoreham-specific procedures is in advance of the  
10 earlier version of the guidelines.

11           And so, although it does not go quite to what  
12 the guidelines now recommend, it goes most of the way  
13 and has what I think is one of the more essential points  
14 in the revised guidelines. So in that sense I do not  
15 consider what we were discussing a major increment over  
16 what they had in their prefiled testimony.

17           JUDGE BRENNER: All right, that is helpful.  
18 Let me understand one other thing also, Mr. Hodges.  
19 Although your review is not completed of the proposals  
20 that go beyond the procedure attached to the LILCO  
21 testimony, I understand you are prepared to give your  
22 opinion as to the state of affairs if we operate on the  
23 assumption that the procedure in place at the time of  
24 possible operation of Shoreham would be the procedure as  
25 presently attached?

1           WITNESS HODGES: Yes, I can talk about that,  
2 or I can talk about what the generic guidelines will do,  
3 either way or both.

4           JUDGE BRENNER: But your review is not still  
5 open on the procedures that presently exist, is it?

6           WITNESS HODGES: The procedures as they  
7 currently exist have been approved for implementation.

8           JUDGE BRENNER: I take it, depending upon what  
9 you find as you review the proposals, you might find  
10 something that you would want to see implemented before  
11 startup. Is that possible?

12          WITNESS HODGES: The problem I have with  
13 saying, yes, we would do it before the startup, is  
14 something I alluded to a little earlier, in that the  
15 operators have already been trained on these other  
16 procedures, on the set of procedures, and to, say, every  
17 six months or fairly frequently change the procedures  
18 that they are trying to operate with and hence have to  
19 go back and retrain the operators may be more  
20 detrimental than waiting a little bit longer and  
21 incorporating them with a bigger change.

22          So I can't give you a definitive answer on  
23 that.

24          JUDGE BRENNER: I infer -- and these are my  
25 words, not yours -- that you would have to find that

1 something really significant was overlooked in the  
2 existing procedure before you would reach the type of  
3 determination that it was important to make the changes  
4 before any commercial operation?

5 WITNESS HODGES: Yes.

6 JUDGE BRENNER: Okay, let's take a break,  
7 partly because it's about that time or past that time,  
8 anyway. And we will think about this and be back at  
9 11:00 o'clock.

10 (Whereupon, at 10:50 a.m., the hearing was  
11 recessed, to reconvene at 11:00 a.m. the same day.)

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1 JUDGE BRENNER: Let's go back on the record.

2 I think that we agreed, Mr. Reveley, that the  
3 things are not absolutely fixed, and we recognize that,  
4 and everybody, including the Board and the parties and  
5 the witnesses, whose task we shouldn't overlook either,  
6 try hard to adapt and do the best we all can consistent  
7 with the time frames in the real world and the time  
8 frames of the unreal world that is this litigation.

9 Consistent with that 20-20 hindsight, this was  
10 not the best way for LILCO to handle this particular  
11 matter. We should have heard some more about the  
12 contemplated changes, recognizing that with all of the  
13 necessary caveats, they are just proposed and not  
14 approved. They are contemplated. The time frame in  
15 which they might be implemented is open and subject to  
16 inquiry.

17 With all of that, it would have been helpful.  
18 The problem is, we heard some things for the first time  
19 today. The County heard some particulars for the first  
20 time today. We all understand that in general things  
21 are in flux with respect to procedures, and in addition  
22 it is appropriate to point out, and I hesitate to  
23 reiterate that procedures are particularly important in  
24 this context as we focused the ATWS contention, given  
25 the Commission's rulemaking, and as you know, on the

1 basis of our rulings on the motion to strike, on LILCO's  
2 motion to strike the County's testimony, and the  
3 reasoning we endeavored to set forth at the time we  
4 admitted the contention, that the procedure and training  
5 are the primary focus.

6           So, we need a good awareness of what changes  
7 might take place, because if we are write things are  
8 okay or not okay on the basis of this procedure, and  
9 limit our writing focused that way, there could be big  
10 problems for either party, either LILCO or the County or  
11 even the staff, in terms of what might happen in the  
12 future after our decision. That is just another  
13 practical reason as to why we need what is going on when  
14 parties decide whether the material bases for a finding  
15 by the Board is now being changed on a contested issue  
16 after the Board's decision, and also as we said, the  
17 interim period that we are considering is not the period  
18 between now and licensing, possible licensing  
19 exclusively, but the period between now and possible  
20 implementation of the final rule.

21           Having said all of that, we are going to do  
22 our best to go ahead with the information as is, but we  
23 are sympathetic in this particular instance, Ms.  
24 Letsche, to the aspect of your ability to follow up with  
25 thoughtful cross examination on matters you have heard

1 for the first time when those matters are not just  
2 additional detail in response to things we contemplated,  
3 but some new things. So, we will proceed as best we  
4 can. We ask you to do your best to adjust and to follow  
5 up now. However, if you after the break want to follow  
6 up with respect to the new matter, and make a  
7 demonstration as to what you want to ask and what it  
8 relates to so we can make our own assessment as to  
9 whether it relates to the possible changes in the  
10 procedures that we have heard about, as distinguished  
11 from things you should have been able to ask about, we  
12 will give you that opportunity.

13           In terms of rebuttal, you always have that  
14 right, even if the right to request rebuttal once you  
15 tie that to the new matter also, and we just ask that it  
16 be done timely. I don't frankly think we are going to  
17 finish the ATWS contention this week. We are hopeful,  
18 very much hopeful of finishing the LILCO and staff panel  
19 this week, but I don't expect that we will finish the  
20 County's testimony if we even start it. So, perhaps we  
21 can handle requests, these possible requests by the  
22 County prior to the time that we might get back to this  
23 contention through the County's testimony, so we could  
24 make whatever rulings that are necessary in advance, and  
25 have the followup all in one place as we continue the

1 contention at some point after the break, and the  
2 parties should be talking with each other about these  
3 possibilities also, but for now we will proceed.

4 MS. LETSCHE: I would like to request that  
5 LILCO or the staff or someone provide the County with a  
6 copy of whatever the revisions are that the gentlemen  
7 have been referring to, and the other relevant  
8 procedures that might be affected or changed as a result  
9 of these revisions so that we have the pertinent  
10 material to look at over the break.

11 JUDGE BRENNER: In fact, if possible, perhaps  
12 by the end of the day that could be done.

13 MR. REVELEY: Yes, I think it can be done.  
14 What we are talking about are guidelines, not draft  
15 procedures, guidelines. There are no draft procedures  
16 proposed. We will certainly make the guidelines  
17 available, and indeed at my request we are going to  
18 investigate how the guidelines have not been previously  
19 in the County's hands, given our understanding of the  
20 history, but we will certainly make them available after  
21 lunch.

22 JUDGE BRENNER: I guess I thought the  
23 guidelines being reviewed by Mr. Hodges were guidelines  
24 for the possible future drafting of procedures, and as  
25 such, I envisioned that they would be pretty specific as

1 to the type of things that would be done, even though  
2 they might not be written in procedure format as you  
3 would present them.

4 MR. REVELEY: I think that is correct, but the  
5 procedures implementing them don't exist in draft, nor  
6 would I imagine they will exist in draft until the  
7 guidelines are approved in some form, if they are  
8 approved.

9 JUDGE BRENNER: Okay, but we are not just  
10 talking about vague goal-oriented guidelines. We will  
11 know them when we see them, I guess.

12 MR. REVELEY: We will get it to you right  
13 after lunch.

14 JUDGE BRENNER: Okay.

15 MS. LETSCHE: Had the Board finished asking  
16 questions? I was getting ready to move to Mr. Hodges'  
17 qualifications.

18 JUDGE BRENNER: Yes.

19 BY MS. LETSCHE: (Resuming)

20 Q Mr. Hodges, have you participated in the  
21 preparation of NUREG-0640?

22 A (WITNESS HODGES) No.

23 Q Have you had any participation in the ATWS  
24 rulemaking?

25 A (WITNESS HODGES) I had no participation in

1 the writing of the proposed rules that went out for  
2 comment. As far as reviewing the comments that come in,  
3 and the drafting of a Commission paper to propose a new  
4 variation of the rule, if you may characterize it as  
5 such, based upon the proposed rules and the comments,  
6 there is -- a task force has been established to do  
7 that, and one of the members of the task force is under  
8 my supervision, and as part of my job and supervising in  
9 this work, I am obviously discussing it with this  
10 individual. I am also reading the comments that have  
11 been received on the proposed rule.

12 Q Does your responsibility include any staff  
13 review of generic interim responses to deal with the  
14 ATWS event?

15 A (WITNESS HODGES) Not specifically.

16 JUDGE MORRIS: I am sorry, Ms. Letsche. I  
17 don't know what generic interim responses are.

18 BY MS. LETSCHE: (Resuming)

19 Q What I was asking, Judge Morris, was whether  
20 or not Mr. Hodges reviews generic submissions or utility  
21 submissions in response to the staff's requirement of  
22 interim ATWS measures. I mean, interim in the period  
23 prior to the conclusion of the rulemaking. Is that what  
24 you understood my question to be?

25 A (WITNESS HODGES) I think I understood your

1 question then. Maybe I was trying to state your  
2 question myself as you were going through it, and I may  
3 have misstated it to myself. I did not review, for  
4 example, the Shoreham specific submittals that came in  
5 for the interim requirements. I have looked at the  
6 "generic" requirements, and the guidelines, emergency  
7 procedure guidelines which are offered as part of that  
8 requirement. I say I have the primary responsibility  
9 for reviewing the technical basis.

10 I should emphasize that there are two parts of  
11 that review. One is the human factors review, and one  
12 is looking at the technical basis, and another  
13 individual is doing the human factors portion, but we do  
14 work very closely, and I am only looking at the  
15 technical basis for those guidelines.

16 Q Have you reviewed an interim or a submittal  
17 with respect to interim ATWS measures from any other  
18 plants?

19 A (WITNESS HODGES) Yes.

20 Q Which ones?

21 A (WITNESS HODGES) LaSalle, Fermi. Those for  
22 sure. There may be one or two others.

23 Q How about Limerick?

24 A (WITNESS HODGES) No.

25 Q You said that you haven't reviewed the

1 Shoreham specific submittal about the interim  
2 requirements. Is the staff's review of that submittal,  
3 however, complete?

4 A (WITNESS HODGES) When I say I haven't  
5 reviewed, I did not review in the sense of writing the  
6 evaluation. I have reviewed myself to my personal  
7 satisfaction the Shoreham submittal. The evaluation,  
8 for example, of the procedures that were written was  
9 done in the Procedures and Test Review Branch.

10 Q Have you reviewed the training that Shoreham  
11 proposes to provide to its operators with respect to the  
12 mitigation of an ATWS event?

13 A (WITNESS HODGES) No, I have not.

14 Q Have you reviewed any submittal from Shoreham  
15 pertaining to the recirc pump trip system?

16 A (WITNESS HODGES) What I saw was not very  
17 descriptive. I believe we have got a question out  
18 asking for more detail. Basically, what I have seen  
19 merely said that they were installing such.

20 Q Is that something that is within the scope of  
21 your responsibility?

22 A (WITNESS HODGES) It is a joint responsibility  
23 between my branch and the Instrument Control Systems  
24 Branch.

25 Q And is that review still open of the RPT

1 system?

2 A (WITNESS HODGES) We are trying to get the  
3 details. I haven't seen the details of the system.

4 Q So it is still open?

5 A (WITNESS HODGES) Well, in the sense that they  
6 haven't described fully what they are using, yes.

7 Q You said you haven't reviewed the training.  
8 Do you know if the staff's review of the proposed  
9 training is complete?

10 A (WITNESS HODGES) The staff reviews, not the  
11 details of the training, but reviews basically, the  
12 manpower commitment to training, how much effort goes  
13 into the training.

14 JUDGE BRENNER: Mr. Hodges, do you intend that  
15 just as a generalization, I take it?

16 WITNESS HODGES: No, I am not -- I had fairly  
17 substantial discussions with the people who are  
18 responsible for looking at the training, and they do  
19 review what I might call as a quantitative effort that  
20 goes into the training from the standpoint of manpower  
21 and dollars, but not the details of the training  
22 program. What they do do is, they rely upon the testing  
23 of the operator on procedures to verify that the  
24 training has been done satisfactorily.

25 JUDGE MORRIS: Is the general syllabus looked

1 at, and the subject matter, some outline of what is  
2 included in training?

3 WITNESS HODGES: I am not really sure how much  
4 they go into the details there. I know they don't go  
5 into any details of the training. They may look at the  
6 syllabus. I am just not certain.

7 JUDGE BRENNER: I suggest to you, and you  
8 don't have to answer unless you have covered this point  
9 with the training people, that we have in at least one  
10 instance and perhaps more that when there are contested  
11 issues in a proceeding in which the particular training  
12 for a particular thing was focused on, that the staff  
13 may vary its general review and focus on the details  
14 contained in -- down to the lesson plan, and so on.

15 WITNESS HODGES: That was discussed with the  
16 people who had that responsibility, and they are in the  
17 process of trying to upgrade what they do. They have  
18 recently hired a number of people with background in  
19 training, and it is their intent to get into additional  
20 detail, but at this point they just have not done it.

21 JUDGE BRENNER: I think they have done it at  
22 least once. I think what you described is their general  
23 approach, and it shouldn't be taken as necessarily  
24 deemed sufficient by the staff, even depending upon  
25 where the focus on a particular issue goes.

1           WITNESS HODGES: This is the approach that has  
2 been taken on Shoreham, whether or not it is just a  
3 general approach, and also the approach that has been  
4 taken on the ATWS, the training for the ATWS procedures  
5 in general.

6           JUDGE BRENNER: Okay. We will see if that  
7 provides us with enough basis to support the staff's  
8 conclusion.

9           BY MS. LETSCHE: (Resuming)

10          Q     Mr. Hodges, have you reviewed the alternate  
11 rod insertion system that LILCO indicates in their  
12 testimony they intend to install at Shoreham?

13          A     (WITNESS HODGES) No, I have not.

14          Q     Have you reviewed any information from LILCO  
15 concerning the modifications to the SDV system that they  
16 have mentioned in their testimony?

17          A     (WITNESS HODGES) I read over what they  
18 described as having been done, and I am familiar with  
19 the type of changes that they are referring to.

20          Q     You say you have read it over. You mean the  
21 testimony?

22          A     (WITNESS HODGES) Well, I think it was -- I  
23 believe it was also described in FSAR or one of the  
24 submittals to questions. I have read a description, I  
25 believe, outside of the testimony. I am just not -- I

1 just don't recall where I have seen it.

2 (Whereupon, counsel for Suffolk County  
3 conferred.)

4 Q Mr. Hodges, you indicated that you have not  
5 reviewed the ARI system that LILCO proposes to put in.  
6 Has anyone on the staff reviewed that?

7 A (WITNESS HODGES) That would be the review  
8 responsibility of the Instrument and Control Systems  
9 Branch. I presume they have looked at it, but I have  
10 not verified that.

11 Q You said before that you didn't write the  
12 evaluation, and I assume you are referring to the SER  
13 evaluation of the ATWS mitigation measures planned by  
14 LILCO, but that you have reviewed some information, and  
15 I can't remember your exact words, but sort of  
16 familiarized yourself with what they are doing. On what  
17 do you base your conclusion in the testimony, in your  
18 prefiled testimony that the interim measures that are  
19 being proposed at Shoreham satisfy the staff?

20 A (WITNESS HODGES) Well, there are two things.  
21 First off, there is a letter from Frank Schroeder to  
22 Darryl Eisenhut which outlines the criteria against  
23 which the ATWS procedures should be reviewed.  
24 Basically, this letter calls for such things as manually  
25 inserting the rods, opening vents and drains on the

1 scram discharge volume, resetting the scrams, a number  
2 of items of this nature. The ATWS procedures were  
3 reviewed against the criteria in that particular letter,  
4 and satisfied all of those criteria.

5           On the basis of that comparison, the ATWS  
6 procedures for Shoreham were deemed acceptable.

7           Q     But you haven't reviewed the training, and you  
8 haven't reviewed the RPT, and you don't know whether the  
9 ARI has been reviewed, and I am not sure of the extent  
10 of your review on the SDV. Is your review limited to  
11 what you just explained about the procedures?

12          A     (WITNESS HODGES) Now, when you say my review,  
13 that is a little different. What I described was the  
14 review that was behind the SER for the ATWS procedures.  
15 My review has gone considerably beyond that, because I  
16 am reviewing them as part of the emergency procedure  
17 guidelines, and looking into the details of the  
18 technical adequacy, not just at whether or not it  
19 satisfies the criteria in that letter.

20          Q     The SER sections that your counsel had  
21 admitted into evidence yesterday, those are the ones  
22 that deal with LILCO's mitigation of ATWS event? Is  
23 that right?

24          A     (WITNESS HODGES) Well, there is one, I think,  
25 at 15.3 that addresses the ATWS in particular. The

1 other section talks in general about the review of  
2 procedures, and that review encompassed the ATWS  
3 procedures, although I don't think it says ATWS  
4 procedures explicitly in that particular writeup. Or if  
5 it does, it is only briefly. As an example, that  
6 description talks about the testing of procedures on the  
7 Limerick simulator, and although the ATWS procedures  
8 were one of the procedures that were gone into to some  
9 extent on that simulator, they were not culled out in  
10 the list that is in that SER.

11 (Pause.)

12 JUDGE MORRIS: Mr. Hodges, taking a quick look  
13 at the Schroeder memorandum, it seems to be addressed to  
14 the emergency operating procedures for ATWS. Is there a  
15 similar document that addresses training?

16 WITNESS HODGES: I am not aware of such.

17 JUDGE MORRIS: Is there any guidance in  
18 writing to whatever part of the staff does this review  
19 on training as to what they should do?

20 WITNESS HODGES: I don't know of any.

21 JUDGE MORRIS: It is not included in the  
22 standard review plan anywhere?

23 WITNESS HODGES: I do not normally review  
24 against those sections of the standard review plan, so  
25 you are beyond what I have really looked at now.

1 JUDGE MORRIS: Thank you.

2 BY MS. LETSCHE: (Resuming)

3 Q Mr. Hodges, I assume you would agree with me  
4 that even based upon the analysis in 0460, that ATWS  
5 events, some ATWS events can have very severe  
6 consequences. Is that right?

7 A (WITNESS HODGES) Yes.

8 Q You state on Page 2 of your prefiled testimony  
9 that it can be argued that an ATWS mitigation system  
10 need not be single failure proof. You use an  
11 interesting phrase there, "that it can be argued that."  
12 Is that your opinion?

13 A (WITNESS HODGES) I don't think I have a  
14 strong opinion yet at this point that it would have to  
15 be single failure proof or did not have to be single  
16 failure proof. I would prefer that it be single failure  
17 proof.

18 Q Would your preference for a single failure  
19 proof system get stronger if we were talking about an  
20 event where you are isolated from the condenser?

21 A (WITNESS HODGES) When I make my statement, I  
22 am referring to just the general design of the system,  
23 and taking into consideration all possible ATWS type  
24 events.

25 Q And would you agree with me that reliance upon

1 operator actions or procedures to mitigate an ATWS event  
2 rather than on hardware would give rise to more  
3 potential for failures in the form of human error?

4 A (WITNESS HODGES) That is a pretty broad and  
5 general question, but I think the answer is generally  
6 yes.

7 MS. LETSCHE: Judge Brenner, if I could have  
8 just a moment, please.

9 (Whereupon, counsel for Suffolk County  
10 conferred.)

11 BY MS. LETSCHE: (Resuming)

12 Q Mr. Hodges, directing your attention to Page 3  
13 of your prefiled testimony, you state in the first  
14 paragraph there that your conclusion or the staff's  
15 conclusion that Shoreham can operate prior to the final  
16 resolution of the ATWS issue is based on engineering  
17 judgment and three factors. Your first factor is the  
18 estimated revival rate of anticipated transients with  
19 potentially severe consequences in the event of scram  
20 failure. What do you mean by that?

21 A (WITNESS HODGES) I mean first off that I  
22 think that the likelihood of an ATWS of any type to  
23 occur is fairly low. I think in NUREG-0460 it was  
24 estimated at about  $2 \times 10^{-4}$  probability per reactor  
25 year. I don't have any basis to challenge that number,

1 so I am accepting that number as reasonably correct.

2           But in addition, there are a number of things  
3 that can happen that will tend to mitigate the ATWS.  
4 One is that you don't always operate at full power, so  
5 that if it occurred, you wouldn't always be at full  
6 power. Many transients, you have the condenser  
7 available as a heat sink, and a number of ATWS events,  
8 even though the rods did not go in on a scram signal,  
9 the operator can be very effective in inserting either  
10 all the rods or sufficient rods to terminate the event.

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1 Q With respect to the last aspect of your  
2 answer, that assumes that there aren't failures in other  
3 equipment that the operator would be relying on, is that  
4 right?

5 A (WITNESS HODGES) What do you mean?

6 Q Well, you said that the operator would have a  
7 chance to take certain actions to mitigate the event,  
8 but doesn't that assume that you don't have a failure  
9 of, say, the RPT or the safety relief valves or other  
10 hardware that the operator is going to have to rely on?

11 A (WITNESS HODGES) You still stated a very  
12 broad question and I'm not sure how to answer your  
13 question, because you have to assume some failures to  
14 get to what we're talking about in the first place, and  
15 then we're still talking about the operator taking  
16 actions with failures. So if you could be more specific  
17 it would help.

18 (Counsel for Suffolk County conferring.)

19 Q Let's see if we can do it this way, Mr.  
20 Hodges. In your last answer with respect to operator  
21 actions, what equipment are you assuming that the  
22 operator is going to be using?

23 A (WITNESS HODGES) I'm assuming the operator is  
24 going to be trying multiple things. One is that he's  
25 going to try to reset his scram signal to see if he can

1 -- if he tries to trip again, if it can be effective.  
2 He's going to start trying to manually insert rods one  
3 at a time with his control system. He is going to open  
4 vents and drains on the scram discharge volume. He is  
5 going to bleed air off the headers to get the scram  
6 valve open.

7 He is going to go to the motor generator and  
8 take the power off there in order to try to get the rods  
9 to go in. There are a number of steps of this type that  
10 the operator will take in order to insert rods, either  
11 through a scram signal or by means of the control  
12 system. And not all the rods have to be inserted in  
13 order to shut the reactor down.

14 JUDGE BRENNER: Mr. Hodges, I want to get  
15 through my non-technical mind the alternate rod  
16 insertion, ARI, context with what you just said. That  
17 is something other than the manual insertion that you  
18 are talking about, correct?

19 WITNESS HODGES: Yes. I think at this point  
20 we are talking about both the regular scram system  
21 having failed and the ARI having failed, which would  
22 take some combination of failures to get there. So I am  
23 assuming at this point that both of those are failing  
24 and now we're talking about what the operator does.

25 Obviously, if the ARI works that is going to

1 come in in 15 or 20 seconds after the normal trip signal  
2 and insert the rods, and there is no need to do all of  
3 these other steps.

4 JUDGE BRENNER: I'm sure we will get to this  
5 more with LILCO's witnesses, but Mr. Hodges, do you know  
6 how ARI is initiated? Is that an automatic signal or  
7 does the operator have to demand it?

8 WITNESS HODGES: I don't think he has to  
9 demand it. It is a signal that would follow with the  
10 delay of the regular trip signal.

11 JUDGE BRENNER: I assume that -- well, I don't  
12 know. Is there sharing of essential equipment of the  
13 normal scram system and the ARI, such that a common mode  
14 failure could well occur?

15 WITNESS HODGES: You are sharing the same  
16 control rod drives and the same rods, but I think  
17 electrically they are separate.

18 JUDGE BRENNER: Okay. I'm sure we will, as I  
19 say, get more on this later. I just wanted to get it  
20 into context since you mentioned the manual insertion  
21 step taken by the operator.

22 (Counsel for Suffolk County conferring.)

23 BY MS. LETSCHE: (Resuming)

24 Q Mr. Hodges, do you know where the sensors are  
25 located for the RPT system at Shoreham?

1           A       (WITNESS HODGES) You have a high pressure  
2 signal which provides one of the trips, and I believe  
3 that would come off of the same taps that would be the  
4 taps for the reference leg on the level  
5 instrumentation. The other signal which would give you  
6 an RPT is low water level, and I believe that is at  
7 level two, so it is a water level signal.

8           Q       But you haven't reviewed any Shoreham diagrams  
9 or submittals to confirm that your assumptions are right  
10 with respect to Shoreham, have you?

11          A       (WITNESS HODGES) I have not reviewed the  
12 specific Shoreham design for that. I have information  
13 from Shoreham that they use those signals and that is  
14 normally what is used.

15          Q       Do you know what pressure will trip the pump?

16          A       (WITNESS HODGES) I believe it is 1120.  
17                   That is psig.

18          Q       In the LILCO testimony they state that -- and  
19 let me direct your attention to page 11 of LILCO's  
20 testimony. In the last paragraph of the answer before  
21 question number 15 on that page, LILCO states that --  
22 the LILCO witnesses state that: "RPT assures that  
23 reactor pressure is maintained well below acceptable  
24 limits."

25                   Do you agree with that statement, Mr. Hodges?

1           A       (WITNESS HODGES) Well, for the analyses that  
2 I have seen, which are generic analyses with RPT, the  
3 pressure remains less than 1300 pounds even for the most  
4 severe pressure transients.

5           JUDGE BRENNER: Mr. Hodges, just so I have  
6 plucked your statement right now into context, that is  
7 supportive of your view that the concern isn't breach of  
8 the pressure vessel, rather it is loss of the cooling,  
9 the heat sink inventory over time?

10          WITNESS HODGES: Yes.

11          (Counsel for Suffolk County conferring.)

12          BY MS. LETSCHE: (Resuming)

13          Q       Mr. Hodges, in your opinion does the reduction  
14 in power that may be achieved by the RPT assure an  
15 acceptable water level?

16          A       (WITNESS HODGES) What do you mean by an  
17 acceptable water level?

18          Q       That the water level is well below acceptable  
19 limits, just to use -- above the top of the active  
20 fuel.

21          A       (WITNESS HODGES) Initially tripping the pumps  
22 will reduce the power to the 30 to 40 percent range, and  
23 as the water level decreases from the normal control  
24 range downward the power level would decrease. In the  
25 current Shoreham procedures for ATWS, they are told to

1 have either HPCI or RCIC going.

2           They may have -- with those particular  
3 situations you could maintain, let's say -- I think HPCI  
4 will handle on the order of 12 to 15 percent power. I  
5 don't have the actual number, but that is a good range.  
6 I have calculated the number for another plant, but not  
7 specifically for Shoreham.

8           And so that if you say that you had the HPCI  
9 system in operation, the water level would drop down  
10 until the natural circulation flow rate would support a  
11 power level of that magnitude, and then you would tend  
12 to reach a steady state level. If you drop all the way  
13 down to the top of the active fuel, power is going to be  
14 in the 8 to 10 percent range based upon calculations  
15 that I've seen. So just operating of the HPCI system  
16 would definitely keep it above the top of the active  
17 fuel, and you might need to throttle slightly to bring  
18 the level down.

19           (Counsel for Suffolk County conferring.)

20           Q     Mr. Hodges, would the reduction in power that  
21 may be achieved by the RPT assume -- or assure that the  
22 suppression pool temperature would remain below 110?

23           A     (WITNESS HODGES) No, the temperature will  
24 still exceed the 110 degrees Fahrenheit, and in the  
25 procedures that is the point at which the operator is

1 instructed to initiate the standby liquid control  
2 system.

3 Q Mr. Hodges, on page 3 of your testimony, in  
4 the second answer on that page you talk about ATWS  
5 procedures developed by LILCO and say that they have  
6 been reviewed and accepted by the NRC. Is the procedure  
7 that, or the procedures that, you are referring to in  
8 your testimony limited to the one that is attached to  
9 the LILCO testimony on this contention?

10 A (WITNESS HODGES) Well, I think the actual  
11 approval may have been of an earlier revision of the  
12 same procedure. But basically, the procedure that is  
13 given in the LILCO attachment, it is procedure  
14 29.024.01.

15 Q And that is the procedure that -- just so I  
16 can keep straight what it is that you've done, you have  
17 reviewed that procedure, right?

18 A (WITNESS HODGES) Yes, I have.

19 Q Have you reviewed any Shoreham procedures  
20 relating to maintenance of equipment that may be used to  
21 mitigate an ATWS event?

22 A (WITNESS HODGES) No.

23 Q How about procedures relating to surveillance  
24 or testing of that equipment?

25 A (WITNESS HODGES) No.

1 Q How about those relating to normal operating  
2 procedures relating to that equipment?

3 A (WITNESS HODGES) Only for the RHR system.

4 JUDGE BRENNER: Ms. Letsche, the "you" in the  
5 question was Mr. Hodges?

6 MS. LETSCHE: Yes.

7 JUDGE BRENNER: And that is the way you  
8 understood it, Mr. Hodges?

9 WITNESS HODGES: That is the way I understood  
10 it, yes.

11 BY MS. LETSCHE: (Resuming)

12 Q You indicated in discussing with the Board  
13 earlier some possible changes or revisions to the  
14 emergency procedure guidelines that are being reviewed  
15 by you or by the Staff now, and I believe you said -- I  
16 don't want to characterize your testimony, but something  
17 about having a consideration of ATWS conditions and  
18 other procedures, something to that effect?

19 A (WITNESS HODGES) I think what I referred to  
20 there was a reorganization of the guidelines, which  
21 would then probably be reflected in a reorganization of  
22 the emergency procedures. Basically, the emergency  
23 procedures or at least the emergency procedure  
24 guidelines start out with a list of symptoms that would  
25 indicate when you were -- for example, a water level

1 indicative of a reactor trip or a high drywell pressure,  
2 some signal of that type to signal to you to get into  
3 the emergency procedures, as opposed to your normal  
4 operating procedures.

5           Once you were in these emergency procedures,  
6 then you had to be keyed to the ATWS procedures or  
7 whatever, and the organization as to how you get there  
8 will be changed somewhat. But the actual steps to be  
9 taken to mitigate the ATWS should be very close to the  
10 same. There are some changes.

11       Q     Let me just make sure I understand what you  
12 mean by the logic changing. The particular instructions  
13 to the operator with respect to how he gets to each of  
14 the steps that he's going to take in the procedure, is  
15 that logic likely to change?

16       A     (WITNESS HODGES) As an example, for the ATWS  
17 procedures there is now what is called -- hold on one  
18 second.

19           (Pause.)

20       A     (WITNESS HODGES) Okay. Basically, you have  
21 what's called a reactor control procedure, which is  
22 broken down into subcomponents. One would be the  
23 control of level, one would be control of power, one  
24 would be control of reactor pressure, and one would be  
25 control of -- what have I said thus far?

1           A       (WITNESS CALONE) You've said all three.

2           A       (WITNESS HODGES) Okay. So basically you're  
3 looking at those components, and depending upon the  
4 symptoms, whether you've got, for example, a high  
5 neutron flux still existing or a high pressure in the  
6 reactor vessel or a low water level, then it will key  
7 you to various subparts of the procedures.

8                   And as far as the guidelines, the ATWS is  
9 under what is known as a contingency. It's contingency  
10 number 7, and it handles the part of the ATWS procedures  
11 which affects the lowering of the water level. The part  
12 of the ATWS procedures, though, which refer to trying to  
13 insert the rods and the manual resetting of the scrams,  
14 inserting each individual rod manually, things of that  
15 nature, are actually covered in the main procedure, the  
16 reactor control procedure.

17                   Now, the current Shoreham procedures are not  
18 organized quite in that fashion, but the steps are very  
19 much the same.

20                   (Counsel for Suffolk County conferring.)

21           Q       Mr. Hodges, I think Mr. Carter mentioned, in  
22 describing this revision, that another difference would  
23 be that there would be an integration of ATWS into other  
24 procedures. Do you know what other procedures ATWS is  
25 going to be integrated into?

1           A       (WITNESS HODGES) Well, I think I mentioned  
2 this reactor control procedure, which is one of the main  
3 procedures. Basically, the guidelines for the  
4 procedures, the Revision 2 of the guidelines has two  
5 main procedures. One is a reactor control procedure and  
6 the other one is a containment control procedure. And  
7 the bulk of the ATWS procedures would be contained in  
8 this reactor control procedure.

9                   The contingency which says, go and reduce the  
10 water level to get the power level down, is in  
11 contingency number 7 in the guidelines. And whether  
12 that would be the exact structure of the Shoreham  
13 procedures, I'm not certain. But there would probably  
14 be at least a similar logic.

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1 Q The only procedures then that ATWS would be  
2 incorporated into would be the reactor control  
3 procedures and the containment control procedures?

4 A (WITNESS HODGES) Would you state that again?

5 Q I was trying to see if I understood what you  
6 had said. Is it that the only procedures, emergency  
7 operating procedures in which ATWS would be incorporated  
8 would be what you have referred to as the reactor  
9 control procedures and the containment control  
10 procedures?

11 A (WITNESS HODGES) I don't think the ATWS  
12 procedures are culled from the control procedures. The  
13 ATWS procedures, if you want to call them that -- I  
14 think in the new guidelines they are called reactivity  
15 control contingency or something of that nature -- they  
16 are culled from the main reactor control procedure, not  
17 from the containment control procedure.

18 (Whereupon, counsel for Suffolk County  
19 conferred.)

20 MS. LETSCHE: Judge Brenner, although I would  
21 very much like to follow up on this, I am afraid I can't  
22 do it until I see some sort of material to be provided  
23 by LILCO.

24 BY MS. LETSCHE: (Resuming)

25 Q Mr. Hodges, did you attend the demonstration

1 at the Limerick simulator which is referenced in the  
2 LILCO testimony, the demonstration of the ATWS procedure?

3 A (WITNESS HODGES) No, that was attended by  
4 members of the Procedures and Test Review Branch.

5 Q Well, do you know whether or not that  
6 procedure or that demonstration, excuse me, utilized a  
7 generic procedure or if it utilized the Shoreham  
8 specific procedure?

9 A (WITNESS HODGES) It is my understanding it  
10 was Shoreham specific, but maybe the LILCO people could  
11 elaborate.

12 A (WITNESS CARTER) That was a Shoreham specific  
13 procedure.

14 Q Mr. Hodges, did the staff make any  
15 recommendations for changes or additions to be made in  
16 the procedure that was used at the Limerick  
17 demonstration as a result of the demonstration?

18 A (WITNESS HODGES) It is my recollection there  
19 were recommendations for some changes in the human  
20 factors area.

21 Q Do you know whether or not those changes were  
22 made?

23 A (WITNESS HODGES) I am not certain. Maybe the  
24 LILCO people could answer that.

25 Q Well, let me just stay with you for a few

1 minutes. I certainly intend to ask the LILCO witnesses  
2 some questions about this, too.

3 Do you know whether or not the staff position  
4 at that demonstration or after that demonstration was  
5 that the procedures were complete at that time?

6 A (WITNESS HODGES) There were statements that  
7 there were figures yet to be provided in the Shoreham  
8 procedures, and that those should be provided.

9 Q Do you know if they were?

10 A (WITNESS HODGES) I don't think they all have  
11 yet. But that didn't just refer to the ATWS  
12 procedures. This was procedures in general that those  
13 statements referred to.

14 Q Well, I am asking you about the ATWS  
15 procedure. Do you know if the ATWS procedure was  
16 considered complete by the staff?

17 A (WITNESS HODGES) There are no specific  
18 figures in the ATWS procedures, so those comments would  
19 not have applied to the ATWS procedures.

20 Q When you are talking about the staff's  
21 comments, are you referring to the information that is  
22 contained in Supplement 2 of the SER, Section 13.5.2.c?

23 A (WITNESS HODGES) I am talking about the  
24 comments that were made relative to the figures  
25 missing. There are other comments in that same writeup,

1 some of which will apply to the ATWS procedures.

2 Q Okay. Well, do you have a copy of that up  
3 there with you, that portion of the second supplement of  
4 the SER?

5 A (WITNESS HODGES) Yes, I do.

6 Q Okay. Directing your attention to Page 13-4,  
7 was the ATWS procedure one of those that was reviewed in  
8 the October 17, 1981, simulator exercise that is  
9 referenced on that page?

10 A (WITNESS CARTER) Yes, the ATWS procedure was  
11 reviewed during that time period.

12 MS. LETSCHE: Judge Brenner, I would like to  
13 direct these questions to Mr. Hodges and get the staff's  
14 position.

15 JUDGE BRENNER: Well, Ms. Letsche, you are  
16 entitled to do that within reason, but one reason for  
17 having a combined panel is to get it all in one place,  
18 and it struck me along the way this morning that there  
19 were many instances when it might have been helpful to  
20 get the view of the LILCO witness right there when we  
21 were on the same subject. For example, and this is just  
22 an example, at one point Mr. Hodges gave a figure at  
23 which he believed -- that is a paraphrase of his words  
24 -- that RPT would trip with pressure, and it would have  
25 been helpful to get -- presumably, if that was wrong, a

1 LILCO witness wouldn't have felt inhibited from jumping  
2 in, and I say that so the witnesses know that, and I  
3 think I would like to have their answer on this. You  
4 have got some people on the panel who were there.

5 Now, I will let you do it in a few minutes if  
6 you want to defer it, but it is nice if we can get it in  
7 close proximity. You don't want to allow them to  
8 respond now? I don't see why not.

9 MS. LETSCHE: Well, I got the response to  
10 that, and I now know from Mr. Carter that this is the  
11 date on which that procedure was demonstrated. What I  
12 want to go over right now with Mr. Hodges, and I prefer  
13 to do it now rather than break it up with comments from  
14 LILCO, is the staff conclusion relating to that  
15 demonstration.

16 JUDGE BRENNER: Well, the reason I jumped is  
17 that he, Mr. Carter and other LILCO witnesses would  
18 rightly take your comment to discourage them, and I want  
19 to encourage them to jump in. So unless we are in a  
20 particular area where it is harmful, that is, you need  
21 to zero in on what a particular witness knows, let's do  
22 it in the nature of -- in the name of efficiency.

23 MS. LETSCHE: Well, Judge Brenner, I do feel  
24 that right now it is important to find out what the  
25 staff's position is and what their review consisted of.

1 And Mr. Hodges is the staff witness here.

2 JUDGE BRENNER: Well, you have gotten Mr.  
3 Hodges' answer, and I am not suggesting that you jump in  
4 before he answers, but after he answers, LILCO  
5 witnesses, feel free to jump in, and you show me where  
6 you are hurt by it, Ms. Letsche.

7 BY MS. LETSCHE: (Resuming)

8 Q Mr. Hodges, directing your attention to the  
9 last paragraph on Page 13-4 of this SER segment, it  
10 states that during the review it was noted that, one,  
11 some plant specific data were not available, and noted  
12 by a "(later)". Is that comment applicable to the ATWS  
13 procedure?

14 A (WITNESS HODGES) No.

15 Q The second comment states that the graphs  
16 referenced in the procedures need revision to improve  
17 their usability. I assume that is one you referred to  
18 before, that that is not applicable to the ATWS  
19 procedure?

20 A (WITNESS HODGES) That is correct.

21 Q Comment Number 3 states, "There are a few  
22 additional changes required in the procedures as noted  
23 during the simulator exercises." Is that applicable to  
24 the ATWS procedure?

25 A (WITNESS HODGES) I am not certain.

1           Q     It states here that the applicant has  
2 committed to make -- to incorporate the plant specific  
3 data when available and to make the agreed changes to  
4 the procedures and the graphs. Do you know if that is  
5 applicable to the ATWS procedure?

6           A     (WITNESS HODGES) Obviously, the changes in  
7 the graphs are not applicable. To the extent that I am  
8 not certain about the third item, I can't answer you.  
9 Otherwise, they are not applicable.

10          Q     How about the last sentence there, "The staff  
11 will verify that the missing data and changes," and I  
12 know missing data isn't going to be applicable, but that  
13 "changes have been included in the procedures before  
14 issuance of an operating license." Has the staff  
15 verified that any necessary changes were included?

16          A     (WITNESS HODGES) I don't recall one as  
17 applied to the ATWS procedures. But I was not there.

18                JUDGE BRENNER: Mr. Hodges, who was there for  
19 the staff? Do you know?

20                WITNESS HODGES: Yes, I do, but I am afraid  
21 that my memory for names is terrible, and sometimes I  
22 have trouble recalling them. Maybe his name is on one  
23 of these pieces of paper.

24                WITNESS CARTER: Mr. James Clifford from the  
25 staff was there.

1 JUDGE BRENNER: I missed his name.

2 WITNESS CARTER: Mr. James Clifford. I would  
3 like to say that the comments based upon the ATWS  
4 procedure as were made by the staff were incorporated  
5 and a revised procedure was transmitted to the NRC.

6 WITNESS HODGES: Mr. Clifford is the gentleman  
7 I have been talking with about this evaluation. I  
8 apologize, but sometimes my memory is just not very  
9 good.

10 JUDGE BRENNER: Quite the contrary. I think  
11 during the course of this proceeding it has been. Is  
12 Mr. Clifford, Mr. Hodges, also the person who is  
13 reviewing the procedures, as well as being the one  
14 present at the simulator exercise reviewing the ATWS  
15 procedures?

16 WITNESS HODGES: He has been reviewing the  
17 Shoreham procedures, and including the ATWS procedures.

18 JUDGE BRENNER: But now you, Mr. Hodges, are  
19 going to be reviewing the specific proposed Shoreham  
20 procedure?

21 WITNESS HODGES: I am reviewing the  
22 guidelines, the generic guidelines, if they were used to  
23 revise their procedures. Mr. Bill Kennedy in the same  
24 branch as Mr. Clifford is also working on the review of  
25 these guidelines from the human factors standpoint. He

1 and I work very closely together. Once the guidelines  
2 are approved and Shoreham modifies their procedures, it  
3 will probably be Mr. Clifford that would review that  
4 again if he still has Shoreham.

5 JUDGE BRENNER: All right. Mr. Carter, you  
6 referred to the staff's comments and the fact that you  
7 believe LILCO has incorporated them in your proposal.  
8 Were the staff comments in writing, or just oral  
9 comments at the simulator exercise?

10 WITNESS CARTER: No, they were in writing. I  
11 don't have a copy of them with me. They were  
12 incorporated, and then the revised procedures were sent  
13 back. There was Mr. Clifford down there, and also  
14 members of Battelle Northwest Laboratories as well.

15 JUDGE BRENNER: Mr. Hodges, do you have Mr.  
16 Clifford's formal comments on the simulator exercise?

17 I am not interested in the overall exercise,  
18 just that they might relate to the testing of the  
19 efficacy of the ATWS procedure on the simulator.

20 WITNESS HODGES: I read over a list of  
21 comments. I may have them with me. I would have to dig  
22 through and see. I am not certain, but I have read the  
23 comments, and they culled out specific sections of the  
24 procedures, so I can go back and verify whether any of  
25 those were ATWS procedure comments. I just didn't

1 recall off the top of my head whether or not they were.

2           As far as the applicability of the simulator  
3 itself, it is my understanding that the Limerick  
4 simulator could not be used to do a complete  
5 verification of the ATWS procedures, but could only be  
6 done partially, but I don't know the details of that.  
7 That is just a statement that has been made in a  
8 transmittal letter transmitting that evaluation over to  
9 our Licensing Division.

10           JUDGE BRENNER: Tell me again where -- would  
11 that be contained in some written staff evaluation, or  
12 assessment, or comments also, that is, the extent to  
13 which the Limerick simulator could be used for the ATWS  
14 Shoreham procedure?

15           WITNESS HODGES: Just one second. I will get  
16 you the exact reference.

17           (Pause.)

18           WITNESS HODGES: This is a February 11th,  
19 1982, memorandum for Robert L. Tedesco, Assistant  
20 Director for Licensing, Division of Licensing, from Joel  
21 J. Kramer, Deputy Director, Division of Human Factors  
22 Safety, Subject, Safety Evaluation Report Input,  
23 Shoreham Nuclear Power Station Unit 1 [SNPS-1] Emergency  
24 Operating Procedures and Anticipated Transient Without  
25 Scram.

1           The last paragraph of the first page of that  
2 letter says, "The purpose of our ATWS review was to  
3 determine if interim requirements to mitigate ATWS have  
4 been completed. Our technical review was performed as  
5 required by Frank Schroeder's memo of June 9th to you.  
6 Although the ATWS procedure cannot be fully exercised  
7 because of limitations of the simulator, the ATWS  
8 procedure is consistent with the guidance provided in  
9 the June 23rd, 1980, memo from Frank Schroeder to you,  
10 and is acceptable for issuance of a full power  
11 license."

12           JUDGE BRENNER: I take it the enclosures to  
13 that transmittal letter are the sections of the SER  
14 supplement 2 that we are looking at?

15           WITNESS HODGES: Yes.

16           JUDGE BRENNER: But the portion you just read  
17 is from the letter, and therefore is not included in the  
18 SER input?

19           WITNESS HODGES: That is correct.

20           JUDGE BRENNER: Okay. Thank you.

21           BY MS. LETSCHE: (Resuming)

22           Q     Mr. Hodges, I take it from your comments and  
23 from Mr. Carter's comments about the staff having  
24 questions and then LILCO responding to those questions  
25 that the ATWS procedure that was demonstrated in that

1 Limerick demonstration was not the procedure that is  
2 attached to the LILCO testimony. Is that right? That  
3 was not the version of the procedure that is attached to  
4 the testimony?

5 A (WITNESS HODGES) I don't know. Maybe Mr.  
6 Carter should answer that.

7 A (WITNESS CARTER) That is correct. At that  
8 time it was only a draft. Although technically the  
9 procedure didn't change, it changed more or less on  
10 human factors.

11 Q Is the revision that is attached to your  
12 testimony, Mr. Carter, the revision that was sent to the  
13 staff following the receipt of their comments applicable  
14 to the Limerick demonstration?

15 A (WITNESS CARTER) Yes, it is.

16 (Whereupon, counsel for Suffolk County  
17 conferred.)

18 JUDGE BRENNER: Okay. I guess I was confused  
19 before, Mr. Carter, with all of these revisions floating  
20 around. So bear with us. You know them better than we  
21 do. That is the problem. When you stated that further  
22 revision incorporated in LILCO's views the human factors  
23 comments after the exercise of the Limerick simulator, I  
24 thought you meant -- I guess I thought you meant the  
25 guidelines that Mr. Hodges was still reviewing, but you

1 meant that the ATWS procedure that is attached to the  
2 testimony in LILCO's view incorporates those comments?

3 WITNESS CARTER: The ATWS procedure attached  
4 to the testimony is based on GE guidelines that came out  
5 in July, 1980, and it was not based on the generic  
6 guidelines that are now Revision 2.

7 JUDGE BRENNER: Let me start again. You had  
8 received comments from the staff, including human  
9 factors, comments after the simulator exercise. Are  
10 those comments incorporated and responded to in LILCO's  
11 view in the procedure that is now attached to LILCO's  
12 testimony?

13 WITNESS CARTER: Yes, those comments have been  
14 incorporated, and they are in the procedure that is  
15 attached.

16 JUDGE BRENNER: And, Mr. Hodges, just so I  
17 understand the chronology, Section 15.3 of Supplement 2  
18 of the staff's SER, which reaches a conclusion with  
19 respect to the Shoreham ATWS procedure, is that with  
20 respect to the procedure as attached to the LILCO  
21 testimony?

22 WITNESS HODGES: It is my understanding that  
23 really those procedures were acceptable based upon the  
24 earlier version, but as far as satisfying the criteria  
25 of Mr. Schroeder, which was really the basis for saying

1 these were acceptable, these were more, I think, in the  
2 line of recommendations that the staff made for the  
3 changes.

4           Technically, the procedures didn't change.

5           JUDGE BRENNER: I understand that, but we are  
6 also interested in the human factors aspect, and I don't  
7 know how far to take it with you, but this section that  
8 was written by a staff member, I don't know, it doesn't  
9 say anything that we have also made comments with  
10 respect to human factors, so I don't know if this  
11 conclusion is made before or after that.

12           WITNESS HODGES: I talked to Mr. Clifford, I  
13 believe, before this Revision O was issued, and in his  
14 mind they were acceptable, and he wrote the section.

15           JUDGE BRENNER: I can read the words, and I am  
16 not being very clear. I can read the words in the  
17 section that says the writer of that section thought the  
18 procedure was acceptable. I want to find out what  
19 procedure he based that conclusion on, and then I want  
20 to know how to weigh his conclusion in my mind,  
21 depending upon whether he wrote that knowing there were  
22 outstanding human factors comments, or if he wrote that  
23 after seeing the response to the human factors comments,  
24 and I am also not sure whether that person is Mr. Kramer  
25 or Mr. Clifford or both, given the transmittal letter

1 you also referred to.

2 WITNESS HODGES: Mr. Kramer would not have  
3 been the reviewer. He is a manager. Mr. Clifford would  
4 be the reviewer. And really, to go -- I would be  
5 speculating to say exactly whether he was including the  
6 incorporation of those comments or not. At the time  
7 that I discussed with him, he did not have, I don't  
8 think, this latest revision, but he may have been trying  
9 to include the comments from that.

10 So, to go farther, I am speculating.

11 JUDGE BRENNER: To further emphasize the  
12 futile nature of our discussion as of this moment, I at  
13 least don't even know what these "human factors"  
14 comments are.

15 WITNESS HODGES: I will try to locate them  
16 over the lunch break so we can discuss them.

17 JUDGE BRENNER: Ms. Letsche, whenever it is  
18 convenient to you, we will take a lunch break.

19 MS. LETSCHE: Let me just ask, I think, only  
20 one question.

21 BY MS. LETSCHE: (Resuming)

22 Q Mr. Hodges, you indicated that the Limerick  
23 simulator wasn't adequate to fully go through the entire  
24 Shoreham ATWS procedure. Do you know what the  
25 inadequacies were or what it was that they were not able

1 to do with the Limerick simulator?

2 A (WITNESS HODGES) No, I don't.

3 MS. LETSCHE: This would be a logical place  
4 for me to break, Judge Brenner.

5 JUDGE CARPENTER: Could the LILCO witness  
6 respond to the last question?

7 WITNESS CARTER: At that particular time, I  
8 think the simulator stalled for some reason. We have  
9 run the ATWS event on the Limerick simulator numerous  
10 times for operator training, and although it probably  
11 doesn't exactly model the ATWS event as predicted by GE  
12 calculations, it does a fairly good job in predicting  
13 the general trends of what happens during an ATWS  
14 situation. At that particular time, I can't remember.  
15 We were doing it between midnight and 8:00 in the  
16 morning, and the system stalled about 4:00 in the  
17 morning, and I can't remember exactly why it stalled,  
18 but it has demonstrated that it can predict, and to some  
19 extent, what happens during an ATWS.

20 JUDGE BRENNER: Including being a good  
21 simulation of the steps that the operator would have to  
22 take at Shoreham?

23 WITNESS CARTER: Yes. We have run this  
24 procedure for the operators during operator training  
25 numerous times on the simulator, and they are able to

1 perform the procedure on the simulator, and that  
2 includes the operators who took their license exam on  
3 the Limerick simulator.

4 JUDGE BRENNER: Ms. Letsche, I don't know if  
5 you want to be helpful over the lunch break to the fact  
6 that some of these documents have to be gathered up. I  
7 think some of them that are pertinent are attached to  
8 your cross plan. I haven't had an opportunity to read  
9 them myself, because of the close time frame in which we  
10 got all of those attachments yesterday, and I don't know  
11 if one of them is a thing that Mr. Hodges is going to  
12 look for, but it might be.

13 MS. LETSCHE: I will go through and check  
14 them, Judge Brenner.

15 JUDGE BRENNER: Well, just to add to the  
16 potential amount of paper floating around that we  
17 haven't focused on in the record, I don't know why the  
18 staff purposely did not also put Section 15.3 of the  
19 basic SER into evidence. I am making no claim. I don't  
20 know one way or the other whether there is material  
21 there different or in addition to what we already have,  
22 but since it is titled Anticipated Transients Without  
23 Scram, and consists of a greater number of pages than  
24 just Supplement 3, it might have been pertinent to have  
25 put it in with the testimony, but I will leave that up

1 to staff counsel. It seems to have some brief  
2 description of what would be looked for in the procedure  
3 guidelines, at least.

4 WITNESS HODGES: I have to take the blame for  
5 that. I didn't point that out to our attorneys, and I  
6 didn't go back and look at it again, but I didn't  
7 remember it as having that much pertinent information in  
8 it.

9 JUDGE BRENNER: The test, I think, is arguably  
10 pertinent. I point it out, and I am not claiming that  
11 it adds anything that we don't already know through the  
12 other papers. I don't know. I got the hint when I read  
13 Supplement 2 and it said, "We stated in the SER."

14 All right, let me state the obvious. Our  
15 interest isn't in accounting for every possible piece of  
16 paper floating around. However, our interest is in  
17 being able to grapple intelligently with what the facts  
18 are, and I am getting the sinking feeling that  
19 notwithstanding your yeoman efforts, Mr. Hodges, that we  
20 have been carrying you beyond your area of knowledge and  
21 expertise as we want to delve into the efficacy of the  
22 interim procedures, and I will let everybody think about  
23 that over the break.

24 I also want to -- certainly we expect to hear  
25 fully from LILCO witnesses on all of these points, and

1 we may get all of the information by the time it is all  
2 over, once all of the witnesses are involved, because  
3 there are LILCO witnesses here who are cognizant of the  
4 procedures, and presumably the training also.

5 We will be back at 1:35.

6 (Whereupon, at 12:20 p.m., the Board was  
7 recessed, to reconvene at 1:35 p.m. of the same day.)

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1 doesn't wish to do that, then you won't have to, but I  
2 think it would be helpful, and if the parties find it  
3 very helpful, it might then be helpful to highlight  
4 those parts for the Board also at your convenience, and  
5 we will also leave the timing up to you, if not this  
6 evening, whenever you feel it is appropriate.

7 Whereupon,

8                               WILLIAM P. SULLIVAN,  
9                               JOHN A. RIGERT,  
10                              LEONARD J. CALONE,  
11                              HARRY T. CARTER,  
12                              EUGENE C. ECKERT,  
13                              HENRY C. PFEFFERLEN,  
14                              and MARVIN W. HODGES,

15 the witnesses on the stand at the time of recess, having  
16 been previously duly sworn, resumed the stand, and were  
17 examined and testified further as follows:

18                           WITNESS HODGES: Judge Brenner, may I make a  
19 comment? Just before the lunch break, you asked a  
20 question about which revision of the ATWS procedures Mr.  
21 Clifford has approved and which ones the comments were  
22 based upon. Over the lunch period, I talked with Mr.  
23 Clifford. The series of comments were generated on  
24 Revision C. The revision that the SER said was  
25 acceptable was Revision E, as in Edward. And now we are

1 talking about Revision O.

2 WITNESS CALONE: Judge Brenner, if I may, that  
3 is not a letter O, it is the numerical zero, and it was  
4 the revision that came immediately after E. The  
5 difference between E and O is one word, and I can give  
6 it to you right now if you would like.

7 JUDGE BRENNER: Since you left it that way,  
8 you might as well.

9 WITNESS CALONE: As long as we are into this,  
10 I will tell you something about plant staff.

11 JUDGE BRENNER: Don't tell me how you  
12 developed your numbering system, but whoever has been in  
13 charge of the contention numbering system in this  
14 proceeding can also take over the numbering of  
15 procedures from now on.

16 (General laughter.)

17 WITNESS CALONE: E is a draft, and became a  
18 Rev. O, and the only change was on the first page,  
19 Number 3.1.2. At the end of that line, it says  
20 "shutdown," "switch in shutdown." It was previously  
21 "refuel." That is a position on the mode switch, the  
22 reactor mode switch. So it was not a technical change  
23 as far as procedure goes, but it was more consistent  
24 with what the operator does in the shutdown. He moves  
25 the reactor mode switch to shutdown, not the refuel

1 position.

2 JUDGE BRENNER: It sounds like a human factors  
3 aspect of the change, but I will let the parties  
4 decide.

5 WITNESS HODGES: One further comment, based  
6 upon looking at Revision C. I then compared the  
7 comments that had been made against Revision C, and most  
8 were incorporated, not all. There were a few that I  
9 would characterize as being trivial or not reflecting an  
10 understanding of how the systems work, and when I spoke  
11 with Mr. Clifford, he indicated these were questions  
12 from the consultant and not himself, and so some of  
13 those were not included, but most of the comments have  
14 been included in the version we are looking at.

15 JUDGE BRENNER: Okay. I don't want to belabor  
16 the obvious. The fact that we may have spent time  
17 talking about things that may turn out to be trivial is  
18 a comment on what happens when we don't have all of the  
19 information here so that we can see immediately that it  
20 is too trivial to go into, and of course the record  
21 still does not know what the comments are that were not  
22 addressed, but we appreciate the information you just  
23 supplied and the fact that you spoke to Mr. Clifford.

24 Just to summarize, I guess it is obvious to  
25 everybody Mr. Clifford in effect reviewed Revision --

1 reviewed the procedure that is attached to the LILCO  
2 testimony with the exception of that one-word change  
3 that Mr. Calone just indicated.

4 WITNESS HODGES: That is correct.

5 MS. LETSCHE: Judge Brenner, to help the  
6 record out, I would like to have marked as the next  
7 Suffolk County exhibit, and I don't know what the number  
8 is --

9 JUDGE MORRIS: Thirty-six.

10 MS. LETSCHE: Yes, Suffolk County Exhibit  
11 Number 36 for identification, a document entitled  
12 SP-29.024.01, Shoreham Transient With Failure to Scram  
13 Emergency Procedure, and it is a three-page document  
14 with the page numbers running from 21 through 23. I  
15 think a copy of this has been provided to the Board as  
16 an attachment to my cross examination plan.

17 JUDGE BRENNER: I don't know if you indicated,  
18 but it is Revision C.

19 MS. LETSCHE: Judge Brenner, the document -- I  
20 don't know what document you are referring to. The  
21 document that I am referring to contains a list of what  
22 appear to be comments concerning procedure.

23 JUDGE BRENNER: Okay, I've got you. I will  
24 reference it in accordance with your labeling of the  
25 enclosures, and I was looking at Enclosure 3 by

1 mistake.

2 MS. LETSCHE: This is labeled as Enclosure 4.

3 JUDGE BRENNER: I am sorry.

4 (The document referred to  
5 was marked for  
6 identification as Suffolk  
7 County Exhibit Number  
8 36.)

9 CONTINUED CROSS EXAMINATION ON BEHALF OF LILCO

10 BY MS. LETSCHE: (Resuming)

11 Q Mr. Hodges, do you have a copy of what has  
12 been marked as Suffolk County Exhibit 36 for  
13 identification?

14 A (WITNESS HODGES) Yes, I do.

15 Q And is this exhibit the human factors comments  
16 of Mr. Clifford that you have been -- that you described  
17 before lunch?

18 A (WITNESS HODGES) These are the comments of  
19 Mr. Clifford and the Battelle consultants, yes.

20 Q And these were the ones that arose out of the  
21 Limerick demonstration of the Shoreham ATWS procedure?  
22 Is that right?

23 A (WITNESS HODGES) Yes. I think -- well, maybe  
24 I am incorrect.

25 A (WITNESS CARTER) No, these did not arise out

1 of the Limerick demonstration. These were sent to me  
2 around August. I think it was August of 1981. And we  
3 had a meeting in September of 1981 at Shoreham, and I  
4 discussed these with Mr. Clifford and Battelle Northwest  
5 Laboratories at that time, and then proceeded to the  
6 Limerick simulator and demonstrated the procedure at the  
7 simulator. They made additional comments, and then I  
8 incorporated those comments. At the September meeting,  
9 we went down these comments and decided at that time  
10 what was really pertinent and what wasn't.

11 Q So, just so I understand, these are not the  
12 comments that were necessarily reflected in the change  
13 from Revision C to Revision E that you referenced, Mr.  
14 Hodges? Is that right?

15 A (WITNESS HODGES) The revisions that I  
16 referenced that I said I had made the comparisons with  
17 the one that you just handed out, and I have just been  
18 informed they were not the ones from the Limerick.

19 A (WITNESS CARTER) I would like to add that  
20 these are the comments, but they were modified at the  
21 meeting at the Limerick simulator.

22 JUDGE BRENNER: Backing up, Ms. Letsche, you  
23 look a little confused. Mr. Carter's main point of  
24 correction was that you assumed in your question that  
25 these comments were made after the simulator exercise,

1 and he has corrected you by saying these comments were  
2 generated before the simulator exercise, and were  
3 modified to some extent after the simulator exercise,  
4 modified or added to, I am not sure.

5 Also, there was some further finalization of  
6 these comments by way of deletion, modification, or  
7 addition, or some combination thereof.

8 BY MS. LETSCHE: (Resuming)

9 Q Mr. Hodges, are you familiar with the  
10 addition, modification, or whatever additional comments  
11 there were from the staff subsequent to the Limerick  
12 demonstration?

13 A (WITNESS HODGES) I was not at the meetings,  
14 no.

15 MS. LETSCHE: I would also like to have marked  
16 as Suffolk County Exhibit Number 37 for identification a  
17 document, the cover two pages of which is a memorandum  
18 dated February 11, 1982, for Robert L. Tedesco from Joel  
19 J. Kramer, Subject, Safety Evaluation Report Input,  
20 Shoreham Nuclear Power Station, Unit 1, Emergency  
21 Operating Procedures and Anticipated Transients Without  
22 Scram, and attached to that two-page memorandum is 13  
23 pages with an insert page following that.

24 JUDGE BRENNER: All right. It is so marked as  
25 Suffolk County Exhibit 37 for identification.

1 (The document referred to  
2 was marked for  
3 identification as Suffolk  
4 County Exhibit Number  
5 37.)

6 MS. LETSCHE: This document is headed on the  
7 top, Enclosure 9, and it was provided to the Board as an  
8 attachment to my cross examination plan.

9 JUDGE BRENNER: Yes. I guess we should  
10 indicate for the record that those enclosure indications  
11 are the County's indications in the context of  
12 enclosures to the cross plan provided to the Board.

13 MS. LETSCHE: Judge Brenner, that is not quite  
14 right. They are actually the staff's demarcations,  
15 because these were enclosures to the staff's discovery  
16 responses provided to Suffolk County.

17 JUDGE BRENNER: Okay. Thank you.

18 BY MS. LETSCHE: (Resuming)

19 Q Mr. Hodges, do you have a copy of what has  
20 been marked as Suffolk County Exhibit 37 for  
21 identification?

22 A (WITNESS HODGES) Yes, I do.

23 Q And is this a cover letter that you referenced  
24 this morning transmitting the SER input relating to the  
25 ATWS procedures?

1           A       (WITNESS HODGES) Yes, it is.

2           Q       Directing your attention to Page 2 of the  
3 memorandum which is at the beginning of Suffolk County  
4 Exhibit 37 for identification, that paragraph states,  
5 "Although the ATWS procedure could not be fully  
6 exercised because of the limitations of the simulator,"  
7 and then it goes on. I believe I asked you before  
8 lunch, but I want to make sure it is with specific  
9 reference to this statement. Do you know what the  
10 limitations of the simulator were that are referenced in  
11 this statement here?

12          A       (WITNESS HODGES) No, I do not.

13          A       (WITNESS CARTER) I would like to add a little  
14 bit to that. We managed to go through maybe two or  
15 three minutes of the transient. The operator was able  
16 to demonstrate quite a bit of the procedure. We was  
17 able to turn on the standby liquid control system, and  
18 he was able to secure the feedwater going in and just  
19 run based on HPCI and RCIC systems. We were able to  
20 demonstrate a lot of steps in the procedures. It is  
21 just that the simulator stalled out about two or three  
22 minutes into the transient.

23          Q       Mr. Hodges, did the Limerick simulator  
24 simulate the standby liquid control system hardware that  
25 is present at Shoreham?

1           A       (WITNESS HODGES) I am not familiar with the  
2 Limerick simulator. I am only familiar as far as the  
3 boilers. I have only had training on the Brown's Ferry  
4 simulator.

5           A       (WITNESS CARTER) I would like to add to  
6 that. Yes, it does. It has a key lock switch, and two  
7 positions, a switch either returns on Pump A or Pump B.

8                   (Whereupon, counsel for Suffolk County  
9 conferred.)

10           JUDGE MORRIS: Did I miss something? I am  
11 sorry. Did the simulator simulate automatic operation  
12 of the standby liquid control system, or manual?

13           WITNESS CARTER: Yes, it does. I am sorry.  
14 No, the Limerick simulator is a manual function. You  
15 have to turn a key and then turn the switch, similar to  
16 Shoreham.

17           JUDGE MORRIS: Thank you.

18           BY MS. LETSCHE: (Resuming)

19           Q       Does the Limerick simulator include an ARI  
20 system?

21           A       (WITNESS CARTER) Not to my knowledge.

22           Q       How about RPT?

23                   (Whereupon, the witnesses conferred.)

24           A       (WITNESS CARTER) I am not sure of that fact.

25           Q       Is the control room configuration at the

1 Limerick simulator the same as that at Shoreham?

2 A (WITNESS CARTER) Please repeat your question.

3 Q My question was, is the control room  
4 configuration the same as it is at Shoreham?

5 JUDGE BRENNER: Okay, Ms. Letsche, here is  
6 another example where I want to narrow the question. Is  
7 the configuration the same with respect to everything  
8 the operator has to do with respect to the ATWS  
9 emergency procedure? I take it that is really what you  
10 want to know.

11 MS. LETSCHE: Yes, Judge Brenner, it is.

12 WITNESS CARTER: The 603 panel is very  
13 similar. Some of the 601 and 602 panels, the layout is  
14 a little bit different, and there are some differences.  
15 Basically, the HPCI and the RCIC systems are pretty  
16 identical. Again, standby liquid control is pretty much  
17 the same. Of course, the simulator doesn't have the  
18 back panels and some of the other things that you would  
19 send the operator out in the field to do. We have to  
20 cover that here in our plant training, but there are a  
21 lot of similarities between the Limerick simulator and  
22 Shoreham.

23 (Whereupon, counsel for Suffolk County  
24 conferred.)

25 BY MS. LETSCHE: (Resuming)

1 Q Mr. Hodges or Mr. Carter, if you can answer  
2 this, what assumptions were used during the  
3 demonstration at the Limerick simulator? And let me ask  
4 a couple of specific ones. What power level was assumed  
5 at the time of the ATWS event that was simulated?

6 A (WITNESS CARTER) You are asking me to recall  
7 something that happened about ten months ago at 4:00  
8 o'clock in the morning. I think it was fairly high  
9 power level, but I don't remember the exact power level  
10 that we started out at.

11 Q Was the ATWS event that was simulated a total  
12 failure to scram or partial failure?

13 A (WITNESS CARTER) It was a total failure to  
14 scram.

15 Q How many operators were assumed to be on duty  
16 during the simulation?

17 A (WITNESS CARTER) We had three operators, a  
18 watch engineer and two reactor operators.

19 (Whereupon, counsel for Suffolk County  
20 conferred.)

21 JUDGE BRENNER: Mr. Carter, I guess I don't  
22 know what a watch engineer is. Is that like a shift  
23 technical advisor, or like an SRO?

24 WITNESS CARTER: The watch engineer is an SRO  
25 and the two other operators with them are RO's.

1 BY MS. LETSCHE: (Resuming)

2 Q Is that a minimum operator contingent for  
3 operation?

4 A (WITNESS CARTER) No, the minimum contingent  
5 is two, an SRO and an RO. There will be a total of four  
6 on each shift at a minimum. In the control room it is  
7 two.

8 Q I am not sure I follow you. You said in the  
9 control room would be two?

10 A (WITNESS CARTER) Yes. There would be four  
11 per shift, two SRO's and two RO's. Two are required to  
12 be in the control room at all times.

13 Q Did the ATWS event that was simulated include  
14 a recirc pump trip?

15 (Whereupon, the witnesses conferred.)

16 A (WITNESS CARTER) Again, I don't recall  
17 whether it has the recirc pump trips in it. The  
18 procedure itself has. You manually trip the pumps, if  
19 they don't trip, I think the simulator does have the  
20 trips in there, but I can't be 100 percent sure.

21 Q I assume from your earlier answer that you  
22 don't know whether or not the simulator included the use  
23 of ARI. Is that right?

24 A (WITNESS CARTER) No, I don't. I am pretty  
25 sure it doesn't. There would be no reason. I don't

1 think they would simulate an ARI.

2 JUDGE BRENNER: Ms. Letsche, those last two  
3 questions sounded very familiar. I think you had just  
4 asked them.

5 MS. LETSCHE: No, Judge Brenner. Earlier I  
6 had asked if the simulator had the capability of  
7 simulating those functions. What I was asking here was  
8 whether or not the demonstration of the ATWS procedure  
9 and the event that they were assuming that they had the  
10 operator walking through included a recirc pump trip,  
11 not necessarily the automatic one, or included the use  
12 of ARI.

13 WITNESS CALONE: If I may just add one  
14 statement about the operator training, in many cases one  
15 of the operator's prime functions is to provide the  
16 automatic action if it isn't done automatically, and the  
17 procedure does require him to trip the recirc pumps, so  
18 the scenario may or may not have had automatic recirc  
19 pump trip, to see if the operator would have tripped it,  
20 so it is kind of hard. You can't be sure which scenario  
21 was run, at least maybe not ten months ago. I know when  
22 I was at the simulator, I have had them both ways. They  
23 can trip it, but I am not sure whether it is an RPT trip  
24 or whether the simulator instructor trips the pumps, but  
25 one of the steps is to trip the recirc pumps, so the

1 operator would have to verify they tripped, and if they  
2 didn't trip he would have to trip them.

3 (Whereupon, counsel for Suffolk County  
4 conferred.)

5 BY MS. LETSCHE: (Resuming)

6 Q Mr. Carter, does the Limerick simulator  
7 provide the same transient response as would be  
8 encountered at Shoreham with respect to the operation of  
9 SRV's?

10 (Whereupon, the witnesses conferred.)

11 A (WITNESS CARTER) They have the same type  
12 valve. I think they just have three more than we do.  
13 I'm not sure. Shoreham and Limerick switches are very  
14 similar in nature.

15 Q When you are demonstrating an ATWS procedure  
16 on the Limerick simulator, does that demonstration  
17 assume the operation of all 13 of the SRV's? Or 14? I  
18 am sorry.

19 A (WITNESS CARTER) Well, the instructor has the  
20 ability to fail some SRV's. I don't remember whether we  
21 have had any transients where we have failed. Some were  
22 not.

23 Q Mr. Hodges, directing your attention to what  
24 has been marked as Suffolk County Exhibit 37, attached  
25 to that are a number of pages which appear to be a draft

1 of the SER input. I notice that beginning on Page 10 of  
2 that attachment, where the heading, 15.3, Anticipated  
3 Transients Without Scram, appears, there are a number of  
4 pages, a couple of pages of drafts there that don't  
5 appear in the version of the SER which made its way into  
6 the second supplement. Do you know why this additional  
7 information was omitted?

8 JUDGE BRENNER: Ms. Letsche, I think for the  
9 sake of the record as well as myself, you will have to  
10 be more specific. I don't have any pages after Page  
11 10. Do you mean the fact that there are several  
12 different sections referred to on Page 10?

13 MS. LETSCHE: I am sorry, Judge Brenner.  
14 Maybe your copy did not contain the full version of this  
15 attachment. The one that I have and, I believe, copies  
16 that I have handed out --

17 JUDGE BRENNER: I have it now. It is my  
18 fault. I turned to the very last page because it said  
19 Insert Page 10. My mistake.

20 WITNESS HODGES: A lot of the information  
21 there which I would term fairly general discussions had  
22 already appeared, I believe, in the original 15.3, and  
23 so there would have been no reason to duplicate it in  
24 the supplement, particularly the discussion about the  
25 frequency of the events and consideration before the

1 Commission. I have not made a word for word comparison  
2 here in the last couple of minutes to see if that is  
3 true of all that was omitted, but I expect that to be  
4 true of most of what was omitted, if not all.

5 (Whereupon, counsel for Suffolk County  
6 conferred.)

7 JUDGE BRENNER: So that just what you are  
8 saying, Mr. Hodges, is that instead of having all of  
9 this writeup which you believe essentially if not  
10 exactly repeats what was already in the basic SER, the  
11 editor or some person performing that function in  
12 finalizing Supplement 2 of the SER substituted that one  
13 sentence, "We stated in the safety evaluation report  
14 that the applicant agreed to develop an emergency  
15 procedure for an ATWS event," and then just plugged in  
16 the last paragraph from this draft writeup, which is the  
17 paragraph that alludes to the further review of the  
18 revised procedure?

19 WITNESS HODGES: I expect that is what  
20 happened. The editor in this case is usually the  
21 project manager, and he compares what is there against  
22 -- in the letter against what is in the original SER,  
23 and I would expect that he would decide not to repeat.

24 BY MS. LETSCHE: (Resuming)

25 Q Mr. Hodges, directing your attention to

1 Suffolk County Exhibit 36, that is, the comments that  
2 were made, I believe, by Mr. Clifford, I would like to  
3 ask you about a couple of particular ones in there. The  
4 one that says, on the lefthand margin, 4.0, should the  
5 IRM's be driven into the reactor, do you know what the  
6 LILCO response was to that question or what the concern  
7 was?

8           A       (WITNESS HODGES) I think this was one of the  
9 concerns by the consultant which I would say should not  
10 necessarily be done at this particular point. It is  
11 nice to do it if you have time, but because the operator  
12 is trying to insert rods and do a number of other  
13 actions to get the rods in, and if the power level is  
14 high enough that it is a problem, his power is still  
15 going to be on the source range, and not on the  
16 intermediate range, then I don't think he achieves much  
17 by inserting the IRM's at this point, and so I don't  
18 think that was incorporated into the final version, but  
19 I don't think it should have been.

20           A       (WITNESS CALONE) Let me add one point. In  
21 the emergency procedure at 3.2 it talks about if the  
22 reactor does scram and all rods go in, the operator then  
23 moves to another procedure. In that subsequent  
24 procedure it would have him putting in the IRM's because  
25 then he would be in a normal shutdown, but as Mr. Hodges

1 says at this point in time he has immediate actions to  
2 take care of, and IRM's are not one of them.

3 Q Mr. Hodges, again, moving down that page on  
4 Suffolk County Exhibit 36, the first page, to the item  
5 that is marked 4.1.1-4.1.2, it states how many rods not  
6 fully inserted two below zero dash six position does it  
7 take to indicate 6 percent power in any part of the  
8 core. Was that incorporated into the revised LILCO  
9 procedure?

10 A (WITNESS HODGES) No, it was not, and again,  
11 it should not have been, because the power level, the  
12 number of rods to get any particular power level is  
13 going to depend upon the rod pattern, probably even the  
14 burnup, and so you cannot put in one definitive number  
15 for that, and you don't want to add information just to  
16 confuse the operator, so I think this was another one of  
17 these superfluous comments that I referred to earlier.

18 JUDGE BRENNER: Who was this consultant, Mr.  
19 Hodges?

20 WITNESS HODGES: I think it was Battelle. I  
21 don't remember which one. I did not think that a very  
22 pertinent comment.

23 JUDGE BRENNER: Doesn't the consultant know  
24 how a reactor works? You wouldn't think so from this  
25 comment.

1           WITNESS HODGES: I think a lot of the  
2 consultants are human factors consultants without a very  
3 strong reactor background, but I am guessing at that  
4 point.

5           WITNESS CARTER: It was Battelle Northwest  
6 Laboratories. I am not sure exactly what their  
7 expertise was. I always thought it was more human  
8 factors than it was technical.

9           BY MS. LETSCHE: (Resuming)

10          Q     Mr. Hodges, moving down to the second item  
11 listed under --

12          JUDGE BRENNER: Let me stay with the other one  
13 for a minute.

14          MS. LETSCHE: That is fine.

15          JUDGE BRENNER: Am I right, Mr. Hodges, you  
16 don't have to know a lot about how a reactor works to  
17 realize that you couldn't come up with a definitive  
18 number for how many rods you would need for the 6  
19 percent power indication in any part of the core? You  
20 would know that it would vary, as you indicated.

21          WITNESS HODGES: That is my understanding. It  
22 wouldn't take a lot to do that. Yes.

23          JUDGE BRENNER: I guess when I find one that  
24 even I know it surprises me that somebody would make  
25 that comment.

1 (General laughter.)

2 BY MS. LETSCHE: (Resuming)

3 Q Mr. Hodges, directing your attention to the  
4 second item listed next to 4.2 in this document, it  
5 talks about reworking after starting SLC Pump A, check  
6 during SLC injection for system operation, flow meters,  
7 ammeters, et cetera. Are there SLC flow meters at the  
8 Shoreham plant?

9 A (WITNESS HODGES) No, there are not.

10 Q Do you know how the operators at Shoreham are  
11 supposed to find out the information that presumably was  
12 the source of the concern in this comment?

13 A (WITNESS HODGES) I think they would determine  
14 the flow rate by tracking the level in the standby  
15 liquid control system tank, but maybe again some of the  
16 LILCO people would like to elaborate on that.

17 A (WITNESS CALONE) The operator has available  
18 to him the standby liquid control tank level, and when  
19 he initiates standby liquid control by moving the  
20 switch, he gets an indication that his squibb valves or  
21 his isolation valves have fired. He gets an indication  
22 on the am switches related to flow, but his key  
23 indication in this case would be level dropping in the  
24 main tank, which would tell him that the pumps are  
25 pumping liquid out of the main tank, and his pressure

1 indication, which would tell him discharge pressure.

2 JUDGE BRENNER: Excuse me. Where in the LILCO  
3 procedure attached to the testimony is that indicated?  
4 I am trying to find the step. I am at 3.6.1, where he  
5 is to start on either A or B.

6 WITNESS CALONE: 3.6.1 has him starting A or B  
7 standby liquid control pump and injecting the entire  
8 contents into the tank. We get back to the concept of  
9 system training, and an operator, when he takes any  
10 action, is expected to look for the required results of  
11 that action. In this case, he is trained as part of the  
12 standby liquid control or any system that when he takes  
13 his action he has to look for a positive indication that  
14 that action was affirmative. He has been trained to  
15 look at the tank level to verify injection.

16 JUDGE BRENNER: How fast would that tank level  
17 indication start to move if the A tank or if the A pump  
18 is working correctly?

19 (Whereupon, the witnesses conferred.)

20 WITNESS CALONE: I would say that he would get  
21 some indication on the instrument within probably a few  
22 minutes of injection to get a realistic movement on the  
23 indicator. It would take on the order of over an hour  
24 to inject the whole tank. So I would say within a  
25 minute he would have an indication as to whether we are

1 pumping or not, and he has also got amps immediately  
2 which tells him if he is pumping fluid.

3 JUDGE BRENNER: What does the training tell  
4 him? What do you tell him in training with respect to  
5 what he should do after he starts the A pump?

6 WITNESS CALONE: He is to verify a level drop,  
7 and that he has pressure in the squibb valves, and the  
8 squibb valves have fired, and by indication of the pump  
9 pressure and the amps and the tank levels there is a  
10 combination of inputs to him that determine that the  
11 standby liquid control is injecting. If the pump  
12 doesn't start, he would have no amps.

13 JUDGE BRENNER: Is he trained, or do you think  
14 it appropriate for him to be trained that he has to stay  
15 there for a minute or two to verify this occurrence  
16 vis-a-vis what else he is supposed to be doing at the  
17 time?

18 WITNESS CALONE: He will initiate, and based  
19 upon the scenario or the transient you are in, I would  
20 not expect him to be standing there waiting for that  
21 level to drop immediately. I would have expected him to  
22 proceed with the immediate actions and come back and  
23 verify that he has standby liquid control being  
24 injected.

25 Let me say one other thing. He is stationed

1 at the same location. He is not running around the  
2 control room. Most of the absence he is taking is on  
3 the 603 panel, which is the front of the reactor panel,  
4 so it is not that he has left or he has gone out of the  
5 room or gone into the plant. It is all in the same  
6 area.

7 JUDGE BRENNER: Is there something in the  
8 training, given that it is not continuous? I understand  
9 what you said, that he is in essentially the same  
10 physical location, but is there something in the  
11 training that says, remember to go back in a minute or  
12 two and verify that you have got the A pump working?

13 WITNESS CALONE: Well, you have to remember  
14 that his actions right now are to reduce power, and that  
15 is driving him to do whatever actions he is going to do,  
16 including verifying that he has a poison being injected  
17 into that vessel throwing that power level around, and  
18 so it becomes part of his integrated operation  
19 training.

20 JUDGE BRENNER: Mr. Hodges, even though you  
21 are not the human factors person, as we have discussed,  
22 there is that melding of disciplines between somebody  
23 such as yourself, who is systems oriented in terms of  
24 understanding whether the procedure could be more  
25 clearly written. Do you think it would be a good idea

1 to have the procedure flag the fact that he has got to  
2 go back and verify that activation of the A pump is  
3 resulting in the successful introduction of the tank  
4 contents of the boron?

5           WITNESS HODGES: I think it could be useful.  
6 As has been pointed out, he has got an indication that  
7 his pumps are running from the power to the pumps, and  
8 so with the pumps running he has a fairly good  
9 indication that he may have injection, and an indication  
10 or a caution to come back and verify level drop. It  
11 would probably be appropriate, but the most effective  
12 means he is going to have for reducing the power is  
13 going to be inserting the rods, either manually or  
14 resetting the trips and getting automatic trip, or one  
15 of those actions, and so that is where I think his time  
16 is best spent.

17           JUDGE BRENNER: Staying with Mr. Hodges just  
18 for a minute, and I will give you a chance in a second,  
19 Mr. Calone, but I understand what you say. He is going  
20 to be busy with a lot of things, and that is part of my  
21 point. I am not suggesting putting something in the  
22 procedure that says, don't do anything else until you  
23 verify it, and I certainly don't mean to be dictating  
24 the writing, but I am talking about some sort of -- and  
25 I certainly understand the concept of leaving details to

1 training so that you don't clutter up procedures, but  
2 within all of those concepts I am suggesting soliciting  
3 your comment on something that says, verify that it is  
4 working in the course of the next X time, or some other  
5 way of expressing it.

6           WITNESS HODGES: I think it would be a good  
7 idea to have something that says, go back and verify  
8 that the level has dropped. I don't think you want to  
9 specify a time frame, because I think if the operator is  
10 responding to a lot of things in a hurry, he loses track  
11 of the time frame, unless you have got a horn going off  
12 somewhere to tell him that time has elapsed, and he has  
13 got enough alarms in the control room already, so I  
14 would not want to specify a time frame for it, but maybe  
15 a caution would be appropriate.

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1 JUDGE BRENNER: You anticipated my thought of  
2 what happens when a lot of horns go off. Mr. Calone,  
3 you wanted to add something?

4 WITNESS CALONE: Yes, sir. Your statement is  
5 well taken. As a matter of fact, it is included in this  
6 procedure. The first action under subsequent operator  
7 action is to verify immediate operator action is  
8 completed. So once he gets to the point of Step  
9 3.6.1.2, he would then go back to the beginning of the  
10 procedure and recycle through his immediate actions to  
11 verify that they have all occurred as he anticipated  
12 them to occur.

13 JUDGE BRENNER: I see. Okay. What step is  
14 the operator trained to include under that label, verify  
15 immediate operator actions? Does he go back to 3.0? I  
16 suggest that because that is the step that is labeled  
17 immediate operator actions.

18 WITNESS CALONE: Yes, that is correct.

19 JUDGE MORRIS: Is it your understanding that  
20 an operator would essentially memorize all of these  
21 steps and immediate actions?

22 WITNESS CALONE: The requirement is for them  
23 to memorize all of the immediate actions on all of the  
24 emergency procedures, yes.

25 JUDGE MORRIS: Wouldn't it be implicit really

1 in each action that he took that he would somehow verify  
2 that the result expected did occur?

3 WITNESS CALONE: Again, as part of his  
4 training, he is expected to look for the results that he  
5 has just initiated. However, when you get to these  
6 procedures, it does get complicated to some extent, and  
7 that is why there is a specific sign-off. He has an  
8 initial box on the right of that statement to verify  
9 that he actually did do that, if that answers your  
10 question, but it is generic in our procedures. The  
11 first subsequent step is to verify the immediate actions  
12 have been taken.

13 JUDGE MORRIS: And do all of the operators get  
14 the simulator training on this?

15 WITNESS CALONE: Yes, they do.

16 JUDGE MORRIS: How many times do they run  
17 through a transient like this?

18 WITNESS CALONE: It would actually vary.  
19 There are required transients that an operator must go  
20 through, some of which are ATWS procedures. Just to  
21 explain briefly, an operator always starts from a steady  
22 state condition, and he is in that condition for a  
23 period of time. It could be minutes. If he is doing a  
24 normal evolution, like a startup, it could be an hour  
25 just to give him startup practice. Somewhere in that

1 evolution he is going to get some transients, maybe an  
2 ATWS. So, he may have two during his training program.  
3 He may have a dozen. It would depend upon the  
4 instructor, but he must document the fact that there was  
5 at least one ATWS transient that he worked through in  
6 the procedure as part of his training, so every operator  
7 does go through ATWS training.

8 JUDGE MORRIS: How is his performance  
9 evaluated?

10 WITNESS CALONE: It is evaluated by the  
11 simulator instructor, which are not LILCO people. These  
12 are presently at Limerick. They are General Physics.  
13 At Dresden it was General Electric. I have only seen  
14 the sheets once. It is basically a checkoff list,  
15 satisfactory, unsatisfactory, and comments, and there is  
16 one per person, one per operator, and then we get the  
17 end results back at the plant after they finish their  
18 training.

19 JUDGE MORRIS: It sounds like what you just  
20 told me was the end result. You get the overall  
21 evaluation. What does he look for during the training,  
22 during the transient? Does he check to see that each  
23 operating step is done in sequence? Does he evaluate  
24 whether the operator is floundering around a little bit,  
25 or whether he has to go back and check his procedure?

1                   WITNESS CALONE: I would say the simulator  
2 instructor is looking for, one, the ability of the  
3 operator to operate, that he doesn't get confused in  
4 there, his ability to handle the procedure, his ability  
5 to recognize symptoms, his ability to maneuver around  
6 the control room and get to the place he wants to be and  
7 do what he is supposed to do. It is all-encompassing,  
8 looking down on the individual to see how he performs,  
9 that the end result is satisfactory, completion of the  
10 transient. So it is everything you said plus maybe a  
11 little more.

12                   JUDGE MORRIS: Thank you.

13                   JUDGE BRENNER: Just to close the loop on the  
14 last sequence, even though you stated operators are  
15 expected to memorize immediate operator actions and  
16 procedures, including the immediate operator actions in  
17 the ATWS procedure, nevertheless, in normal -- in the  
18 real world the operator has these written procedures and  
19 is trained to refer to them as an aid to the operator's  
20 memory as distinguished from the testing and training  
21 situation, correct?

22                   WITNESS CALONE: That is correct.

23                   JUDGE BRENNER: In addition, I note that --  
24 and it is in the record, but just because the procedure  
25 is in the record, but just to tie it up here, there is a

1 box on Page 3 of the procedure labeled Caution occurring  
2 after Section 4.4, which states "Do not shut down SLC  
3 injection once it has been started until the SLC  
4 solution tank is verified to be empty." Now, I take it  
5 that although that doesn't serve the same purpose as the  
6 4.1 requirement to verify immediate operator actions,  
7 including that you have initiated flow, but at that  
8 point he is going to have to reverify whether or not --  
9 he is going to have to reverify the contents of the tank  
10 if he is going to pay attention to that caution.

11 WITNESS CALONE: The caution was put in there  
12 to warn the operator that cutting off standby liquid  
13 control prior to total injection may cut him short on  
14 reactivity at the end of the transient. It wasn't meant  
15 as a subsequent followup. I am certain that before he  
16 got to that step he knows that his standby liquid  
17 control is injected.

18 JUDGE BRENNER: Thank you.

19 (Whereupon, counsel for Suffolk County  
20 conferred.)

21 BY MS. LETSCHE: (Resuming)

22 Q I don't know who to ask this question to, so I  
23 will just ask it to the panel in general. If the  
24 standby liquid control system is activated so the pumps  
25 are running but the squibb valves don't open, do the

1 relief valves, or the relief valve on the line, does  
2 that open?

3 A (WITNESS CALONE) Yes. The relief valve would  
4 open, but that is at a higher pressure than normal  
5 injection, so the operator would at least know that he  
6 is at a higher pressure. He is at a relief valve set  
7 point by his pressure indication. And he will also know  
8 the squibb valves didn't fire because of the continuity  
9 circuit associated with the squibb valves.

10 (Whereupon, counsel for Suffolk County  
11 conferred.)

12 Q In that event, though, the level of solution  
13 in the SLC tank would get lower, right, because the pump  
14 would be pumping that stuff out?

15 (Whereupon, the witnesses conferred.)

16 A (WITNESS CALONE) I believe it returns to the  
17 section of the pump. Just let me check that.

18 (Pause.)

19 A Yes, it does. The indication he would get  
20 again would be the higher pressure on the higher than  
21 normal injection pressure. The recirc would -- the  
22 relief valve would lift, and he would return back to the  
23 section of the pump, and these are positive displacement  
24 pumps, so technically the level won't drop. They will  
25 just need the same amount of fluid around the circuit or

1 the closed loop from pump suction to discharge and back  
2 again, so the level technically will not drop since  
3 there is nowhere for the level to go.

4 Q Mr. Hodges, going back to Suffolk County  
5 Exhibit 36, the next item after the one we were just  
6 discussing also labeled 4.2 states, "Which pump will be  
7 used to ensure adequate mixing of the boron solution?"  
8 Do you know the answer to that one?

9 A (WITNESS HODGES) Yes. I think if you go to  
10 the Version C of the procedures and look at that 4.2, it  
11 is a discussion that would start either A or B standby  
12 liquid control pump, and I gather that the people who  
13 were asking the question, which one of those two pumps  
14 would be used to ensure adequate mixing, and the answer  
15 is neither and again, I think this is one of the  
16 instances where the questions reflected a lack of  
17 understanding of the system. It was stated more from a  
18 human factors standpoint, trying to get some  
19 clarification.

20 A (WITNESS CARTER) I would like to add to  
21 that. Based on the September meeting, it has become  
22 evident that some of the remarks or some of the comments  
23 were really not appropriate, and that is one of the  
24 things that was beneficial from the meeting in September.

25 JUDGE BRENNER: Mr. Hodges, one thing I don't

1 understand about the way the staff approached these  
2 comments on this procedure, and I guess my comment might  
3 go in general. As we discussed, you have a human  
4 factors person, and then you have somebody such as  
5 yourself or somebody who works for you. Why isn't the  
6 human factors person's comments coordinated through your  
7 branch before they are sent out to a utility?

8 WITNESS HODGES: That is a very good question,  
9 but I don't have an answer.

10 JUDGE BRENNER: You might want to suggest a  
11 change to the staff's operating procedures.

12 WITNESS HODGES: Yes.

13 BY MS. LETSCHE: (Resuming)

14 Q Mr. Hodges, just to try to cut this short,  
15 maybe you could identify in Suffolk County Exhibit 36  
16 the comments that you feel are in the category that you  
17 have described for us, these human factors comments that  
18 maybe you feel were not appropriate.

19 A (WITNESS HODGES) Just the ones that are not  
20 appropriate? There is also a couple that are just  
21 comments that you can't really incorporate. It is just  
22 comments on our questions, so do you want the sum total  
23 of those or only the ones that were not appropriate?

24 Q I would like both of those, please.

25 A (WITNESS HODGES) 4.1.1-4.1.2, well, there are

1 two of those.

2 JUDGE BRENNER: Excuse me. Let me interject.  
3 Normally we bind these things in at the end, depending  
4 upon the use that is made of it. Given what we are  
5 about to embark on, it might be useful for the record to  
6 bind in Suffolk County Exhibit 36 for identification,  
7 not in evidence, but for the convenience of the reader  
8 of the record, since Mr. Hodges is about to comment on  
9 the comments, if you will, if that is okay with  
10 everyone.

11 MS. LETSCHE: It is fine with me.

12 MR. REVELEY: It is fine with us.

13 JUDGE BRENNER: Okay. It is still only an  
14 exhibit marked for identification, and what I think of  
15 it for its evidentiary worth you may only find out if  
16 you try to move it into evidence, but we will bind it in  
17 for convenience at this point.

18 (The material referred to follows.)  
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SP 29.024.01 Shoreham Transient with Failure to Scram Emergency Procedure

- 1.0 You need to give the operators a better idea of what constitutes a valid scram signal.
- 1.0 A determination of rod position needs to be made somewhere in the procedure.
- 1.1 An ATWS could also have all rods inserted but not fully.
- 3.1.2 Mode should be capitalized; In all cases the capitalization in the procedures should match that of the control panel (c.f. 4.4.3.5).
- 3.4 This should be the second subsequent operator action.
- 4.0 The first subsequent operator action should be to verify immediate operator action (c.f. 4.4.4.1.b).
- 4.0 Should the IRM's be driven into the reactor?
- 4.1 Rewrite this step in a standard IF..., IF NOT... logic format.
- 4.1.1-  
4.1.2 Need to be more specific on which indications to use for core power, and how many instruments are needed above 6%.
- 4.1.1-  
4.1.2 How many rods not fully inserted to below 0-6 position does it take to indicate 6% power in any part of the core.
- 4.2 Verify isolation of RWCU. Make separate step. Do not use "isolation/isolate" to make conditional steps.
- 4.2 Reword after starting SLC pump A. Check during SLC injection for system operation, flow meters, ammeters, etc. If not operating, start the B pump.
- 4.2 Which pump will be used to insure adequate mixing of the boron solution?
- 4.2 Specify which tank "the tank" refers to.
- 4.3 Reword to clarify which systems the flow rate refers to.

Shoreham Transient with Failure to Scram Emergency Procedure (Continued)

- 4.4 Are there enough operators to do all these substeps concurrently?  
If not, is there a preferred order?
- 4.4.1.1 Each breaker should appear on a separate line with its own checkoff.
- 4.4.1.3 Restore what?
- 4.4.2 and 4.4.3 Combine these 2 steps into 1 step with 2 subtasks and rewrite using standard logic format.
- 4.4.4 Is there a difference between steps 4.4.3.1 and 4.4.4?
- 4.6 How does the operator know he has this condition?
- 4.6 "Caution" - Be consistent in the use of acronyms SLC or SBLC.
- 4.7 Is there a preference for which of these steps should be tried or does the operator have to make that determination? If the latter, specify the information necessary to make that determination. Logic of the step is unclear.
- 4.7.1 Should this be the main turbine bypass valve?
- 4.8 How do you use a consideration?
- 4.8 How does operator determine when reactor is to be placed in cold shutdown?
- 4.8.2 Is "slow" speed marked on control panel? If so, capitalize, if not, indicate the range of speeds that corresponds to "slow".
- 4.8.2-4.8.3 Are these considerations or actions?
- 4.8.3 Rewrite the Caution and list action step separately. Also, specify the methods by which the operator can make the determination of temporary dilution of the boron in the core.
- 4.8.3 Second Caution: This is an action step and should be rewritten as such. Also, second Caution is not clear.

Shoreham Transient with Failure to Scram Emergency Procedure (Continued)

4.8.3 What if the main condenser is not available?

4.10 How does the operator find a source of water with the proper boron concentration? Should such information precede 4.10?

1                   WITNESS HODGES: There are two comments  
2 labeled 4.1.1-4.1.2. There is a comment we discussed  
3 that is labeled 4.2, talking about the flow meters.  
4 There is another one on 4.2 which talks about the  
5 mixing. Another one on 4.2 which I would classify more  
6 as a nitpick. I don't think it was in the revised  
7 procedures. It says, "Specify which tank 'the tank'  
8 refers to." I don't necessarily think it is irrelevant,  
9 but I think it is a nitpick. 4.4 is strictly a question  
10 that you can't include in the procedures.

11                   Similar to 4.4, 4.6 is again a question that  
12 you cannot incorporate. The same -- well, there are two  
13 comments on 4.6, similar to the one labeled 4.7. It is  
14 a question asking about preference, but does not suggest  
15 anything to the procedures. 4.7.1 was included but I  
16 think again is a nitpick. The one that is labeled  
17 4.8.2-4.8.3, I again would consider to be somewhat of a  
18 nitpick, although I think there were some changes made,  
19 but I am not certain of that. The one labeled 4.8.3,  
20 again, a question that could not be included in the  
21 procedures. The steps for that could be, but the  
22 question itself could not be. And I think 4.10 would  
23 also be in that category.

24                   JUDGE BRENNER: Mr. Hodges, just looking at  
25 4.6, 4.6, how does the operator know he has this

1 condition? I don't know what he is referring to,  
2 looking at this comment. What was your comment on the  
3 comment? What didn't you like about the comment?  
4 Depending upon what the comment refers to, it could or  
5 could not be a valid comment in the abstract.

6 WITNESS HODGES: The second 4.6, Version C  
7 said, after the reactor is shut down, in Revision C,  
8 Section 4.6 says, after the reactor is shut down, and  
9 then it tells what to do, and so, I am assuming that the  
10 question there is, how does the operator tell when he is  
11 shut down.

12 JUDGE BRENNER: Okay. Say no more. Well, I  
13 guess I should let you finish the thought for the record.

14 WITNESS HODGES: The operator has definite  
15 criteria for when he is shut down.

16 (Whereupon, counsel for Suffolk County  
17 conferred.)

18 BY MS. LETSCHE: (Resuming)

19 Q Mr. Hodges, with respect to two of the  
20 comments you have listed as being questions that  
21 couldn't be included in the procedures, particularly 4.4  
22 and 4.7, the concern here seems to be whether or not  
23 there is a preference for the order in which steps are  
24 taken. Do you know if any changes were made in the  
25 procedures to address that concern about preference in

1 the order of steps to be taken?

2 A (WITNESS HODGES) Give me a minute, please

3 (Pause.)

4 A (WITNESS HODGES) The final procedures do not  
5 list a preference. However, they appear to be listed in  
6 the order of preference.

7 A (WITNESS CALONE) If I may, in Rev. 0, since  
8 that is what we are talking about, the steps to be  
9 followed, 3.5 indicates that following attempts to scram  
10 the reactor are to be performed concurrently if manpower  
11 is available, and it goes through a whole list of things  
12 that can be done. I can go down them step by step.  
13 Some are located in the control room. Some are located  
14 in the relay room, and some are located in the reactor  
15 building. The question always comes into effect as to  
16 what actually got you to this point in time, what  
17 scenario, what transient that would make available or  
18 not available people in the field to perform the field  
19 work to check these things.

20 A (WITNESS HODGES) I believe you are talking  
21 about 4.7.

22 A (WITNESS CALONE) This is the recurrent item.  
23 I believe the reference is to the individual steps to  
24 scram the reactor.

25 JUDGE BRENNER: Wait a minute. Let me jump

1 in, Mr. Hodges. Bear in mind that the number references  
2 in these comments, because they were to a different  
3 revision, is not necessarily consistent.

4 WITNESS HODGES: I have both revisions in  
5 front of me.

6 (Whereupon, the witnesses conferred.)

7 BY MS. LETSCHE: (Resuming)

8 Q Let me just see if maybe I could clear this  
9 up. My question, Mr. Hodges, was, with respect both to  
10 what is labeled as 4.4, which is, I think, what Mr.  
11 Calone is addressing, and to 4.7, which is what I think  
12 you were talking about, if that helps.

13 A (WITNESS CALONE) That is correct. I withdraw  
14 my statement, because I was in another step. Let Mr.  
15 Hodges continue.

16 A (WITNESS HODGES) My statement I just made  
17 applied to the 4.7 comment, and I think they are listed  
18 in the order of preference.

19 A (WITNESS CARTER) I would like to add to that,  
20 yes, they are. That is the order of preference.

21 A (WITNESS HODGES) And then the one for 4.4,  
22 are there enough operators to do all of the substeps  
23 concurrently, and if you had only two operators, which  
24 is what you have in the control room initially, that  
25 probably would not be enough to do all of them

1 concurrently. However, you have two others that can be  
2 called up very quickly and, for example, you would not  
3 send one of your control room operators down to open  
4 vents for the scrams. You would send one of your other  
5 operators down. So, with that in mind, you could  
6 perform a fair number of these simultaneously.

7 JUDGE BRENNER: Through no fault of the  
8 witnesses, of course, the record gets very difficult  
9 with these different numbers. Let me just make sure I  
10 understand you. 4.7, the reference to Section 4.7 in  
11 Suffolk County Exhibit 36 happens to be the same number,  
12 4.7, in Attachment 1 to the LILCO testimony. Am I right  
13 so far?

14 WITNESS HODGES: The 4.7 in that exhibit, I  
15 think it is 36, really gets into steps 4.2.1 and 4.2.3  
16 in Revision 0.

17 JUDGE BRENNER: Okay, thank you. And I infer  
18 that the reference to 4.4 in Suffolk County Exhibit 36  
19 for identification is the portion that Mr. Calone was  
20 referring to in Attachment 1 to the LILCO testimony  
21 which is section 3.5 and subsections thereafter. Is  
22 that correct?

23 WITNESS HODGES: That is correct.

24 (Whereupon, counsel for Suffolk County  
25 conferred.)

1 BY MS. LETSCHE: (Resuming)

2 Q Mr. Hodges, in the revised procedure that is  
3 attached to the LILCO testimony, is there a preferred  
4 order listed for the concurrent actions referenced in  
5 Section 3.5? My question is, is the order in which they  
6 are listed here the preferred order?

7 (Pause.)

8 A (WITNESS HODGES) It is difficult to say it is  
9 a preferred order. I think it is an order that you  
10 would start from from the control room and doing those  
11 things you could do most easily, first from the control  
12 room and then going down to those that you might have to  
13 send someone out to do. So in that kind of sense, it  
14 has some preference associated with it, but whether he  
15 went to do the breakers first or the scammer system  
16 first is an example. I am not sure there is a  
17 preference there.

18 JUDGE BRENNER: Mr. Hodges, I inferred that it  
19 is not, at least not contrary to any preferred order.  
20 Is that correct?

21 WITNESS HODGES: I think that's correct.

22 WITNESS CALONE: Yes. Let me say that this is  
23 not in preferred order. I don't think we tried to do  
24 that. It is significant steps the operator can take by  
25 location, I think, is a better way of looking at it.

1                   (Whereupon, counsel for Suffolk County  
2 conferred.)

3                   BY MS. LETSCHE: (Resuming)

4           Q       Mr. Hodges, you stated a minute ago that with  
5 respect to the concurrent operations suggested in  
6 Section 3.5, that the two operators in the control room  
7 could do all of those things, but that there were others  
8 who could be called up. How many people would be  
9 necessary to perform those actions concurrently as  
10 suggested in this procedure?

11           A       (WITNESS HODGES) Maybe the problem is with  
12 the concurrently, because the strictest definition of  
13 the word "concurrently" would mean exactly at the same  
14 times where there would obviously be some time delay,  
15 for example, if the operator went down to where the  
16 CRD's were located and was trying to operate valves  
17 there as well as doing things with the control units, I  
18 mean, scram valves plus other things at that point.  
19 They are very close to simultaneous, but not exactly  
20 simultaneous, but with that modification to the word  
21 "concurrent" I think you could do it with four.

22           A       (WITNESS CALONE) Let me jump in a second.  
23 Step 3.5.1 and 3.5.2 and 3.5.3 are all done by the  
24 reactor operator, one individual on the front panel.  
25 All of those controls are on the front panel. When you

1 get down to 3.5.1, then you are talking about one  
2 individual going to the relay room, which is one flight  
3 below the control room, and that is a matter of opening  
4 a panel and pulling fuses. That won't take more than  
5 about two minutes from the control room to exercise.

6           That same individual could then go out to do  
7 Steps 3.5.2. Now, 3.5.3.3 is a restoration, so we  
8 wouldn't be into that point. We wouldn't be restoring  
9 it right then. So basically the first three steps are  
10 being done by the control room operator, not the second  
11 operator in the control room but the main operator in  
12 the control room. That is all taken care of from the  
13 603 panel, the reactor panel.

14           Then you have one action in the relay room  
15 directly downstairs, and then you have an action out on  
16 the elevation 63 on the reactor building, which is on  
17 the same floor as the control room, dealing with the  
18 vent air and scram valves. So, I don't think you need  
19 four individuals to perform those functions, but we have  
20 four.

21           (Whereupon, counsel for Suffolk County  
22 conferred.)

23           A       (WITNESS HODGES) Let me say the main thing  
24 that is intended here by concurrently is, you don't go  
25 all the way through and complete one action before you

to t, so the operator would not sit there and  
to with injection rods manually from the  
control do that for ten or fifteen minutes  
before to try out one of these other actions.  
instating it in this way is that you are  
linking these things together.

Q (CALONE) let me ask you, is that what LILCO  
ent procedure by the use of the term  
"concu"

A (MESS CALONE) Yes, that is correct. The  
operator would -- the reactor operator in  
control room would be doing most of the individual  
actions sequentially, because each one  
requires. The field operators may be doing one  
two of those items concurrently, depending  
in scenario we are into as to what got us to  
stop what the status is of the rest of the  
plant.

Q We ask, with respect to the first thing he  
told me, 3.5.1, insert rods not fully  
insert the reactor manual control system. How  
long is he supposed to be trying to do that before he  
moves on to the next?

A (BRENNER) Ms. Lee, I am sorry, I  
missed reference.

1 MS. LETSCHE: 3.5.1.

2 JUDGE BRENNER: Thank you.

3 WITNFSS CALONE: He knows very shortly after  
4 he tries to select and move some control rods in front  
5 of him whether or not the rod sequence control system  
6 will permit him to do that. In addition, his training  
7 would have told him which permits would not allow him to  
8 do it anyway, so there are some configurations he can be  
9 in that he wouldn't even bother with that, because he is  
10 locked out from using it based upon the system design  
11 itself. There are other times he may attempt to use it,  
12 but he would know pretty quick whether or not the logic  
13 will allow him to use, to move individual rods quick,  
14 and by quick I am talking 15, 20 seconds.

15 BY MS. LETSCHE: (Resuming)

16 Q If the logic tells him he can't move one  
17 particular rod that he selects, is that sufficient for  
18 him to then move on to the next step, or is he then  
19 supposed to go and select another rod?

20 A (WITNESS CALONE) No, he would probably select  
21 three rods, or try to select three rods. After the  
22 third rod, he would give up on it. It is basically  
23 getting into three separate rod groups.

24 Q Assuming that with the first rod he selects,  
25 he is able to get that in, how long does it take for him

1 to move that rod in?

2 A (WITNESS CALONE) That would depend upon the  
3 position of the rod. It travels at a constant rate, so  
4 if it is full out versus two notches, it would vary.

5 (Whereupon, the witnesses conferred.)

6 A (WITNESS CALONE) I believe regular drive on  
7 emergency in, and that is not a scram, but on an  
8 emergency in from full out is about 48 seconds.

9 Q And does he have to wait until that rod is all  
10 the way in before he moves on to another one?

11 A (WITNESS CALONE) No, on an emergency in,  
12 which is a control on the reactor panel, there is no  
13 timer involved, and I won't get into the timer  
14 sequences, but there is no timer involved for him to  
15 reselect another rod any time that he would like to  
16 select another rod. Normally, once a rod gets past  
17 four, notch four, and is driving in ~~it~~ we would let go,  
18 because it will coast all the way in.

19 From that point, he would then go get what we  
20 would call a hot rod or power rod and grab that one and  
21 try to drive that one in past point four, notch four.  
22 Once you get to notch two or zero, the rod is  
23 technically in. There is no power left in it. And so  
24 he would grab the hot rods, which are the rods in the  
25 notch 40, 36, 34, 30, in that range, drive them in as

1 fast as he can. He would be selecting the hottest rods  
2 in the core. And, as I say, once he gets past notch  
3 four, let it go and immediately reselect another hot rod  
4 or power rod to reduce power as rapidly as possible.

5 (Whereupon, counsel for Suffolk County  
6 conferred.)

7 MS. LETSCHE: I would like to have marked as  
8 Suffolk County Exhibit Number 38 for identification a  
9 document with the heading United States Nuclear  
10 Regulatory Commission Office of Inspection and  
11 Enforcement, dated July 3, 1980, I.E., Bulletin Number  
12 80-17, Failure of 76 of 185 Control Rods to Fully Insert  
13 During A Scram at A BWR. This document has on the top  
14 of it Enclosure 1, and was enclosed with my cross  
15 examination plan. I think the Board has copies.

16 JUDGE BRENNER: All right. It is so marked as  
17 Suffolk County Exhibit 38 for identification.

18 (The document referred to  
19 was marked for  
20 identification as Suffolk  
21 County Exhibit Number  
22 38.)

23 BY MS. LETSCHE: (Resuming)

24 Q Mr. Hodges, do you have a copy of what has  
25 been marked as Suffolk County Exhibit 38 for

1 identification?

2 A (WITNESS HODGES) Yes, I do.

3 Q Are you familiar with this document?

4 A (WITNESS HODGES) Yes, I am.

5 Q And is it fair to state that this is a staff  
6 recommendation of actions to be taken following the  
7 partial failure to scram incident at Brown's Ferry that  
8 occurred in 1980?

9 A (WITNESS HODGES) Recommendations might be a  
10 little bit of a weak word.

11 Q Are these requirements?

12 A (WITNESS HODGES) I don't recall that an order  
13 was sent out, but it was pretty strong.

14 JUDGE BRENNER: How about, the staff expected  
15 that these things would be done, and if they weren't  
16 done, the staff would then consider whether to issue an  
17 order?

18 WITNESS HODGES: Yes.

19 BY MS. LETSCHE: (Resuming)

20 Q Directing your attention to Page 3 of Suffolk  
21 County Exhibit 38, Mr. Hodges, Item Number 6 on that  
22 page states, "In order to mitigate the consequences of  
23 an ATWS event, enhanced operability of HPCI, RCIC, SLCS,  
24 RPT/RHR/pool cooling and and main steam bypass is  
25 essential." Do you know whether or not the staff has

formed any review of the operability of these systems  
the Shoreham plant with respect to their ability to  
investigate the consequences of an ATWS event?

A (WITNESS HODGES) Some of these don't make  
sense to apply to Shoreham yet, since they haven't  
been stated, and in fact A and B under Item 6 would not  
necessarily apply.

Q Well, let's talk about A. Has the staff  
reviewed surveillance procedures or maintenance  
procedures at Shoreham for the systems that are  
referenced up in the beginning Paragraph 6?

A (WITNESS HODGES) I have not personally. I am  
not sure what level of detail those procedures have been  
reviewed at.

(Whereupon, counsel for Suffolk County  
referred.)

Q How about Paragraph C under Item 6 here? Has  
any type of review that is referenced in their 50.59  
been conducted for the Shoreham plant?

JUDGE BRENNER: Why don't you get to the  
importance of the requirement, because if you hang him up  
on the applicability or lack thereof of 50.59 to a  
plant operating -- to a plant that has never received an  
operating license, you are going to be diverted, and it  
will be important to where you want to go. You want to

1 know whether the staff or LILCO has considered using  
2 both pumps at the same time to increase the SICS flow,  
3 correct?

4 MS. LETSCHE: Yes, Judge Brenner, that's  
5 right.

6 WITNESS HODGES: I again personally would not  
7 have been involved in that review, so I am not sure what  
8 kind of detail. I don't know if someone else here would  
9 like to give an answer.

10 WITNESS RIGERT: As far as Paragraph C is  
11 concerned, we have done a conceptual design review and  
12 concluded that it would require major modifications to  
13 operate two pumps at once. The pump suction piping  
14 would have to be modified to give us adequate NPSH, and  
15 the pump discharge to the reactor vessel would have to  
16 be rebuilt, and it was to the point of being a \$1  
17 million type fix, not at all possible before a fuel  
18 load, and also really a subject of a rulemaking, and  
19 Paragraph A has been cancelled out by Supplement Number  
20 5 to this SIL or to this bulletin. The only valid  
21 paragraph now would be B, and I guess that is a  
22 procedural question.

23 BY MS. LETSCHE: (Resuming)

24 Q Mr. Rigert, you said that -- I think your  
25 answer was, we have performed a conceptual design

1 review. Is that a LILCO review?

2 A (WITNESS RIGERT) Well, Stone and Webster did  
3 some analysis for us.

4 Q You weren't referring to a staff review, were  
5 you?

6 A (WITNESS RIGERT) No. We, LILCO and Stone and  
7 Webster.

8 Q Mr. Hodges, to your knowledge, has the staff  
9 reached a conclusion as to whether or not the SLCS flow  
10 at Shoreham has been increased to the maximum consistent  
11 with safety?

12 MR. REVELEY: Excuse me. Objection. That  
13 cuts to the rulemaking directly, the capacity of the  
14 SLCS.

15 JUDGE BRENNER: The way you asked the question  
16 does. As we indicated in the ruling on the motion to  
17 strike, we are interested in the sensitivity of the time  
18 involved vis-a-vis what the Commission might have had in  
19 mind with other reactors and how that might affect the  
20 procedures, and basically what the operator has to do  
21 and what time frame you have in the transient. So, you  
22 can keep it to that in going to the efficacy of the  
23 interim measures.

24 If you are asking, would it be better overall  
25 to have faster flow, that is not going to help us in

1 terms of the overt measures. But if you want to try to  
2 establish what the flow change might be with two pumps  
3 and then only if you are then ready to relate that  
4 through the witnesses, through your questions, to what  
5 effect that has on the time for operator actions, that  
6 would be okay.

7 BY MS. LETSCHE: (Resuming)

8 Q Mr. Hodges, with respect to the interim  
9 measures being taken by Shoreham in response to the  
10 staff position on the ATWS issue, has the staff reviewed  
11 the use of one pump in the SLCS system with respect to  
12 the amount of time available to the operators to  
13 mitigate the ATWS event? In other words, the effect of  
14 the use of one pump as opposed to the use of two pumps  
15 on the time available to the operators to mitigate an  
16 ATWS event.

17 A (WITNESS HODGES) I think the SER that wrote  
18 off on the acceptability of the procedures, I don't  
19 think went into the time available with one or two  
20 pumps. The criteria were those criteria specified in  
21 this letter from Frank Schroeder to Darryl Eisenhut,  
22 which did not include the pump flow rates, and as long  
23 as the criteria in that letter were satisfied, then the  
24 procedures were found to be acceptable.

25 I have looked at times involved for one

1 standby liquid control pump, and I have not a  
2 quantitative but a qualitative feel for what two pumps  
3 will do, but I haven't looked at it in quite the detail  
4 yet.

5 (Whereupon, counsel for Suffolk County  
6 conferred.)

7 JUDGE BRENNER: Could I hear your last  
8 sentence again, Mr. Hodges? It is my fault. I missed  
9 it.

10 WITNESS HODGES: I have not done a  
11 quantitative calculation of how much time you have to  
12 actuate the pumps with two versus one. I have done a  
13 calculation to see how much time you have for one pump,  
14 and I have looked at analyses that show the benefits of  
15 two versus one pumps, but my analysis personally is more  
16 qualitative rather than quantitative at this point.

17 JUDGE BRENNER: Do you want to clue us in to  
18 the results of your qualitative look?

19 WITNESS HODGES: Let me speak only at this  
20 point in terms of the worst case event, so we will start  
21 out by stipulating several things. First off, that the  
22 ARI doesn't work, that you have got main steam isolation  
23 valve closure ATWS, so you are not dumping any heat to  
24 the condenser. It is all going to the suppression pool,  
25 and none of these measures that you are taking to try to

1 manually insert the rod to reset the trips or open vents  
2 and drains on the scram discharge volume, none of those  
3 types of measures work, and you are relying strictly  
4 upon the standby liquid control system, so a lot of  
5 stuff has happened that didn't work, that should have  
6 worked to get to this point. So, we are talking about  
7 the worst case.

8 JUDGE BRENNER: Okay, you have got RPT,  
9 though?

10 WITNESS HODGES: You have RPT in this case.  
11 That is correct. For one pump, if you assume that you  
12 are starting with a suppression pool temperature of 90  
13 degrees, which would be a normal operating limit, and  
14 you go to the 110 degrees that is in the procedures, as  
15 the point at which you would actuate the standby liquid  
16 control system, then that increment added to the  
17 suppression pool amounts to approximately 40 and a half  
18 full power seconds.

19 Now, for a transient where you had the  
20 recirculation pump trip, you are reducing the power  
21 fairly quickly, so that in reality you have somewhere  
22 between a minute and a half and two minutes to actuate  
23 the standby liquid control system before you reach that  
24 110 degrees Fahrenheit suppression pool limit. That is  
25 how much time you have to do some of these other things

1 before you have to actuate the standby liquid control  
2 system.

3           Actuating the standby liquid control system at  
4 that point with no RHR cooling so the operator also  
5 fails to turn on the RHR cooling to get the temperature  
6 somewhere in the neighborhood of 240 to 260 degrees  
7 Fahrenheit in the suppression pool, fairly high. I am  
8 sorry, that is a little bit high. One second.

9           (Pause.)

10           WITNESS HODGES: I am sorry. That was a little  
11 high. It is closer to 220 to 230, in that range. If  
12 you had two standby liquid control system pumps  
13 operating at 86 gpm, which would have required some  
14 piping modifications in order to get that at Shoreham,  
15 then the temperature would be 170 degrees or less, and  
16 these temperatures are temperatures at the time you  
17 finally got the reactor shutdown, the 220 to 230 on the  
18 one case and 160 to 170 in the other case. These are  
19 temperatures at the time you finally got enough boron in  
20 to shut the reactor down to hot shutdown.

21

22

23

24

25

1 JUDGE MORRIS: Did you reach any conclusion  
2 then whether it was unsafe to run two pumps?

3 WITNESS HODGES: No, I don't think it is  
4 unsafe to run two pumps, and at this point you could  
5 make the piping changes without irradiating anyone, so I  
6 don't see anything there that would make it unsafe. I  
7 do see it to be an economic penalty, but I don't see  
8 anything unsafe about it.

9 JUDGE MORRIS: Well, I asked because of the  
10 parenthetical phrase there that includes unless unsafe.

11 Is there something behind that question?

12 WITNESS HODGES: I think that was directed to  
13 operating plants, and so there, when you start to cut up  
14 the piping, then there may be things unsafe about that.

15 JUDGE MORRIS: Okay. I understand.

16 (Board conferring.)

17 JUDGE BRENNER: Mr. Hodges, I think you may  
18 have implicitly or even explicitly said it for those  
19 with a good technical ear in terms of turning the  
20 transient around at that point, I think, or words to  
21 that effect was your phrase, but assuming you are using  
22 one pump and say you ran in the 220 to 230 range in the  
23 timeframes you indicated, what conclusions do you draw  
24 with respect to the reasonable assurance of safety of  
25 using just one pump from the standpoint of the concern

1 for the inof the ultimate heat sink?

2 HODGES: The test data that we have  
3 seen as fa the quenching and such works from the  
4 tailpipes relief valves in the suppression pool  
5 indicates 200 degrees there is no problem, and I  
6 think they even go up to 210 to 220. It is --  
7 some of tpo up in that particular range, and the  
8 quenchers satisfactorily. The NRC has written  
9 off on 20s not blessed the higher temperature at  
10 this poining the data, you could probably go to  
11 220. If above 220, there is just no data to  
12 support might be okay, but it starts to be  
13 questioned so I would have to label it at this  
14 point as ne.

15 BRENNER: All right.

16 e flow you have assumed with one pump,  
17 is that flow as would actually occur at  
18 Shoreham

19 S HODGES: That is the 43 gpm at  
20 Shoreham

21 BRENNER: I am asking for your  
22 assistar advice, whatever.

23 n we get a handle on whether the  
24 operator e starting initiating SLCS in a minute  
25 and a hvo minutes, assuming he follows the

1 procedures correctly?

2 WITNESS HODGES: In Step 3.6 of the  
3 procedures, he has explicit instructions to do that.

4 WITNESS CALONE: Let me also add, I think Mr.  
5 Hodges said he was going on suppression pool temperature  
6 as the initiating action to start standby liquid  
7 control. I would assume in the scenario he is speaking  
8 of we would have a reactor power of higher than 6  
9 percent.

10 Now, I am going to give you my experience on  
11 ATWS. In my opinion and as operating at least at the  
12 simulator and witnessing other people operate at the  
13 simulator, an ATWS is a very highly recognizable  
14 situation, the reason being the reactor protection  
15 system notifies the operator in advance that he is  
16 approaching a scram limit, keys him into an area of the  
17 scram. He knows when he doesn't have it. He knows when  
18 he wants to scram and it doesn't go in. He is  
19 monitoring control rod drives and control rod  
20 positions. In my experience and from what I have seen,  
21 an ATWS is recognizable within seconds of the event.  
22 And I have to say that I cannot see an operator sitting  
23 around or wondering about what is happening for a minute  
24 and a half or two minutes. It is my opinion that an  
25 operator will respond within 10 or 15 seconds to get

1 initiating liquid control, at least to the  
2 of recognit he has an A'NS, and if he has  
3 6 percent, believe me, he is interested in  
4 ng that pool around.

5 WITNESS: I would tend to disagree. I  
6 that he isto try first to get those means  
7 would be micient in shutting the reactor  
8 and also whld be the least penalty to him.  
9 nose are thwhere he inserts the rods by  
10 r resettingrams or inserting them manually,  
11 ese others, think he is going to use the time  
12 s until he that 110 in order to try to use  
13 other mean if he sees these other means  
14 effective, s what he will use.

15 Now, lies these other means and they do  
16 ork, then I necessarily think he will wait  
17 3 to that mnd a half. But he is not going  
18 immediatele standby liquid control system.  
19 ak he is gotry these other actions first,  
20 think he because they do not take 20 or so  
21 es in order the reactor down. They work  
22 quickly, ifork.

23 JUDGE: Well, but are they going to  
24 more than a and a half to two minutes, or  
25 ou start thute and a half to two minutes

1 after he had tried all of that?

2 WITNESS HODGES: No, I am starting the minute  
3 and a half from time zero in the transient, and he will  
4 try that until his minute and a half is up, but he also  
5 has to keep an eye on the suppression pool temperature,  
6 and when he gets to that point, he will hit the standby  
7 liquid control system and go back to this other stuff.

8 JUDGE BRENNER: I have got you now. That is  
9 why I don't have to worry about the time assumption  
10 because the temperature requirement, even under your  
11 assumptions, Mr. Hodges, requires him to initiate  
12 standby liquid control.

13 WITNESS HODGES: Yes.

14 WITNESS CALONE: Let me add just the fact that  
15 our procedure as written and as the operators are  
16 trained, it is the 6 percent power level that will cause  
17 them to inject standby liquid control. It is an "or"  
18 statement to him, and the "or" statement would have  
19 preference over the 110 suppression pool temperature.  
20 That is the way they are trained, and that is the way  
21 they respond.

22 JUDGE BRENNER: Isn't the reactor -- when does  
23 he look at that 6 percent, as soon as he gets an initial  
24 failure to scram, given the transient?

25 WITNESS CALONE: Once he notices the failure

1 scram, his first action is to manually scram the  
 2 tor. He does that by two mechanisms, as the  
 3 edure says. He hits the manual scram, which is one,  
 4 he puts the mode switch to shutdown, which is the  
 5 nd scram. The operator is trained in a scram  
 6 ario, his normal shutdown scenario is as he moves  
 7 mode switch to shutdown, he scans his APRMs and  
 8 cts to see APRMs, average power range monitors,  
 9 easing in power, and in a short period of time he  
 10 know that he doesn't have or he does have greater  
 11 t 6 percent power. So it is right there on the  
 12 bod and when he hits those buttons, he expects to see  
 13 the power immediately drop.

14 WITNESS HODGES: It should take about 5  
 15 seconds approximately for the power to get down to that  
 16 range, if it's going to get down on a normal trip. So  
 17 if it says over 6 percent beyond the first five  
 18 seconds, he should be aware that he has an ATWS in  
 19 progress.

20 E BRENNER: Shouldn't that 3.6 requirement  
 21 then, partrly the 6 percent aspect but not  
 22 exclusive appear further up in these procedures?

23 ESS CALONE: As Mr. Revely mentioned  
 24 before in the procedures, these procedures do have a  
 25 tendency anging them. From our experience at the

1 simulator, we have made that basic conclusion that the  
2 step may be more functional up higher in the procedure,  
3 but again, we have to remember that the operator  
4 memorizes immediate actions and he knows he has to go to  
5 a standby liquid control injection if he reaches the  
6 point of 6 percent power after manual scram.

7 JUDGE MORRIS: May I confirm that in 3.6 where  
8 the words reactor power are used, it is meant to be  
9 neutron level?

10 WITNESS CALONE: At that exact point in time  
11 he is using his APRMs as an indication of reactor power,  
12 that is right. It is neutron level that he is actually  
13 monitoring, but he is using that as his indication of  
14 reactor power.

15 JUDGE MORRIS: There is no ambiguity about  
16 that?

17 WITNESS CALONE: I think a a guide to the  
18 operator, there is no ambiguity about it. The actual  
19 reactor power is normally calculated by the process  
20 computer. That is where he gets actual power.

21 JUDGE MORRIS: Right.

22 JUDGE BRENNER: Do the proposed procedure  
23 guidelines go into the detail of suggesting that the  
24 direction to the operator that he initiate SLC if the  
25 reactor power is above 6 percent, etc., the rest of 3.6,

1) what in the procedures?

2) S HODGES: The emergency procedure  
3) is a little bit different. First off, they  
4) use a 3 percent guide rather than 6 percent. It is  
5) possible the lower end of the APRM range is  
6) the trend, and for the plant that they use as  
7) a reference that was 3 percent. Also in the  
8) steps I think assume that the operator will  
9) take the steps first rather than trying to go to  
10) inject the standby liquid control system  
11) and assume that he will wait until it reaches  
12) the pool temperature limit.

13) BRENNER: Okay. Let me come back to the  
14) record, Mr. Hodges, when you gave us your view  
15) of what to do around something over 200 degrees,  
16) you are sure the basis is there to support a  
17) plus you are okay with respect to inventory.  
18) In that situation that we get into in  
19) what has given the fact that it is one pump?

20) S HODGES: Well, there is --

21) BRENNER: And given the other  
22) assumptions you made about things that would work.

23) S HODGES: It is a combination of  
24) elements is you have got to worry about load on  
25) the pool point, and also you have to worry about

1 a net positive suction head for the HPSI or RCSI pumps  
2 when you are using those to try to maintain level. So I  
3 think you start running into problems on MPSH for those  
4 pumps at those kind of temperatures as well. So I think  
5 that for the one pump initiated at 110 degrees for this  
6 worst case that we are talking about, it is very much  
7 borderline and it might not make it through it. And  
8 that is the reason I said in my prefiled testimony that  
9 we did not necessarily think that these interim measures  
10 were good for all ATWS events, and it is good for a good  
11 many of them, and I think, and in fairly summary fashion  
12 I have discussed what kinds of ATWS events you are okay  
13 on. But for this very worst case event, you just may  
14 not be protected.

15 JUDGE BRENNER: Okay. When you were assuming  
16 the possibility of two pumps, you were doubling the  
17 flow, correct, the flow rate?

18 WITNESS HODGES: I was taking the 86, which is  
19 double the flow, and I think to get exactly 86 you might  
20 have to do some minor modifications, but yes.

21 JUDGE BRENNER: Is the flow rate proposed for  
22 Shoreham of 43 typical of the flow rate at operating  
23 boiling water reactors to the extent that that would  
24 have been the body of knowledge that the Commission had  
25 in mind in their statement of considerations with

1 respect to interim procedures?

2 WITNESS HODGES: That is very much standard.

3 WITNESS PFEFFERLEN: Judge Brenner, let me  
4 make one comment here. I think Mr. Hodges indicated  
5 that the higher temperature was a result of not  
6 operating with the RHR.

7 WITNESS HODGES: That is correct.

8 WITNESS PFEFFERLEN: so with the RHR in  
9 operation, the temperatures would be lower, the HPSI can  
10 take suction from the condensate storage tank also so  
11 that there would be a source of water. And finally, I  
12 think the temperature determination, the 220 that he  
13 cited, was a conservative value which did not take into  
14 account going through 212, the heat of vaporization,  
15 which would of course have to happen in the process. So  
16 it is a conservative assessment that you make there I  
17 believe.

18 WITNESS HODGES: Well, I specifically stated  
19 no RHR cooling, which is again one of the worst case  
20 conditions.

21 JUDGE BRENNER: Also, for what it is worth,  
22 Mr. Hodges, I am not focusing on 220 as a number. I am  
23 focusing on the thought that you are over the point  
24 where in your view the analyses can support a conclusion  
25 of acceptability that is over 200. So I am not -- or

1 thereabouts. I am not focusing on any one particular  
2 degree as you would in a rigorous analysis.

3 WITNESS HODGES: That is correct.

4 JUDGE BRENNER: I mention that so even if I  
5 assume you are at 211, for example, and not at boiling,  
6 I am still thinking about it.

7 WITNESS HODGES: Well, I think the data does  
8 go up into the 210 to 220 range, and so although the NRC  
9 has only written off on up to 200 as far as the loads in  
10 the suction pool, I think there are some data that would  
11 show at slightly higher temperatures you are still  
12 okay. It is just when you start getting up in the 240  
13 or so range it starts to be questionable.

14 WITNESS ECKERT: May I add one comment here?

15 I do not want to overly complicate it, but as  
16 we have started talking about the peak numbers, and a  
17 lot of these have been presented in the past and  
18 discussed as if the operator just let the ATWS event,  
19 should it happen, run its course, as the guidelines have  
20 been constructed, they are also looking at actions that  
21 are protecting the containment area and looking at the  
22 concerns that Mr. Hodges pointed out here relative to  
23 the quenching capabilities of the safety relief valve  
24 quenchers. And so there are actions in the guideline  
25 that will also be called upon that as pool temperatures

1 heat up, the operator would be asked to depressurize the  
2 reactor so it is not blowing high energy steam into a  
3 very hot pool, and coincident with what is going on in  
4 the ATWS event, he would be taking actions to protect  
5 for those loads as well.

6           And if such high temperatures are approached,  
7 it would be approached on the tail end of the event  
8 where you have then depressurized the reactor somewhat  
9 and are away from this region of high quenching loads  
10 and the data that was talked about here, which is really  
11 1000 psi or so reactor pressure data.

12           JUDGE BRENNER: That is correct, also, isn't  
13 it, Mr. Hodges, that you in the sense of bounding worst  
14 case analysis did not go into the kind of detail of  
15 adjusting for what would be a complicated series of  
16 functions, including lowering of the pressure and so  
17 on?

18           WITNESS HODGES: Well, there are conditions  
19 under an ATWS where I think the operator is called upon  
20 to lower the pressure, but normally for the ATWS he  
21 would not do that unless if he could not maintain the  
22 level, for example, with the systems -- let's say he  
23 lost the suction head -- then he would have to reduce  
24 the pressure. But otherwise I think he would try to  
25 maintain the pressure. That is what the procedures tell

1 him to do, or the Emergency Procedure Guidelines,  
2 Revision 2.

3 WITNESS CARTER: I am not sure I entirely  
4 agree with that. Once he hits the heat capacity  
5 temperature limit in the control guideline, he would  
6 depressurize the reactor.

7 WITNESS HODGES: Let me say that that is an  
8 ambiguity that has not been cleared up in there at the  
9 present.

10 JUDGE BRENNER: An ambiguity in the  
11 procedure?

12 WITNESS HODGES: In the guidelines for the  
13 procedures, yes.

14 JUDGE CARPENTER: Mr. Carter, how can you make  
15 such a sweeping statement? Is it documented someplace  
16 that that would happen, that he would be instructed to  
17 do that?

18 WITNESS CARTER: Well, he has other emergency  
19 procedures. His containment emergency procedures  
20 instruct him explicitly to depressurize the reactor once  
21 he hits the capacity temperature limit. I have taught  
22 them that, and they know that.

23 WITNESS HODGES: That is in the containment  
24 control guidelines to do that, but the ATWS procedures  
25 also I think tell him to try to maintain pressure unless

1 he cannot maintain level. So there may be a conflict  
2 there, and this is one reason that these are not  
3 approved yet.

4           WITNESS ECKERT: Let me add that I have worked  
5 at the Anderson reactor, and at this point, as I  
6 understand Rev. 2, and the way it stands for review by  
7 the Commission, it does involve the actions that the  
8 operator would take even if he was in an incomplete  
9 shutdown situation, that he would depressurize. The  
10 actions are written in such a way that he would do so as  
11 smoothly and logically as he could in view of the fact  
12 that he has not had complete rod insertion, and that  
13 that action as well helps reduce reactor power during  
14 this period of depressurization, and to that extent  
15 actually helps him control power and reduce power as he  
16 rides through the event and until sufficient boron has  
17 been injected to shut him down nuclearly.

18           And so my understanding of Rev. 2 as we have  
19 worked it up ended up with that action being in the  
20 guideline and being the way the Shoreham procedures are  
21 written and the Rev. 2 procedures are written.

22           JUDGE BRENNER: Mr. Hodges, just to help me  
23 understand this in context -- and this gets into the  
24 rulemaking more than I think we have to, but it might  
25 help in my non-technical mind with the context. If you

1 had an automatic SLCS, I take it one of the subjects  
2 would be at what point would you want that automatic  
3 SLCS to be called upon automatically.

4 Are some of the possibilities in the  
5 rulemaking that it would be called upon faster than the  
6 parameters now in the procedures?

7 Can you help me out with that?

8 WITNESS HODGES: It is hard to say where it is  
9 going to come down at this point because the proposed  
10 rules that were issued did not get in that kind of  
11 detail. It talked only in terms of criteria and that  
12 there are discussions now going on as to what should be  
13 written which -- and that is getting into whether you  
14 should talk about an injection system that basically  
15 both pumps running or should you go to a higher capacity  
16 system, and there are a number of other considerations  
17 that are being looked at. And so it hasn't at this  
18 point been tied down to exactly when and on what  
19 criteria it should be actuated. So it is still up in  
20 the air.

21 (Pause)

22 WITNESS HODGES: Let me just say that at this  
23 point the best guess is it will probably be something  
24 like a two-pump system, probably automatic, but that is  
25 doing a lot of supposing at this point on what the

1 Commission will finally come down on and in fact what we  
2 will collectively, we being the people on this task  
3 force and others who are inputting to the task force,  
4 willk try to decide.

5           So that is my guess at this point as to where  
6 it will come down.

7           JUDGE BRENNER: Well, in terms of automatic  
8 initiation, is there any of the proposals or the things  
9 under active consideration by the staff, at least, to  
10 get that automatic initiation immediately upon a failure  
11 to scram, or would there be the automatic initiation  
12 upon some of the same parameters being reached as is  
13 currently indicated in the 3.6 of LILCO's attached  
14 procedure, that is, 110 degrees Fahrenheit, that type of  
15 thing?

16           WITNESS HODGES: My recommendation at any rate  
17 is going to be based upon the criteria like the 110  
18 degrees, primarily because if you can get those rods in,  
19 that is the quickest way of getting the power down, and  
20 in many cases and for the ATWS situation, these other  
21 steps to reduce power by inserting the rods, either one  
22 rod at a time or resetting the scrams and getting them  
23 to go in are going to be effective, and that is the best  
24 way of doing it.

25           WITNESS ECKERT: May I add --

1           JUDGE BRENNER: Let me just stay with this for  
2 a second. Then I will come right back to you. And we  
3 are going to take a break soon, too, but I will come  
4 back to you before the break.

5           Under that possibility -- and we are just  
6 talking possibilities here, if it was the same capacity  
7 pump, you would have the same considerations under the  
8 automatic system, too, since the initiation is starting  
9 at the same point as the manual initiation that you  
10 assumed in your description before.

11          WITNESS HODGES: That is correct. We are not  
12 talking about, I do not think, a 43 gpm, we are talking  
13 about something higher capacity.

14          WITNESS ECKERT: Judge Brenner, I just wanted  
15 to add, we have explored with the Staff possible logic  
16 for the automatic initiation, and it is very similar to  
17 the equipment in Shoreham to one extent, that it is tied  
18 to the kinds of separate sensors that are initiating the  
19 RPT function in the ATWS system that is at Shoreham, and  
20 it is using confirmation that high APEM power still  
21 remains as the indicator that although scram should have  
22 happened, it has not apparently happened. And so then  
23 that signal becomes available very early in such an  
24 event and the confirmation period is the only delay, and  
25 that is in the neighborhood of a couple of minutes.

1 That is the type of thing that has been studied.

2 JUDGE BRENNER: One other quick thing, I think  
3 it is quick, on the subject.

4 Mr. Hodges, in looking at the Commission's  
5 summary listing of their considerations for the finding  
6 of acceptability of interim operation of reactors, they  
7 do not list ARI. They list RPT but not ARI.

8 Is there anyplace in the rule or elsewhere, to  
9 your knowledge, of the considerations of whether or not  
10 ARI was assumed in terms of efficacy of interim  
11 operation or on the contrary, that it was not assumed  
12 because none of the operating reactors had it?

13 WITNESS HODGES: Well, basically none of the  
14 operating reactors had it, and we at this point are not  
15 requiring it of them.

16 Also, I think there is some disagreement among  
17 the NRC Staff members and some of the utilities and  
18 maybe GE about how much you buy in terms of reduction of  
19 ATWS challenges by incorporation of the ARI. I think  
20 that GE and the utilities claim maybe a factor of ten  
21 and the NRC staff talked about something like a factor  
22 of two, something on that order of magnitude  
23 difference.

24 JUDGE BRENNER: Okay. But is there any  
25 possible argument that ARI could make things worse from

1 a certain point of view than what the Commission  
2 considered would be the case for interim operation?

3 WITNESS HODGES: No, I would expect it to make  
4 it better.

5 JUDGE BRENNER: And the dispute is over how  
6 much?

7 WITNESS HODGES: Yes.

8 JUDGE BRENNER: I suppose the real focus of  
9 the dispute is it is so much better that you don't need  
10 higher capacity automatically initiated standby liquid  
11 control system.

12 WITNESS HODGES: That is one of the  
13 questions.

14 (General laughter.)

15 JUDGE BRENNER: I just took a wild guess.

16 (General laughter.)

17 JUDGE BRENNER: We will take a break now, and  
18 unless somebody objects to the break, having the kind of  
19 day, we never know what a party might say.

20 MS. LETSCHE: I was just going to ask you  
21 where on my cross plan you were, Judge Brenner.

22 (General laughter.)

23 JUDGE BRENNER: I will be honest with you and  
24 I will state this for the record. Although we looked at  
25 your cross plan, I was not consciously following it, but

1 to the extent that I used up a fair amount of it, that  
2 is okay as far as I am concerned.

3 MS. LETSCHE: I just have to find it.

4 (General laughter.)

5 JUDGE BRENNER: I will tell you quite frankly  
6 what occurred. We are very anxious to get to parametric  
7 sensitivity type discussion of nonsequence and what the  
8 operator is doing, and I think we said that many times  
9 in the course of the past few weeks. Mr. Hodges'  
10 statement saying he looked at that type of thing and  
11 then stopping is what stimulated my saying, well, tell  
12 us about it.

13 MS. LETSCHE: I wasn't objecting to your  
14 questions. I thought they were fine.

15 JUDGE BRENNER: Well, I apologize if I messed  
16 up your cross approach, but that is what happened.

17 (Board conferring.)

18 JUDGE BRENNER: Let's take a 15 minute break  
19 until 3:55.

20 (A brief recess was taken.)

21

22

23

24

25

1 JUDGE BRENNER: Ms. Letsche, as a follow-up to  
2 your comment that we have utilized some of your cross  
3 plan, the always-asked question is how much time do you  
4 have now?

5 (Laughter.)

6 MS. LETSCHE: Well, I won't finish today,  
7 Judge Brenner. I am actually -- I don't know if you  
8 have looked at it, but I am just about finished with my  
9 cross plan for the Staff and am ready to move into the  
10 one for LILCO. Certain portions of that I am not going  
11 to pursue, given some of the things that have happened.

12 I don't know. I guess it would be possible  
13 for me to finish tomorrow, but I don't want to -- I just  
14 can't say for sure.

15 JUDGE BRENNER: I will tell you what I was  
16 hoping. I was hoping you would be able to finish with  
17 enough time to allow for some reasonable, but not  
18 necessarily a large amount of, Staff questions, and  
19 redirect and Board questions at the end.

20 MS. LETSCHE: It's very hard for me to  
21 estimate it right now until I have sat down and really  
22 had a chance to go through my plan and think about what  
23 happened today, which is one problem I have answering  
24 you right now.

25 JUDGE BRENNER: Well, let me make clear, even

1 if you finish today we will give you the opportunity to  
2 think about follow-up for tomorrow based upon the new  
3 material.

4 MS. LETSCHE: Well, I know I'm not going to  
5 finish today.

6 JUDGE BRENNER: I suppose you have a certain  
7 assumption in mind as to when today would end, when you  
8 say that.

9 MS. LETSCHE: Well, yes, I did, that's true.  
10 I guess I should ask. Should I assume you had a  
11 different assumption in mind?

12 JUDGE BRENNER: I don't know. We are anxious  
13 to finish the panel this week, but we are reaching the  
14 point of being tired, as I'm sure you are and the  
15 witnesses are, too. So we are not going to push it for  
16 the point of affecting the record.

17 If it made a difference for you finishing  
18 today, I would have run later. But I guess we will run  
19 until around 5:00 or 5:15 if it's not going to make a  
20 difference. But Mr. Reveley, you wanted to say  
21 something?

22 MR. PEVELEY: Well, it would be grand if we  
23 could finish this week, since three of our people are  
24 from California.

25 JUDGE BRENNER: You're not going to get us to

1 run late tomorrow, I can tell you that.

2 MR. REVELEY: What about today?

3 JUDGE BRENNER: We will talk about it when we  
4 get to 5:15, about whether to come back after a break or  
5 not. And it would depend upon whether Ms. Letsche --  
6 what kind of estimate she can give us at that point. So  
7 let's proceed and see where we are.

8 BY MS. LETSCHE: (Resuming)

9 Q Mr. Hodges, I would like to direct your  
10 attention to page 22 of the LILCO prefiled testimony,  
11 particularly the last paragraph on the page of  
12 testimony, and ask you if you agree with the conclusion  
13 contained in that paragraph with respect to all ATWS  
14 conditions.

15 A (WITNESS HODGES) I think, as I stated a few  
16 minutes ago before the break, that for the most limiting  
17 ATWS conditions it might be marginal, and I'm not saying  
18 it wouldn't do it. I'm just saying it is a close call,  
19 with what we know.

20 But I think you can say that for most ATWS  
21 events that it would.

22 (Board conferring.)

23 MS. LETSCHE: I'm sorry, I thought you were  
24 going to say something.

25 JUDGE BRENNER: Proceed.

1 BY MS. LETSCHE: (Resuming)

2 Q I would like to ask the LILCO panel -- and I'm  
3 not directing this to any particular person -- if in  
4 your opinion or in your interpretation GDC-20 applies to  
5 automatic initiation of reactivity control systems?

6 A (WITNESS PFEFFERLEN) Your question is does  
7 GDC-20 apply to automatic initiation of reactivity  
8 control systems?

9 Q That's right?

10 A (WITNESS PFEFFERLEN) Yes, I think it does.

11 Q And do you also believe it applies to  
12 automatic initiation of engineered safeguards systems?

13 A (WITNESS PFEFFERLEN) No, I think it applies  
14 to automatic initiation of reactivity control systems,  
15 scram systems.

16 Q Well, what systems would you put in that  
17 category, reactivity control systems?

18 A (WITNESS PFEFFERLEN) The scram system.

19 Q The scram system; would that include the  
20 standby liquid control system?

21 A (WITNESS PFEFFERLEN) No.

22 Q Would it include the recirc pump trip?

23 A (WITNESS PFEFFERLEN) GDC-20 I don't think  
24 would include the recirc pump trip, either.

25 Q How about alternate rod insertion systems?

1           A       (WITNESS PFEFFERLEN) I think all of those are  
2 backups to the scram system as required by GDC-20. The  
3 scram system is designed to meet all of the requirements  
4 laid out in GDC-20, and the systems that you mentioned  
5 are backups to or modifications of that system. But the  
6 system was designed originally in all past plants as  
7 completely satisfying GDC-20.

8                   (Counsel for Suffolk County conferring.)

9           JUDGE MORRIS: Excuse me, Ms. Letsche.

10           Is it your position, then, Mr. Pfefferlen,  
11 that the backup systems, in exercising a protection  
12 function, do not have to meet the requirements of  
13 GDC-20?

14           WITNESS PFEFFERLEN: I don't think I  
15 necessarily meant that. My point was that GDC-20 is  
16 satisfied by the scram system and the scram system was  
17 designed to satisfy that. Now, whether or not the  
18 requirements of GDC-20 -- it requires an automatically  
19 initiated system and I think that is fully satisfied  
20 with the scram system. So I think the answer is yes, I  
21 think it does not apply to the ARI or the SLC system or  
22 the RPT.

23           JUDGE MORRIS: And the basis for that is that  
24 you do have a system that does comply?

25           WITNESS PFEFFERLEN: Exactly.

1 JUDGE MORRIS: And you've defined this as a  
2 protection system?

3 WITNESS PFEFFERLEN: That is correct.

4 JUDGE MORRIS: Would you also say that the  
5 backup systems are protection systems or reactivity  
6 control systems?

7 WITNESS PFEFFERLEN: Well, they are backup  
8 reactivity control systems.

9 Let me ask, which systems specifically are you  
10 referring to, the ARI?

11 JUDGE MORRIS: Well, I was thinking of the  
12 standby liquid control system.

13 WITNESS PFEFFERLEN: The standby liquid  
14 control system is a backup system to that reactivity  
15 control system. But the reactivity control system, the  
16 scram system, is designed to meet all of the single  
17 failure criteria, to function with rods stuck out. In  
18 other words, there is sufficient negative reactivity to  
19 perform its function, to meet all of the imposed failure  
20 requirements that would go with a system designed to  
21 meet the GDC.

22 And I submit that in the past this has been an  
23 acceptable situation, and since ATWS now is being  
24 discussed we are bringing into play the other systems  
25 that we are talking about now.

1           JUDGE MORRIS: Maybe I am trying to  
2 manufacture a problem where there is not one, but in my  
3 reading of GDC-20 it seems to distinguish between a  
4 protection system and a reactivity control system.

5           WITNESS PFEFFERLEN: I'm sorry, maybe I should  
6 read the section.

7           JUDGE BRENNER: I think maybe to fill it out  
8 for the record, it isn't necessarily G C-20 by itself  
9 that draws that distinction, arguably, but it is the  
10 title of Roman III within the GDC. And then if you look  
11 at the different GDC's under that, some of them include  
12 "protection system" in the italicized introductory title  
13 and some include "reactivity control systems."

14          WITNESS PFEFFERLEN: Yes, I do agree with your  
15 statement. But addressing specifically GDC-20, "The  
16 protection system shall be designed to initiate  
17 automatically," okay, I would say that it is the  
18 reactivity control system and the other protection  
19 functions that -- core cooling, ECCS, and things of this  
20 nature -- that would be required to satisfy the  
21 acceptable fuel limits.

22          But as far as the reactivity system goes, the  
23 scram system is what -- the protection system I believe  
24 would include other systems that provide a protection  
25 function, but not a reactivity control function, just as

1 emergency cooling systems which are initiated by the  
2 reactor protection system.

3 BY MS. LETSCHE: (Resuming)

4 Q Mr. Pfefferlen, I wonder, could you just read  
5 into the record for us GDC-20?

6 JUDGE BRENNER: I will read it in. It hasn't  
7 changed, but I have got the slightly newer version, just  
8 in case. It is:

9 "Criterion 20, protection system functions.  
10 The protection system shall be designed:

11 "(1) To initiate automatically the operation  
12 of appropriate systems, including the reactivity control  
13 systems, to assure that specified acceptable fuel design  
14 limits are not exceeded as a result of anticipated  
15 operational occurrences; and

16 "(2) To sense accident conditions and to  
17 initiate the operation of systems and components  
18 important to safety."

19 MS. LETSCHE: Thank you, Judge Brenner.

20 JUDGE BRENNER: That's a nice little phrase at  
21 the end of the criterion there.

22 BY MS. LETSCHE: (Resuming)

23 Q Mr. Pfefferlen, can you tell me where in  
24 GDC-20 it exempts backup reactivity control system?

25 MR. REVELEY: Judge, I'm going to object to

1 the question. To repeat the objection I've made a  
2 number of times today, the Commission in its notice of  
3 proposed AIWS rulemaking has already found, and we are  
4 bound as a matter of law by that finding, that neither  
5 GDC-20 nor anything else require an automatic SLC in  
6 this interim period.

7           It could be that Ms. Letsche is going  
8 someplace else, but I doubt it. And if in fact the  
9 Commission by finding that the interim SLCS which are  
10 not automatic in EWR's are acceptable for the interim --  
11 I don't see that this line of inquiry will ultimately  
12 help the Board in writing its findings.

13                   (Board conferring.)

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1           JUDGE BRENNER: Essentially we agree with Mr.  
2 Reveley. Let me first state why the hedge on the  
3 essentially.

4           We agreed to the point that we are going to  
5 grant the objection. We do not agree that the  
6 Commission has absolutely found that an automatic system  
7 is not required in the interim. They found that subject  
8 to a finding that the interim measures taken conform  
9 with their expectation as indicated in the statement of  
10 considerations of the interim measures. That is, it is  
11 open to find that at a particular reactor, given certain  
12 deficiencies such as training and procedures, then in  
13 the absence of an automatic system and given these  
14 deficiencies that the reactor has not met the  
15 requirements that the Commission had in mind.

16           And I say that so that our agreement with you  
17 should not be taken literally with one phrase you had in  
18 there that would imply an absolute finding that nothing  
19 else possibly could be required, but the thrust of the  
20 objection is correct.

21           Another way of saying it in the context of GDC  
22 20, since that is where the objection -- that is what  
23 the question was focused on and where the objection was  
24 made is that it is not very productive given the fact of  
25 the rulemaking to debate what is a protection system

1 within the meaning of GDC 20, since it might be fair to  
2 suggest that what is a "protection system" becomes a  
3 matter of definition through analysis or rulemaking or  
4 both of what it is you have to protect from. For  
5 example, one possible result of the rulemaking is that  
6 the Commission will find that you need an automatic that  
7 you should protect from an ATWS, and in order to protect  
8 from an ATWS, you need an automatic standby liquid  
9 control system. If they made that finding, then that  
10 system could be a protection system within the meaning  
11 of GDC 20.

12 So the way to get at this is to focus at the  
13 interim procedures given what the Commission had in mind  
14 and not try to define what might or might not be within  
15 GDC 20 after the completion of the rulemaking.

16 (Counsel for Suffolk County conferring.)

17 BY MS. LETSCHE: (Resuming)

18 Q Mr. Pfefferlen, if you assume that the standby  
19 liquid control system is not promptly initiated by an  
20 operator, would you have assurance that the fuel limits  
21 would not be exceeded in the event of a severe ATWS  
22 event?

23 A (WITNESS PFEFFERLEN) If the SLC were not  
24 promptly initiated, would I have assurance that the fuel  
25 limits would not be exceeded?

1 (Panel of witnesses conferring.)

2 I think, as Mr. Hodges pointed out, that  
3 eventually if we continue to dump heat into the  
4 suppression pool, we get to a condition that may lead to  
5 some kind of fuel damage. So I think the answer to your  
6 question is no. I cannot assure that, but that is in  
7 the long term that some understood problem may develop.

8 (Counsel for Suffolk County conferring.)

9 Q Mr. Pfefferlen -- actually there are a number  
10 of people on this item that I am going to refer you to  
11 -- on page 6 and 7 of your prefiled testimony you talk  
12 about the Shoreham scram system. Can somebody tell me  
13 how the control rod drives and hydraulic control units  
14 are arranged with respect to each other? In other  
15 words, do the two hydraulic control unit groups divide  
16 in a checkboard pattern of rods, or does each group  
17 drive one side of the core? How is that set up?

18 (Panel of witnesses conferring.)

19 A (WITNESS RIGERT) The hydraulic control units  
20 are separated into east and west banks, and they split  
21 the reactor roughly down the middle; they are not  
22 checkerboard. East-west as far as the core spacing of  
23 the rods. But the electrical system is checkerboard as  
24 far as the scram channels and the failure of an  
25 individual channel in the reactor protection system.

1 That has been checkerboarded in the physical core  
2 arrangement.

3 (Counsel for Suffolk County conferring.)

4 Q Mr. Pfefferlen, do other types of reactors  
5 have diverse scram drive mechanisms like an electrical  
6 and a hydraulic drive?

7 A (WITNESS PFEFFERLEN) I would imagine the  
8 answer is yes. I know in the prototype LMFBR they are  
9 talking about that, but I am not aware of any operating  
10 plants that have. I really do not know the answer to  
11 that other than in the LMFBR prototype.

12 Q Did GE ever consider putting diverse drives  
13 into their BWR design?

14 MR. REVELEY: Judge, I object. I do not  
15 understand the relevance of this line.

16 JUDGE BRENNER: Neither do I.

17 Ms. Letsche, do you want to explain?

18 (Counsel for Suffolk County conferring.)

19 MS. LETSCHE: Judge Brenner, I am following up  
20 on the witnesses' testimony around page 8 of their  
21 prefiled testimony where they are describing their scram  
22 system, and trying to find out whether there was any --  
23 and this was something that we had moved to strike to  
24 start with, and that motion was denied.

25 JUDGE BRENNER: I know that part.

1 MS. LETSCHE: And trying to determine if there  
2 was any consideration of making the scram system more  
3 diverse than it is.

4 JUDGE BRENNER: I still do not understand the  
5 relevance. The reason that motion to strike was denied  
6 is that this was -- it was helpful to have a description  
7 of what the system is at Shoreham, but you are not  
8 asking about what the system is at Shoreham now, and we  
9 are going to grant the objection.

10 BY MS. LETSCHE: (Resuming)

11 Q Where is the standby liquid control system  
12 located in the reactor building?

13 JUDGE BRENNER: Do you mean the key, Ms.  
14 Letsche, or the tank or the pump?

15 MS. LETSCHE: I am talking about the major  
16 part of the system, that is, the tanks and the pumps.

17 WITNESS CARTER: The tanks and the pumps are  
18 located on elevation 112 north.

19 BY MS. LETSCHE: (Resuming)

20 Q Where in the reactor is the insertion point  
21 for the standby liquid control system?

22 A (WITNESS CARTER) The insertion point is on  
23 elevation 104 south.

24 (Counsel for Suffolk County conferring.)

25 Q Where in the vessel is the boron inserted?

1           A       (WITNESS CARTER) It is inserted through a  
2 pipe underneath the core plate.

3                   (Counsel for Suffolk County conferring.)

4           Q       What is the necessary boron concentration in  
5 the core in order to achieve shutdown from full power?

6           A       (WITNESS ECKERT) To achieve the hot shutdown  
7 from full power at hot conditions we have used the term  
8 355 parts per million in the reactor water. That is  
9 based in a funny way that the way the physicists have  
10 kept track of their parts per million on a cold density  
11 even though it is in hot reactor. If you really used  
12 water density at the hot conditions, it comes out about  
13 480 parts per million based upon the densities present  
14 at that temperature. That would be mixed solid water in  
15 the core with that boron concentration.

16                   (Counsel for Suffolk County conferring.)

17          Q       Assuming the insertion point that Mr. Carter  
18 stated and the boron concentration that you just  
19 described, how much boron solution would have to be  
20 injected to achieve the hot shutdown?

21          A       (WITNESS ECKERT) The guidelines would direct  
22 the operator to inject about a quarter of the tank to  
23 achieve this amount of boron in the vessel.

24          A       (WITNESS HODGES) Can I answer that one?

25          Q       Sure.

1           A       (WITNESS HODGES) My calculations showed that  
2 if you had a water level in the normal range or after,  
3 restoring the water level to the normal range, you would  
4 have needed to insert a little over 258 pounds of 13  
5 weight percent sodium pentaborate and add approximately  
6 4.46 gallons per pound of boron; so you are talking  
7 about 1,154 roughly gallons of sodium pentaborate.

8           Q       Assuming the 43-gallon per minute flow rate  
9 which we would have at Shoreham, approximately how long  
10 would it take to achieve that condition?

11          A       (WITNESS HODGES) My calculations show 26.8  
12 minutes.

13          Q       Does the LILCO panel agree with that?

14          A       (WITNESS ECKERT) Yes.

15                 JUDGE CARPENTER: Mr. Hodges, that was with  
16 the 13 percent solution?

17                 WITNESS HODGES: That is correct. Thirteen  
18 weight percent in the standby liquid control tank.

19                 JUDGE CARPENTER: Is that nominal or a  
20 conservative value for that? As I recall, the values  
21 are somewhat higher in some of the documents we looked  
22 at a few weeks ago.

23                 WITNESS HODGES: I just do not remember. I  
24 was thinking that was a nominal value, but there is at  
25 least a minimum that is quoted. It could be above

1 that. I do not recall for sure.

2 JUDGE CARPENTER: One of the other panel  
3 members is nodding.

4 WITNESS ECKERT: It is a nominal value, and  
5 depending upon the level in the tank between high or low  
6 alarms it will vary a little bit around that  
7 concentration.

8 BY MS. LETSCHE: (Resuming)

9 Q Mr. Hodges, do your calculations assume the  
10 insertion of the boron solution underneath the core  
11 plate?

12 A (WITNESS HODGES) That is how much you need to  
13 get into all of the water system. It is irrespective of  
14 where you inject it; that is, to put it in and mix it,  
15 that is how much you need.

16 Q How do you know that the solution has been  
17 properly mixed in the reactor in order to achieve the  
18 shutdown in your calculations?

19 A (WITNESS HODGES) I have seen results from  
20 some mixing tests that the owners group ran that showed  
21 the efficiency of the mixing.

22 (Counsel for Suffolk County conferring.)

23 Q What was the value of the mixing efficiency?

24 A (WITNESS HODGES) It varies with the water and  
25 the power level, but as you increase the water level it

1 gets up near one very quickly.

2 (Counsel for Suffolk County conferring.)

3 Q Does that mean that if you were attempting to  
4 maintain the core water level at a low level, the  
5 efficiency would be less?

6 A (WITNESS HODGES) If you had the water level  
7 down at the top of the core, it would not be mixing.

8 Q Under those conditions, assuming you are  
9 maintaining the water level at the top of the fuel, how  
10 much time would it take to achieve shutdown, hot  
11 shutdown?

12 A (WITNESS HODGES) If you never raised the  
13 water level back up, you would not get the mixing that  
14 you would need; and that is why you have got to raise  
15 the water level back up after you get the boron injected.

16 (Counsel for Suffolk County conferring.)

17 Q That is a step that is not in the current  
18 Shoreham procedures, is that right?

19 A (WITNESS HODGES) It is not explicitly in  
20 there. I would expect that the operator would probably  
21 take that action, but it is not explicitly in there.

22 (Counsel for Suffolk County conferring.)

23 Q Mr. Hodges, what other variables other than  
24 the water level would affect the mixing efficiency?

25 A (WITNESS HODGES) It is primarily the natural

1 circulation flow rate which is controlled by the water  
2 level, so they are interrelated.

3 (Counsel for Suffolk County conferring.)

4 Q So when you have the recirc pump turned off,  
5 that reduces the circulation and that would reduce the  
6 mixing, is that right?

7 A (WITNESS HODGES) Hold on for one second.

8 (Pause.)

9 As long as the power level is above about 15  
10 percent you still get very good mixing, and tripping the  
11 recirc pump drops the level to the 30 to 40 percent  
12 range, so natural circulation rate with a reasonably  
13 high water level will give you good mixing. As you drop  
14 down near the top of the core the mixing starts to  
15 decrease sharply.

16 (Counsel for Suffolk County conferring.)

17 Q Mr. Hodges, I would like to -- I guess maybe  
18 not Mr. Hodges but the LILCO panel -- talk a little bit  
19 about the various things that would affect the time in  
20 which the standby liquid control system has to work.  
21 Does the operation or the correction operation of the  
22 safety relief valves affect the time in which the  
23 standby liquid control system has to inject the boron  
24 into the reactor or to be effective, let us say, to  
25 achieve hot shutdown?

1           A     (WITNESS ECKERT) No. There is really no  
2 close tie to those functions. The safety relief valves  
3 are working very early in the event controlling the  
4 initial disturbance if there was one, and the action of  
5 shutting down nuclearly becomes on a much slower time  
6 frame.

7           Q     How about the reactor water cleanup system?  
8 Does that have an effect on the time in which the  
9 standby liquid control has to be effective in achieving  
10 hot shutdown?

11          A     (WITNESS CALONE) Yes, that would have an  
12 effect except when you initiate standby liquid control  
13 there is an automatic isolation and reactor water  
14 cleanup, and one of the steps is for the operator to  
15 verify isolation.

16          Q     What does he have to do to verify it?

17                     (Panel of witnesses conferring.)

18          A     (WITNESS CALONE) The reactor water cleanup is  
19 -- the reactor water cleanup system is about two feet  
20 from the reactor panel. He would walk over there or  
21 just visually look from the control panel and verify  
22 that the suction valves were not closed, an indication  
23 by a green light.

24          Q     Why is it that that system is isolated when  
25 the SLC is activated?

1           A       (WITNESS CALONE) It would remove the poison  
2 from the reactor vessel.

3           Q       Does whether or not the main steam isolation  
4 valve is open or closed have an effect on the time in  
5 which the SLC has to be effective in achieving hot  
6 shutdown?

7           A       (WITNESS CALONE) We may be talking about some  
8 chemistry here. My understanding is that the sodium  
9 pentaborate does not carry over in the steam. The steam  
10 leaving the reactor would not carry the poison out. The  
11 reactor water cleanup, which is a water discharge from  
12 the reactor, would carry the neutron poison out; so the  
13 MSIV should not have an effect upon removing the sodium.

14          Q       Are there any other systems or components that  
15 would have an effect on the time in which the standby  
16 liquid control has to be effective in achieving hot  
17 shutdown?

18                   (Panel of witnesses conferring.)

19          A       (WITNESS CALONE) I cannot think of any system  
20 that would affect it directly. It is a constant  
21 displacement pump putting in a given volume per unit  
22 time into a volume of water, and the only thing that  
23 would stop it is if the pump stops.

24          Q       Does the operator have an alternate technique  
25 to initiate the standby liquid control system if the

1 switch that normally activates it does not work properly?

2 (Panel of witnesses conferring.)

3 A (WITNESS CALONE) There are two situations  
4 involved. The only way to activate the squibb valves  
5 without crawling under the panel and shorting them out  
6 is by the standby liquid control switch on the 603  
7 panel. If the squibb valves fired, we could operate the  
8 pumps manually from elevation 112 in the location of the  
9 standby liquid control system.

10 Q If the squibb valves do not fire, is there any  
11 way to get to inject the boron into the vessel?

12 A (WITNESS CALONE) If the two redundant squibb  
13 valves fail to fire off the safety-related switch, then  
14 there is no way of getting the boron into the vessel  
15 that I know of.

16 (Counsel for Suffolk County conferring.)

17 Q Gentlemen, at pages 9 and 10 of your testimony  
18 you discuss the recirc pump trip system at Shoreham.  
19 Would the operator trip the recirc pumps from full power  
20 in normal controlled shutdown?

21 A (WITNESS CALONE) I am sorry. Could you  
22 repeat that?

23 Q Yes. In a normal controlled shutdown  
24 situation would the operator trip the recirc pumps?

25 A (WITNESS CALONE) In a normal controlled

1 shutdown?

2 Q From full power.

3 A (WITNESS CALONE) No, ma'am.

4 Q Why not?

5 A (WITNESS CALONE) In a controlled shutdown you  
6 would control the reduction of power. Tripping the  
7 recirc pumps is not a way to control reduction of  
8 power. That is a way of rapidly decreasing power. In a  
9 controlled shutdown we wouldn't want to decrease power  
10 at a rapid rate just to trip them. What we would  
11 normally do is manually reduce their speed from full  
12 speed to min speed which will take the reactor power  
13 from 100 percent to about 60 percent. So there are some  
14 thermal limits associated with the turbine and the  
15 generator as far as load cycling. We would not just  
16 arbitrarily wheel that thing down to 60 percent power  
17 and put a thermal transient on the turbine and  
18 generator. So in a normal shutdown we would reduce  
19 power using the recirculation pump speed to about 60  
20 percent and then move rods in.

21 Q Is it stressful for the fuel structures to  
22 undergo the quick change in power such as would occur  
23 with the RPT?

24 A (WITNESS ECKERT) That is one of the design  
25 basis cases that is used to evaluate margins for fuel

1 thermal limits and is done, is tested at the plant when  
2 it starts up, and has been something that has been done  
3 frequently. So it is not an unusually stressful  
4 situation.

5 Q What signals does the RPT rely upon for  
6 activation?

7 A (WITNESS RIGERT) The Shoreham recirc pump  
8 trip is initiated off of a high reactor pressure at a  
9 set point of 1120 psig or low reactor level, what we  
10 call level two.

11 Q How are those signals derived?

12 A (WITNESS RIGERT) We are using signals off of  
13 level and pressure transmitters that are in the ECCS  
14 systems. Those transmitters send their signals into the  
15 analog trip system where we have trip units, electronic  
16 trip units that are calibrated at the settings I  
17 mentioned, and then they go into a logic which is  
18 basically two low level signals or two high pressure  
19 signals. Either one of those will complete the logic  
20 and give you a trip signal. And then there is two sets  
21 of that logic, a division 1 and a division 2, and those  
22 go to redundant breakers in the power feed to the motor  
23 of each recirc pump so that the division 1 system will  
24 go to breakering both each pump power supply and also  
25 the division 2 will do the same, so the system is a

1 single failure-proof.

2 Q The level and pressure transmitters in the  
3 ECCS system that you mentioned, are those the sensors  
4 for those conditions?

5 A (WITNESS RIGERT) The transmitter is the  
6 sensor.

7 Q And so the sensors that will trigger the RPT  
8 are the same as those that would trigger the ECCS system?

9 A (WITNESS RIGERT) The ECCS, yes. Not RPS,  
10 though.

11 (Counsel for Suffolk County conferring.)

12 Q Was the RPT design feature added to the BWR  
13 design because or in response to the ATWS interim  
14 measures required by the Commission, or was this  
15 something that was in the GE design prior to that?

16 A (WITNESS RIGERT) In the case of Shoreham this  
17 was being put in before the notice of rulemaking, and I  
18 believe because I think on the operating plants there  
19 was an order to install it. I am not -- since we are  
20 not an operating plant, I do not know the details of  
21 that, but as far as I know, it was just an accepted fact  
22 that everyone shall have an RPT.

23 Maybe Mr. Hodges could confirm that.

24 Q Mr. Hodges, can you confirm that?

25 A (WITNESS HODGES) I think he has accurately

1 characterized that, yes.

2 (Counsel for Suffolk County conferring.)

3 Q Gentlemen, on page 10 of your testimony you  
4 indicate that the RPT feature provides prompt reduction  
5 in power to less than 40 percent. Somebody might have  
6 said this before, but how fast is this prompt reduction  
7 that we are talking about here?

8 A (WITNESS ECKERT) It is in less than a minute.

9 Q Why is not this tripping of the recirc pump  
10 left to the operator to perform?

11 A (WITNESS ECKERT) This was added on the front  
12 end of the event and is a part of the very effective  
13 overpressure protection that is being used here on the  
14 front end of the ATWS event, so that it is a part of the  
15 front action happening up within those first few seconds  
16 and the first part of the first minute with the relief  
17 valve action to reduce power quickly and allow the  
18 relief valves to turn the pressure peak very quickly and  
19 get us all down to a power level that allows time for  
20 the rest of the actions.

21 A (WITNESS HODGES) Let me add a little bit of  
22 description, if I could, to his previous answer on how  
23 fast you get down with the recirc pump trip. Once you  
24 trip the pump, just a coasting down from the inertia of  
25 the pump, you follow a curve that is not exactly a

1 decaying exponential, but it looks almost like a  
2 decaying exponential, and you get down to about half of  
3 the pump flow in six seconds, and then it starts to  
4 level out so you get down in order of maybe 20 seconds  
5 down on a natural circulation flow rate.

6 JUDGE BRENNER: That sounds to my nontechnical  
7 ear, Mr. Hodges, as being very consistent with the rapid  
8 time frame that the LILCO witness testified that you  
9 would get down to that 40 percent.

10 WITNESS HODGES: He said less than a minute,  
11 and I was just trying to put a little bit of  
12 clarification on what was less than a minute. I was not  
13 disagreeing with him.

14 BY MS. LETSCHE: (Resuming)

15 Q Mr. Eckert, what criteria was used in  
16 determining -- in making the decision to automate the  
17 RPT rather than leave it to the operators to do manually?

18 A (WITNESS ECKERT) Well, as I stated, it has  
19 really been in our development of resolving the ATWS  
20 situation with the staff for quite a time and is  
21 connected with the front-end transient of overpressure  
22 protection that was involved in the first few seconds of  
23 the event. And it made the most sense to us as well as  
24 to the staff that that be a front end automatic action.  
25 It has very little negative consequences on the reactor

1 should it happen, and it is not an ATWS situation, so it  
2 is not the kind of action that we need a lot of  
3 protection against, so we put that right up front as a  
4 strong part of overpressure protection even for this  
5 type of an event.

6 Q I assume one of the reasons for that is to  
7 avoid the probability of the operator not doing it or  
8 doing it too late, is that right?

9 MR. REVELEY: Judge, I am going to object. We  
10 are clearly talking again about whether or not to  
11 automate the SLC.

12 JUDGE BRENNER: Is that where you are headed?

13 MS. LETSCHE: No, Judge Brenner. I am trying  
14 to find out why they decided to automate the RPT.

15 JUDGE BRENNER: Yes. And then what do you do  
16 with that information? You see, the Commission  
17 strictures on us on what to assume in the interim is to  
18 require the automated RPT, and on the assumption that  
19 you do not want to require that they should make it  
20 manual. I do not know where you are headed. We are not  
21 writing on a clean slate, as we said many times. If  
22 there was no proposed rulemaking and no interim  
23 guidance, we would be hearing a lot of information as to  
24 what the parties and thereafter this Board thought  
25 should be done in the interim, but we are not free to do

1 that.

2 MS. LETSCHE: Judge Brenner, I think the  
3 object of my questioning here is related to the  
4 contention of LILCO that relying on operating procedures  
5 are sufficient in the interim to mitigate ATWS events.  
6 And the question there is whether or not relying on  
7 operator actions is reasonable in light of how long it  
8 is going to take them to do things, or whether or not  
9 they are going to do them.

10 The point of my questioning here is what  
11 criteria -- with respect to those criteria whether  
12 operators are going to do something and how long it is  
13 going to take them to do it entered into this decision,  
14 and whether or not the decision was different with  
15 respect to the other operator actions they were relying  
16 upon in terms of mitigating ATWS events.

17 JUDGE BRENNER: Well, given that, we are going  
18 to grant the objection on the basis that the Commission  
19 has found that interim steps relying on procedures and  
20 training in the absence of an automatic standby liquid  
21 control system are acceptable.

22 Now, we have aided the gloss over the  
23 utility's strong objection, as you might recall, that it  
24 is open to an individual board to scrutinize the  
25 particular procedures and training for the utility so

1 that we can determine whether they are acceptable. We  
2 can argue in the findings as to what the measure of  
3 acceptability is. We have already stated we would take  
4 into account how complex the steps are being called upon  
5 for the operator to perform and what kind of situation  
6 he is in with respect to time frame and what else has to  
7 be done in that time frame and so on. And one arguable  
8 measure is whether these are the type of procedures and  
9 training that the Commission had in mind when they wrote  
10 that. Somebody might want to argue that we should look  
11 at that, and we might. But those are still quite narrow  
12 guidelines, and it is not open to us to conclude that  
13 operator actions and training in the absence of the  
14 automated system are unacceptable, and that is what you  
15 want to argue, and that is the subject of the  
16 rulemaking. So the objection is granted.

17 I also frankly thought the question was  
18 answered by now, but that is another matter.

19 (Counsel for Suffolk County conferring.)

20 BY MS. LETSCHE: (Resuming)

21 Q Gentlemen, on page 15 of your testimony you  
22 discuss the ARI system. What signals initiate the ARI  
23 system at Shoreham?

24 A (WITNESS RIGERT) The ARI system is initiated  
25 off the same signals I described before for RPT.

(Counsel for Suffolk County conferring.)

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1 BY MS. LETSCHE: (Resuming)

2 Q You indicate in your testimony that there  
3 would be, if I can find the reference for you, I think  
4 it is in Answer 18 on page 15, that a control rod  
5 insertion initiated by the ARI sytem would involve a  
6 small delay in the time of initiation.

7 What is the small delay that you are referring  
8 to there?

9 A (WITNESS RIGERT) The normal time to scram is  
10 in the range of 5 seconds. I would say that is a good  
11 estimate of it. There is test data right now on the  
12 test that was done at Shoreham by our start people on  
13 our backup scram valves which are identical to the ARI  
14 valves and this accomplished a scram in 11 to 12  
15 seconds.

16 Q In light of what you indicated was the case  
17 with respect to the sensors for the RPT and for the ARI,  
18 since they share the same sensors, that means that if  
19 the RPT failed, you also wouldn't have ARI, is that  
20 right?

21 A (WITNESS RIGERT) Well, if some of those  
22 sensors failed, you would probably still have both of  
23 them because they are single failure proof and diverse  
24 in that you have level N pressure; it would take  
25 multiple failures in order to defeat the systems. So it

1 depends upon what kind of failures you are postulating.

2 (Counsel for Suffolk County conferring.)

3 JUDGE BRENNER: Ms. Letsche, while you have  
4 paused, let me take stock of deciding how much we should  
5 do with our time this week. I saw the promised -- I  
6 hesitate to use the word anticipated -- application for  
7 issuance of subpoenas and also a response, and I am  
8 pleased that the procedure was worked out so that we  
9 have the positions of both parties.

10 Do you want us to consider that prior to  
11 tomorrow morning?

12 MR. PEVELEY: No, sir. I don't think that is  
13 necessary. My understanding is that two of the requests  
14 have been mooted by subsequent developments, that only  
15 one remains, but the company is perfectly willing to  
16 have it resolved later if the resolution involves the  
17 opportunity to take the deposition beyond the period  
18 that the Board has scheduled. Otherwise I guess we need  
19 to resolve it sooner rather than later, and I will just  
20 have to take five minutes to read the miserable thing  
21 carefully, and Ms. Letsche will have to do the same, and  
22 then we can argue absent our emergency planning notice.

23 JUDGE BRENNER: You are going to need us  
24 because of the Board's schedule, to consider it no later  
25 than tomorrow. That is my point.

1           MR. REVELEY: What I was going to suggest at  
2 the end of the day was that once you have had an  
3 opportunity to read it carefully and we have had a  
4 chance to read it carefully, you could let us know if  
5 you wish Ms. Letsche and me to argue it early tomorrow.

6           MS. LETSCHE: I think both Mr. Reveley and I  
7 are at least somewhat aware that there might be  
8 conversations going on between Richmond and Washington  
9 relative to that, and I know I have not talked to the  
10 people down there since lunch.

11          MR. REVELEY: I have not either.

12          MS. LETSCHE: I think that is his position,  
13 too.

14          JUDGE BRENNER: I guess I thought there was  
15 still a possibility of taking Mr. Jones' deposition  
16 tomorrow, depending upon our ruling.

17                    Is that incorrect?

18          MR. REVELEY: That is correct so far as we are  
19 concerned, as I understand the situation, but given Mr.  
20 Jones' commitments, I don't know whether it's feasible  
21 or not.

22          JUDGE BRENNER: I thought the response was  
23 that he was committed starting on August 6.

24          MR. REVELEY: I am not adequately up to speed  
25 on that.

1 MS. LETSCHE: Judge Brenner, I'm not either.

2 MR. REVELEY: I can be very quickly.

3 MS. LETSCHE: I could, too.

4 JUDGE BRENNER: Mr. Jones is here, Ms.

5 Letsche?

6 MS. LETSCHE: But I have not spoken to him and  
7 I have to do so before I could. I didn't get this item  
8 from Mr. Reveley until our last break. I didn't know it  
9 was coming up.

10 JUDGE BRENNER: Why don't you ask him if he is  
11 available tomorrow for the deposition, and if not, why  
12 not.

13 (Pause)

14 JUDGE BRENNER: I guess I should state for the  
15 record, and I am sure somebody will relate this to Ms.  
16 Letsche, that we have read the motions and the  
17 responses, so we are ready.

18 (Pause)

19 JUDGE BRENNER: Ms. Letsche, if I had known  
20 you were coming back so quickly I would have waited, but  
21 I stated while you were out that we have read the motion  
22 and the responses and we are reasonably ready. Whether  
23 or not I had to give the parties time to get ready,  
24 depending upon whether tomorrow made a difference, and  
25 that is the sole reason that I raised it, and I

1 apologize for interrupting your examination, but because  
2 it is 5:00 o'clock, I wanted to get a handle on what it  
3 is I am supposed to be doing with the rest of my day.

4 MS. LETSCHE: Judge Brenner, Mr. Jones informs  
5 me that he does have a commitment tomorrow. He has to  
6 be in New York City on government business and so is not  
7 available tomorrow.

8 JUDGE BRENNER: Okay. That answers the  
9 question.

10 Well, we will either do this at the end of the  
11 day today or tomorrow morning. If I am correct that the  
12 only question is Mr. Jones' deposition and the only  
13 question about that question is whether we would require  
14 it, that is the basic question, and there doesn't seem  
15 to be any disagreement as long as the timeframe is  
16 August 27 or thereabouts or thereafter. When we get  
17 back to it I am curious as to why the date is so late  
18 that LILCO has asked for, that is, September 15, as the  
19 closing time.

20 MR. REVELEY: I don't now, Judge, other than  
21 perhaps an attempt to find a time period that would be  
22 acceptable. My understanding is that our people want to  
23 take Mr. Jones' deposition now and that that could not  
24 be arranged on the basis of agreement between the  
25 parties.

1           JUDGE BRENNER: Did I hear something in  
2 passing that this still may be resolved? Discussions  
3 between Washington and Richmond sounded like very high  
4 level things.

5           MS. LETSCHE: Judge Brenner, I am not sure  
6 that I can represent that. As I said, I have not spoken  
7 to the people in Washington since the lunch break, and I  
8 actually can't even speak to what Mr. Reveley just said  
9 because I don't know all of the information or all of  
10 the details with respect to the scheduling involved in  
11 these motions. I can make a phone call and find out all  
12 of that information, however.

13           JUDGE BRENNER: Well, I guess we are a little  
14 ahead of you. If you read the response, there are no  
15 longer any objections as to the taking of the  
16 deposition, and in fact, a date has been arranged for  
17 the other two county employees. So we are not going to  
18 issue any subpoenas because that is on the basis that  
19 we have been assured as to the resolution as stated in  
20 the papers, and we appreciate the fact that the parties  
21 continued to work it out even after initiating a formal  
22 request to us. And we commend you all for that.

23           As to Mr. Jones, the question in essence is we  
24 are being asked to decide whether he knows anything  
25 worthwhile, and we cannot and are not going to decide

1 that, given his position with the county and his overall  
2 position and what has been alluded to many times by the  
3 county, his involvement in emergency planning. We  
4 cannot decide that he knows nothing relevant to Phase 1,  
5 and given the liberal discovery standard of matters  
6 which could lead to admissible evidence, we are going to  
7 grant the deposition.

8           This does not mean that the county is  
9 incorrect, that he knows nothing pertinent to Phase 1  
10 issues. We just cannot decide that. To some extent,  
11 given our action on reconsideration, the portion of the  
12 county's argument relying upon our actions on EP I  
13 doesn't have the same vitality it might have once had,  
14 but even assuming the EP I was still absolutely  
15 rejected, our ruling would have to be the same. We  
16 would have to conduct a mini-inquiry to decide whether  
17 or not he knows anything given his position with the  
18 county and his involvement in emergency planning. It is  
19 not unreasonable for LILCO to suggest that maybe he  
20 knows something. And once you have that starting point,  
21 and given the fact that we are talking about a  
22 deposition and not a requirement that Mr. Jones  
23 personally, with no help, answer interrogatories or  
24 something of that nature, we are going to order the  
25 discovery.

1           It may be that once they start deposing him,  
2 his answers are going to be I don't know, I don't know,  
3 and I don't know.

4           MS. LETSCHE: I think the county's argument is  
5 set forth in its papers in opposition to this, and that  
6 is that he does not have any relevant knowledge of the  
7 Phase 1 issues.

8           JUDGE BRENNER: I just cannot assume that. I  
9 am not saying that the county is incorrect, and I want  
10 to emphasize that, but it is not as if you have got some  
11 Mr. Jones off the street here who doesn't have anything  
12 whatsoever to do with the area. You've got Mr. Frank  
13 Jones, the Deputy County Executive who is coordinating  
14 the emergency planning work for the county.

15           MS. LETSCHE: Well, that is with respect to  
16 the county's planning efforts, and as I understand it,  
17 this subpoena is with respect to the Phase 1 issues  
18 currently before the Board, and that is what the  
19 County's argument has stated in the papers, and I think  
20 it is adequately stated there, and I do not want to  
21 belabor it since you have already ruled, but that is our  
22 position, that as to those issues, he does not have any  
23 knowledge.

24           JUDGE BRENNER: Again, in the end you might be  
25 right, but we cannot make that determination now, nor do

1 we have to make that determination to order the  
2 discovery.

3           As long as we are on this subject, I made  
4 certain handwritten deletions in the subpoena out of  
5 courtesy, since we have already established that Mr.  
6 Jones isn't going to be available on August 5, so I will  
7 issue it to LILCO, and hopefully they can make copies  
8 and eventually file it in the record of this case, and  
9 the deletions are on the first page I have deleted the  
10 time and date. I have left the location. I have  
11 certainly left in the portion of the second page that  
12 leaves it up to the parties to work it out, work out a  
13 mutually convenient time and location. So we are not  
14 requiring that the location be that requested by LILCO.  
15 We expect the parties can work that out.

16           We are leaving in the fact that the date and  
17 location be established prior to August 20 since that is  
18 the time we are going to start focusing on whether  
19 there -- or begin to refocus on whether there are any  
20 remaining problems.

21           In terms of the date LILCO has suggested,  
22 prior to September 15, that strikes us as being quite  
23 late, and I just don't know what the purpose is, and  
24 neither does anybody else.

25           MR. REVELEY: I think I can speak to that.

1 Whatever Mr. Chrisman and Ms. McCleskey may have had in  
2 mind, so far as I am concerned, the sooner the better,  
3 and I am sure they will see it that way. Also, once I  
4 have had a chance to talk with them.

5 JUDGE BRENNER: Well, maybe they know about a  
6 problem that Mr. Jones has that week, too.

7 Mr. Jones, why don't you come up here, since  
8 we are discussing you and we know who you are, and the  
9 idea is we have ordered the discovery, and I want to  
10 keep it in as tight a timeframe as possible. Given your  
11 vacation time and so on, we are not going to intrude on  
12 that at all. So the question is after August 27, is  
13 there a reason why it has to be as late possibly as  
14 September 15? I am inclined to put it in a tighter  
15 timeframe such as Friday, September 3, and then leave it  
16 up to the county and LILCO to pick a mutually convenient  
17 time between August 27 and September 3.

18 I hope Ms. Letsche doesn't mind my doing this  
19 with her client. We are trying to find a convenient  
20 time.

21 MS. LETSCHE: Let me just say one thing, and I  
22 certainly don't object to Mr. Jones answering your  
23 questions directly, but it could very well be that one  
24 of the reasons for that date -- and I don't know either  
25 without checking with our people -- is related to some

1 of the other discovery things that are going on during  
2 that timeframe and the other obligations of the  
3 attorneys who would be involved in this deposition of  
4 Mr. Jones, both from our end and from LILCO's end. I  
5 don't know, and I frankly can't speak to that unless I  
6 had an opportunity to talk to them.

7 JUDGE BRENNER: I will take care of that  
8 possibility in a minute. But let me find out if Mr.  
9 Jones is booked that week. That would explain it.

10 MR. JONES: I am scheduled to leave on  
11 vacation this weekend and I don't know whether the 27th  
12 date -- where the 27th date comes from because I won't  
13 be back until the 29th.

14 JUDGE BRENNER: I think the county thought you  
15 would be back on the 27th. But in any event, the  
16 timeframe I am suggesting would be after the 27th.

17 MR. JONES: Well, other than the fact that I  
18 would be away for three weeks, and that first week back  
19 would undoubtedly be a hectic week in working something  
20 in there and making the prior arrangements, since I will  
21 not be local, making the prior arrangements before I get  
22 back on Monday would be somewhat difficult. So that  
23 first week back could be a problem or could pose a  
24 problem. So perhaps that is why they set that back.

25 JUDGE BRENNER: Other than that there is

1 nothing specific? In other words, we are already  
2 delaying quite a few weeks because of your vacation,  
3 which I think you should take and have a good time on,  
4 but when you get back they are entitled to depose you.

5 MR. JONES: Other than the first hectic week,  
6 I know of no other restrictions of my own.

7 JUDGE BRENNER: All right. I am inclined to  
8 set the date, but I will let -- I don't have to sign  
9 this until tomorrow. I will allow Ms. Letsche and Mr.  
10 Reveley to let me know. I am inclined to set the date  
11 for September 6, which would run until that following  
12 Monday in case there are insurmountable problems.

13 Well, that is Labor Day. I am inclined to set  
14 it for September 7, just in case there are real problems  
15 that first week. The 15th strikes me as getting quite  
16 late into the discovery period. However, we would hope  
17 a mutually convenient date can be worked out, even that  
18 first week, unless you have particular problems.

19 MS. LETSCHE: Judge Brenner, we will certainly  
20 look into the situation. I will talk with Mr. Reveley  
21 and see if we can resolve it.

22 JUDGE BRENNER: But if there is a reason that  
23 you don't know about that you want to tell me about  
24 tomorrow as to why I should leave it for the 15th, you  
25 can do that also.

1 MS. LETSCHE: I will check into that.

2 JUDGE BRENNER: One reason I did it now was I  
3 want to take advantage of Mr. Jones' presence because I  
4 did want to work his schedule out consistent with the  
5 needs of the proceeding and take due regard for his  
6 schedule I guess is the way to phrase it.

7 (Pause)

8 JUDGE BRENNER: Incidentally, perhaps we  
9 should -- well, I won't bind it in. We know what the  
10 motion is, and it starts to get a little thick. The  
11 granting of the motion does not necessarily connote  
12 agreement with LILCO's view that their example of  
13 Contention 5A would necessarily get into matters of  
14 local conditions. Frankly, that is not the way we read  
15 5A, but again, we are talking about discovery and not  
16 the scope of litigation and trial. But I don't want to  
17 preclude that either. It just doesn't necessarily  
18 connote agreement.

19 How much more do you have of this panel, do  
20 you think? An hour, two hours, three hours?

21 (Counsel for Suffolk County conferring.)

22 MS. LETSCHE: Judge Brenner, I would say  
23 probably about three hours.

24 Judge Brenner, let me just make one other  
25 comment. I think that when we break I can go through my

1 cross examination plan and come up with the most  
2 efficient way to finish up, and I think it would be  
3 helpful, frankly, to have the opportunity to do that,  
4 and I think I could hopefully finish up in the timeframe  
5 I indicated tomorrow.

6 JUDGE BRENNER: Could I get a time estimate  
7 from the other parties, recognizing that it is  
8 conditional on what has happened so far?

9 MR. REVELEY: I think, Judge, if we end up  
10 having a realistic opportunity to get this panel off the  
11 stand, that will severely limit whatever we might have  
12 had in mind, and in any event, we don't have much in  
13 mind.

14 (General laughter.)

15 MR. REVELEY: I mean, that was somewhat  
16 facetious, but if, for example, we have our chance at  
17 redirect at 2:00 o'clock we will finish it briskly.

18 JUDGE BRENNER: I keep telling Mr. Heer that  
19 if only he could talk faster, we would finish this  
20 proceeding sooner.

21 (General laughter.)

22 MR. REVELEY: It does sound like we have a  
23 credible shot at finishing with the panel tomorrow.

24 JUDGE BRENNER: How about the Staff?

25 MR. BLACK: I certainly anticipate no more

1 than a fistful of questions on redirect for Mr. Hodges.  
2 It certainly won't take long.

3 JUDGE BRENNER: How many questions is a  
4 fistful.

5 (General laughter.)

6 JUDGE BRENNER: Is that bigger than a  
7 breadbox?

8 (General laughter.)

9 WITNESS HODGES: The question is, is that a  
10 clenched fist?

11 (General laughter.)

12 JUDGE BRENNER: We have questions, too, about  
13 a half an hour's worth. I don't think we are going to  
14 make 2:30 if we adjourn now, even if we started at  
15 8:30.

16 We would only have five hours of actual  
17 hearing time if we assume an hour for lunch. I am a  
18 little surprised you have three hours left.

19 MS. LETSCHE: Judge Brenner, it might not take  
20 that long. For obvious reasons I am trying to be  
21 conservative in my estimate.

22 JUDGE BRENNER: Yes, I understand.

23 MS. LETSCHE: Obviously the main thing I have  
24 left in my cross examination plan, to give the Board  
25 some indication of what I intend to do, is items IX and

1 X. X I think is going to be the major thing I will be  
2 doing tomorrow.

3           You can see by looking at that that it is a  
4 little hard for me to estimate how long it might take.  
5 It might be very quick, but it might not. But I think  
6 that is basically what I have left with my quick review  
7 of my plan.

8           JUDGE BRENNER: All right. I think we will  
9 adjourn, and with your ability to think through the  
10 order again, I think you are right, that you will be  
11 more efficient. It has been a long day for the  
12 witnesses also, and while I know they wouldn't say that  
13 because they are anxious to get off, I am concerned  
14 about the quality of the record when you start passing  
15 or approaching that point of fatigue, and we are tired  
16 also.

17           But let me suggest this to you, Ms. Letsche,  
18 in that last area -- and let me make sure I can say this  
19 without disclosing it -- in that last area when you  
20 consider what you need to know in order to get to where  
21 you want to get, you can go through all of the  
22 variations and how they might affect the ultimate  
23 estimates, or you could consider whether you could cut  
24 right through it and bound those variations as I  
25 attempted to do today, and therefore not have to worry

1 about the interim arguably bounded variations. And as I  
2 read the cross plan, I think that can easily be done by  
3 the County.

4 MS. LETSCHE: I will certainly consider that  
5 this evening.

6 JUDGE BRENNER: So you get your worst case,  
7 and if you want to put a little meat on it, your next to  
8 the worst case, but you don't have to get all of the  
9 cases. And if you did that, I think you could cut about  
10 a half an hour off of that page. But don't do it unless  
11 you agree with me that you will get to where you want to  
12 go because we are interested in that also.

13 One thing we can do is see -- we will  
14 terminate the questions of the panel on this contention  
15 at this time, and the witnesses can leave. We won't  
16 talk about this issue anymore.

17 Are there other miscellaneous matters that we  
18 have to consider this week that we should do today  
19 rather than tomorrow?

20 MR. REVELEY: The main miscellaneous matter I  
21 think we got, and Ms. Letsche and I were wrestling with  
22 it this morning, is what order to propose to you after  
23 the break, and we were having real problems. We can  
24 talk about our problems off the record or we can wrestle  
25 with it some more. I don't think they are worth dealing

1 with on the record.

2 JUDGE BRENNER: All right, work them out and  
3 't come back until you do.

4 (General laughter.)

5 MR. REVELEY: It is not so much we are  
6 disagreeing with each other; we are really not. We are  
7 running into some scheduling problems.

8 MS. LETSCHE: I think the only other thing,  
9 Judge Brenner, is there are two settlements I think that  
10 have been, or resolutions that have been submitted to  
11 the Board that you had indicated you wanted to take care  
12 of at some point.

13 JUDGE BRENNER: Yes, let's leave that for  
14 tomorrow. I think we can do it fairly quickly. We just  
15 haven't had a chance to talk about all aspects of it  
16 collectively as a Board. I don't now if there are  
17 other -- there are other settlements for which we have  
18 not seen the written product, and I was holding it for  
19 that partially.

20 MR. REVELEY: I am afraid there won't be. It  
21 is moving very slowly.

22 JUDGE BRENNER: All right. We will take those  
23 two up tomorrow the.

24 One thing we are going to emphasize is when  
25 you pick the order, which you will be talking about

1 between today and tomorrow of what we will litigate  
2 after, we expect vigorous possible narrowing or  
3 settlement conferences to continue over the break,  
4 presumably, as to the issues that will come up after the  
5 break, and that is pretty much all issues on which  
6 testimony has been filed now.

7 MS. LETSCHE: That is really one of the things  
8 we have been discussing and one of the problems we are  
9 encountering, I think, is where we will be after the  
10 break in light of discussions that are scheduled to take  
11 place during the break.

12 JUDGE BRENNER: Well, you can pick a sequence  
13 and obviously pick it with due regard to that which is  
14 less likely to settle, but nevertheless, make sure  
15 settlement conferences take place on even that issue  
16 since narrowing could take place. And then if, as we  
17 get closer to that week, you inform us that you need to  
18 switch the order because there has been a hoped-for  
19 settlement or narrowing or some other reason, we will  
20 consider it. But so we are not locked in to being ready  
21 only on the first one that comes up, but we would like  
22 it to be as much as possible close to the order that you  
23 choose and maybe jump us to number two but not certainly  
24 to number four the day before we are going to start the  
25 litigation.

1 I forget the testimony unless I reread it  
2 again the day before the hearing I must confess, and it  
3 is very helpful when I reread it a few times with the  
4 cross plan. But we have caught up to that. In fact,  
5 let me remind you of that, that the cross plan on SC 25,  
6 RPV integrity and testing is due on August 24.

7 Now, if you want to schedule that the first  
8 one suddenly for some reason, that is okay, but if you  
9 do that, file the cross plan with the Board a week  
10 before, that is, August 17.

11 MS. LETSCHE: Judge Brenner, is that due on  
12 the 24th or the 25th?

13 JUDGE BRENNER: Whatever the Tuesday is. But  
14 accelerate that a week if you want to try that issue, if  
15 there is a possibility that you will want to try that  
16 issue the first week. But otherwise keep that date.

17 MS. LETSCHE: I guess we will talk about it.

18 JUDGE BRENNER: Okay. I don't think other  
19 than the order and the settlements that there will be  
20 anything else that we need to discuss tomorrow that I  
21 know of, and in that case, let's adjourn now and we will  
22 reconvene at 8:30 tomorrow morning.

23 (Whereupon, at 5:25 o'clock p.m., the hearing  
24 in the above-entitled matter recessed, to reconvene at  
25 8:30 o'clock a.m., Thursday, August 5, 1982.)

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the  
ATOMIC SAFETY AND LICENSING BOARD

in the matter of: LONG ISLAND LIGHTING COMPANY (Shoreham Nuclear Power  
Station)

Date of Proceeding: August 4, 1982

Docket Number: 50-322-OL

Place of Proceeding: Riverhead, New York

were held as herein appears, and that this is the original transcript  
thereof for the file of the Commission.

Ray Heer

Official Reporter (Typed)

Ray Heer

Official Reporter (Signature)