



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 Riverhead County Complex  
 10 Legislative Hearing Room  
 11 Riverhead, New York  
 12 Wednesday, July 28, 1982

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

15 BEFORE:

16 LAWRENCE BRENNER, Chairman  
 17 Administrative Judge  
 18 JAMES CARPENTER, Member  
 19 Administrative Judge  
 20 PETER A. MORRIS, Member  
 21 Administrative Judge  
 22 WALTER H. JORDAN, Assistant to the Board  
 23 Administrative Judge

24  
 25

## 1 APPEARANCES:

2

3 On behalf of Applicant:

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11 On behalf of the Regulatory Staff:

12 BERNARD BORDENICK, Esq.

13 DAVID A. REPKA, Esq.

14 Washington, D.C.

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16 On behalf of Suffolk County:

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	<u>C O N T E N T S (Cont'd)</u>		
	<u>E X H I B I T S</u>		
<u>NUMBER</u>	<u>IDENTIFIED</u>	<u>RECEIVED</u>	<u>BOUND IN TRANSCRIPT</u>
Staff No. 6	8108	8108	8108
Suf.olk County No. 33	8110		8311
Suffolk County No. 34	8264		8312

RECESSES:

Morning - 8164

Noon - 8204

Afternoon - 8259 & 8290



1 by the end of the day today, obviously if possible.

2 MR. IRWIN: I think we have it. We will try  
3 to dig four up.

4 JUDGE BRENNER: Thank you.

5 That is all we have on ATWS. With respect to  
6 contention Suffolk County 27, involving Reg Guide 1.97,  
7 post-accident monitoring, we would appreciate copies of  
8 some other items that we neglected to bring with us, and  
9 that is a copy of the latest applicable version of the  
10 Reg Guide, which as I recall is Revision 2. And in  
11 addition, there is an errata -- I think it is April 1980  
12 or '81, I forget -- which is pertinent, and we would  
13 appreciate a copy of that.

14 We could use three copies. We will accept as  
15 few as whatever we can get.

16 MS. LETSCHE: We can get you that, Judge  
17 Brenner.

18 JUDGE BRENNER: Thank you. Tomorrow would be  
19 okay on that one.

20 Also related to that contention, we would  
21 appreciate a copy of CLI-80-21, which is referenced in  
22 the testimony. I don't know if anybody had the  
23 foresight to bring that, but it is referenced in the  
24 testimony. So we would appreciate at least one copy of  
25 that.

1           MR. REVELEY: I think we probably have that,  
2 Judge. I will check.

3           JUDGE BRENNER: Thank you.

4           While we're on the subject of that contention,  
5 the litigation is coming up quickly. Is there a further  
6 report on possible narrowing? Reading of the testimony  
7 leads us to believe that it wouldn't be unreasonable to  
8 expect the feasibility of some narrowing, at least.

9           MS. LETSCHE: After the break, after the  
10 hearing broke yesterday evening, Judge Brenner, Mr.  
11 Earley spoke with Mr. Minor and myself and is apparently  
12 attempting to put together some information and  
13 materials from the LILCO people to give to Mr. Minor and  
14 Mr. Hubbard to look at. I don't know when they will get  
15 them, but they will certainly review them when they  
16 arrive.

17           I should say that what we were talking about  
18 was not a total resolution of the issue, but a possible  
19 narrowing of what we would actually litigate.

20           JUDGE BRENNER: I think that is in line with  
21 what we anticipated. Once in a while the parties  
22 surprise us and settle things we don't expect to be  
23 settled, but we didn't expect that on the contention,  
24 but we did expect that a narrowing was feasible.

25           As a minor housekeeping matter, when we do get

1 to that litigation certainly the motion -- action on the  
2 motions to strike should be reflected in annotations on  
3 the testimony.

4           And in addition, we never dealt squarely with  
5 the fact that subpart C was settled in the sense of a  
6 movement over to emergency planning along with the  
7 settlement on the other related contention. And that  
8 should be -- those portions of the testimony should be  
9 deleted also, not for reasons of a motion to strike but  
10 by reason of the settlement. There are only some minor  
11 portions and they are readily separable.

12           MS. LETSCHE: I think, Judge Brenner, I don't  
13 know if you have had an opportunity -- maybe we haven't  
14 given it to you yet, but the revised information that we  
15 have submitted reformulated portions of the Suffolk  
16 County 27 testimony, which also included just a  
17 rewriting of the table, does reflect the fact that one  
18 portion has been moved out of the contention.

19           JUDGE BRENNER: Okay. I think as I recall,  
20 there are other portions in the testimony from at least  
21 one party besides the table that relates to C. And it  
22 is not a big deal, but just at the time we put it in the  
23 record so that it is clear.

24           Yesterday the Staff gave us a copy of SECY  
25 82-111, which includes the Commission's cryptic report

1 of their votes. We certainly appreciate receiving the  
2 document and I want to start out with that context. It  
3 is certainly pertinent to emergency planning, if nothing  
4 else.

5           The problem I have is, as I said on the record  
6 yesterday, the Staff informed us it was pertinent to  
7 Suffolk County 27, post-accident monitoring. I took a  
8 quick look and didn't see the pertinence. But we had a  
9 quick dialogue, Mr. Repka, and you told me it was  
10 pertinent.

11           And I read it faster than I would have, as a  
12 result of the sequence, when I should have been reading  
13 other things, and it is a rather thick document. And  
14 now that I have read it more thoroughly, I still don't  
15 see the pertinence to that contention.

16           There is a reference to -- there is a very  
17 quick section that is headed "Reg Guide 1.97," that is  
18 correct. However, when you read it the only thing  
19 mentioned in there is the SPDS, which is not part of  
20 that contention.

21           There is a quick reference to continuous  
22 offsite monitoring on page 13 of the SECY document,  
23 which is also not part of the contention. I'm not sure  
24 in the first instance if it is related to the continuous  
25 halogen monitoring that was originally part of the

1 contention, but even if it was that is no longer part of  
2 the contention.

3           So when we get these thick documents and it's  
4 obvious that a large part of it doesn't pertain to a  
5 contention coming up now, the entire document is going  
6 to be helpful by the time we are finished with emergency  
7 planning. However, I would like to know what part you  
8 think is pertinent to this contention and I think the  
9 parties would be helped by that, since I had to read the  
10 whole thing sooner than I would have otherwise.

11           MR. REPKA: I had been led to believe that the  
12 pertinence is in the implementation schedule of Reg  
13 Guide 1.97, Revision 2. And all I can suggest is that  
14 hopefully when Dr. Rossi is here to testify on the  
15 contention he can shed some more light on where he feels  
16 it is relevant.

17           JUDGE BRENNER: I don't think it is fair to  
18 the parties, putting aside the Board, to wait that  
19 long. It is a thick document and they shouldn't figure  
20 out what part they should focus on for the first time.  
21 So maybe you could find out and focus us by the end of  
22 the day.

23           MR. REPKA: I will attempt to do that.

24           JUDGE BRENNER: Okay, because if there is  
25 something in there I missed it. Yes, there are matters

1 related to implementation schedule, but I had difficulty  
2 tying it up with the ten remaining items of this  
3 content. I'm not disputing the pertinence; I just  
4 couldn't find it.

5 But we certainly appreciate receiving the  
6 document as timely as we did. It's going to be helpful,  
7 as I said, to other things in the case. And in line  
8 with that, obviously further follow-up implementation of  
9 the document is anticipated. Right now it is a little  
10 difficult to work with. You have to match up the  
11 Commission's comments with the section they are  
12 commenting on, and it's not clear exactly what the final  
13 implementation of some of those Commission comments will  
14 look like.

15 So as soon as there is a final document  
16 implementing the action taken by the Commission, whether  
17 by virtue of the final policy statement or a NUREG or  
18 regulation or some combination, we would certainly  
19 appreciate receiving that from the Staff also.

20 MR. REPKA: We will certainly do that.

21 (Pause.)

22 JUDGE BRENNER: That is all we have on  
23 preliminary matters not related to safety relief  
24 valves. I do have a preliminary matter related to that  
25 subject if there are no other preliminary matters

1 unrelated to that subject.

2 In looking through the responses again of  
3 LILCO and the Staff to the Board inquiry, I noted that  
4 item 13 of LILCO's response is the helpful table  
5 provided by LILCO of the open items status sheet and  
6 giving the status in LILCO's view.

7 Two of those items, of course, relate to safety  
8 relief valves, and I thought it would be helpful if I  
9 just read those two items into the record at this time,  
10 so we have the position of LILCO at least at the time  
11 this was supplied -- and I forget the precise date --  
12 rather than having to put the whole table in, which has  
13 many unrelated matters.

14 Mr. Irwin, do you recall when this was  
15 supplied?

16 MR. REVELEY: June 22nd.

17 JUDGE BRENNER: Let's go off the record.

18 (Discussion off the record.)

19 MR. REVELEY: Perhaps that was the 25th. It  
20 was near the end of June.

21 JUDGE BRENNER: It was filed on or about June  
22 22nd, give or take a few days.

23 Referring to the table in item 13 of LILCO's  
24 response -- and item 13 is entitled "SER Open Items  
25 Status Sheet" -- on page 5 of that table there is item

1 number II.D.1, relief and safety valves. Under the  
2 "action party" column LILCO lists the NRC. Under the  
3 "action description" column LILCO states "NRC to provide  
4 additional questions which would enable them to complete  
5 review. Under the "schedule" column LILCO indicates  
6 "not scheduled." That item, of course, relates to  
7 contention SC-22 on testing.

8           On page 7 of the table, there appears item  
9 number II.K.3.16, "Challenges to SRV's." That item  
10 number, of course, relates to Suffolk County contention  
11 28(a)(vi). As we know, these item numbers are  
12 NUREG-0737 item numbers.

13           Under "action party" LILCO once again  
14 indicates NRC. Under "action description" LILCO states  
15 "item closed; NRC evaluating generic program; LILCO is  
16 subject to results of evaluation." Under "schedule"  
17 LILCO indicates "not scheduled."

18           MR. IRWIN: Judge Brenner, there is one  
19 further bit of updating that can be done with respect to  
20 that table. LILCO has recently received, I believe, the  
21 questions from the Staff relating to item II.D.1. They  
22 just came in in the past few days.

23           WITNESS SMITH: It was received, NRC letter,  
24 July 8th, from A. Schwencer to M. Pollack. It was  
25 received at LILCO on July 9th. It contains six

1 questions relative to II.D.1.

2 JUDGE BRENNER: Okay. Is there a response  
3 scheduled?

4 WITNESS SMITH: Prior to coming here we were  
5 reviewing the schedule and the parties that would be  
6 preparing them are here at the hearings now. I would  
7 suspect by mid-August we would have those submitted to  
8 the NRC.

9 JUDGE BRENNER: Well, I continue to have some  
10 question, I guess, about the scheduling of this  
11 contention or these contentions at this time, and more  
12 about that after litigation of them.

13 We are ready to proceed, Mr. Repka. Did you  
14 want to take care of that remaining item from  
15 yesterday?

16 MR. REPKA: Yesterday we introduced the  
17 pertinent SER supplement 1 sections dealing with TMI  
18 items II.D.1 and II.K.3.16. I have copied the relevant  
19 portions of our June 29th, 1982, filing to the Board,  
20 indicating the status of SER open items for Shoreham.  
21 These are pages 15 and 16 of that filing, which cover  
22 item number 57.II.D.1, and page 18, which includes item  
23 number 57.II.K.3.16.

24 If the Board deems it appropriate, we could  
25 bind these into the transcript at this point. These

1 indicate the status as of the 29th of June of the  
2 ongoing reviews on II.D.1 and II.K.3.16.

3 JUDGE BRENNER: All right. That will be Staff  
4 Exhibit 6. We would propose to admit it into evidence  
5 as an update as of June 29th of the SFR.

6 Part of this is to focus the parties and  
7 counsel and the witnesses on what the Board last knew on  
8 some of these items, and then if there are updates,  
9 presumably through the witnesses, we will get them. So  
10 in the absence of objection we will admit the identified  
11 portions of the Staff's June 29th filing into evidence  
12 as Staff Exhibit 6.

13 (The document referred to  
14 was marked Staff Exhibit  
15 No. 6 for identification  
16 and received in  
17 evidence.)

18 JUDGE BRENNER: And we will bind it into the  
19 transcript at this point.

20 (The document referred to, Staff Exhibit No. 6  
21 received in evidence, follows:)

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STAFF EX  
#6  
Lay-in #: 1

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The Staff is reviewing the provided documentation to determine if additional information is required. Verification of the above requirements will satisfy the Staff's concerns in this area. Implementation of the requirements is not necessary prior to low power operation (greater than 5%) because only small quantities of radionuclide inventory will exist in the reactor coolant system and therefore will not affect the health and safety of the public. Prior to exceeding 5% power operation LILCO must demonstrate the capability to promptly obtain reactor coolant samples in the event of an accident in which there is core damage.

Item #57, II.D.1--Performance Testing of Boiling Water Reactor and Pressurized Water Reactor Relief and Safety Valves

LILCO has committed to participate in the BWR Owners Group program for testing of safety and relief valves. LILCO is reviewing the BWR program description and scope to ensure that it is applicable to Shoreham plant specific valves and piping. LILCO has reported satisfactory test results for Shoreham plant specific safety and relief valves based upon preliminary review of the generic BWR test program results in a transmittal dated December 9, 1981.

The NRC Staff is currently reviewing the above test results to verify satisfactory completion of this requirement. The Staff has identified additional information which must be addressed by LILCO before the review of this item can be completed; specifically the applicability of the generic test results to Shoreham's safety/relief must be justified. This information has arisen from the review of report NE

DE-24988-P as discussed in an internal memorandum dated June 21, 1982 (Zoltan R. Rosztoczy to Albert Schwencer). This request for information will be transmitted to LILCO the week of July 5, 1982.

Item #57, II.E.4.2--Containment Isolation Dependability

In Section 22.2.II.E.4.2 of SSER #1 we noted that LILCO had met all requirements for this item except for valve operability and the provision for isolation due to a high radiation should this occur while a purge line is in use. By letter dated November 23, 1981 LILCO proposed an in-situ valve test satisfactory to the NRC (see discussion under item 36). By letter dated January 1, 1982, LILCO agreed to the addition of a high radiation signal to isolate the purge line when in use during operating conditions 1, 2 and 3 (power operations, startup, and hot shutdown). This is acceptable to the Staff. However, the Applicant's proposal to install the isolation signal after commercial operation has not been justified. The date for installation and operability for this isolation signal capability remains to be resolved. LILCO has indicated it will address the date of installation by August, 1982.

:  
Item #57, II.F.2--Instrumentation for Detection of Inadequate Core Cooling

The Staff has found LILCO to be in partial compliance with this requirement and has found in the review the need for the following:

- (1) Incorporation of thermocouples into the ICC monitoring system prior to June 1983 in accordance with Regulatory Guide 1.97;

Item #57, II.K.3, Item 13--Separation of High Pressure Injection and Reactor Core Isolation Cooling System Initiation Levels

The Staff has determined that separation of High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) initiation levels is unnecessary at this time but notes that LILCO is subject to the results of the ongoing generic evaluation of the topic.

LILCO has committed to make an earnest effort for installation prior to fuel load of the automatic restart of RCIC on low water level. Once installed, the Staff will verify that the system meets the requirements of this item.

Item #57, II.K.3, Item 16--Reduction of Challenges and Failures of Relief Valves-Feasibility Study and System Modification

LILCO is a participant in the ongoing evaluation by the BWR Owners Group of possible ways to reduce challenges to safety/relief valves. That study encompasses the 2-stage Target Rock safety/relief valve which is used at Shoreham. LILCO has provided the results at the evaluation as prescribed in II.K.3, Item 16. We conclude that no modifications are necessary for Shoreham at this time.

This item is subject to generic review by the Staff. This review is scheduled to be completed in December, 1982. No action is required by LILCO until the generic resolution is provided at which time LILCO will be provided with a resolution implementation schedule.

Item #57, II.K.3, Item 45--Evaluation of Depressurization With Other Than Automatic Depressurization System

1 MR. IRWIN: Judge Brenner, in the same vein,  
2 LIILCO has reviewed the FSAR overnight and the copies of  
3 those pages on which we particularly relied are being  
4 Xeroxed right now, and we will provide them at the  
5 break. I could not get them done before 9:00 o'clock.

6 JUDGE BRENNER: Let's go off the record.

7 (Discussion off the record.)

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

9 All right, we are ready to proceed with the  
10 County's cross-examination.

11 Ms. Letsche, I will try to say this as  
12 generally as possible. Is it premature to ask you if  
13 you think you might finish your examination today?

14 MS. LETSCHE: I don't know if it is premature  
15 to ask me. I don't think I will finish today.

16 JUDGE BRENNER: Proceed.

17 MS. LETSCHE: I would like to have marked as  
18 the next Suffolk County exhibit --

19 JUDGE MORRIS: That is 33.

20 MS. LETSCHE: -- as Suffolk County Exhibit 33  
21 for identification a copy of a licensee event report  
22 contained in NUREG/CR-2000, ORNL/SIC-200, for the month  
23 of April 1982, in particular an item contained on page  
24 12 of that document which relates to an event reported  
25 by Browns Ferry 3 plant.

1 JUDGE BRENNER: Do we have copies of that?

2 MS. LETSCHE: Judge Brenner, I believe copies  
3 were attached to my cross-examination plan. I think it  
4 might have been attached to the plan on 28(a)(vi).

5 (Discussion off the record.)

6 JUDGE BRENNER: All right. It is so marked  
7 for identification as Suffolk County 33.

8 (The document referred to  
9 was marked Suffolk County  
10 Exhibit No. 33 for  
11 identification.)

12 Whereupon,

13 RAYMOND M. CRAWFORD

14 JEFFREY L. SMITH

15 STEVEN J. STARK

16 JOHN J. BOSEMAN

17 FRED HAYES

18 JOHN J. KREPS

19 C. A. MALOVRH

20 ROBERT J. WRIGHT

21 MARVIN W. HODGES

22 FRANK C. CHERNY,

23 the witnesses on the stand at the time of recess,  
24 resumed the stand and, having previously been duly sworn  
25 by the Chairman, were examined and testified further as

1 follows:

2 CROSS-EXAMINATION -- RESUMED

3 BY MS. LETSCHE:

4 Q Mr. Boseman, do you have a copy of what has  
5 been marked as Suffolk County Exhibit 33 for  
6 identification?

7 A (WITNESS BOSEMAN) I have a copy of an LER  
8 report. I don't have the exact marking that says it is  
9 an attachment.

10 Q It does not have that marking on it. But is  
11 it the one I just identified for the record?

12 A (WITNESS BOSEMAN) If it is Docket No. 50-296,  
13 LER No. 81-074, yes, I do have a copy of it.

14 WITNESS BOSEMAN: Judge Brenner, I would like  
15 at this time to ask your permission to focus in on how  
16 LER's and field reports interrelate with the safety  
17 relief valve operability assurance program for the  
18 Target Rock two-stage.

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1 JUDGE BRENNER: That is usually something that  
2 either should have been in your testimony or we can get  
3 it on redirect. I am going to let you discuss it with  
4 your counsel, and then he can discuss it with the other  
5 counsel and let them figure out how to work it, and we  
6 will proceed with the cross for now. Now, if it becomes  
7 pertinent to your answer to a question but is related to  
8 the question as opposed to a side rendition of something  
9 you want to say, you can do it that way.

10 Did you know about this, Mr. Irwin?

11 MR. IRWIN: I know that Mr. Boseman has a  
12 concern about the relationship of various kinds of tests  
13 to operational experiences on SRV's, and I suspect this  
14 is a natural vehicle for discussion of the relationship  
15 of these things. I agree with you that it may come out  
16 in answer to a question.

17 JUDGE BRENNER: Let's see where it goes. If  
18 counsel for all the parties agree that it would save a  
19 lot of time to do it without waiting for redirect, we  
20 will permit it, but let's proceed with the questioning  
21 for now.

22 BY MS. LETSCHE: (Resuming)

23 Q Mr. Boseman, this LER discusses data relating  
24 to bench testing of safety relief valves. Is that  
25 correct?

1 A (WITNESS BOSEMAN) Yes, it is.

2 Q Those are the model number that is mentioned  
3 in this LER, five target rock model 7567F-100, is that  
4 model substantially the same as the model that is in the  
5 Shoreham plant?

6 A (WITNESS BOSEMAN) It is very similar. Yes,  
7 it is.

8 Q Is that also substantially the same as the  
9 model used in the GE generic SRV test?

10 A (WITNESS BOSEMAN) Yes, it is.

11 Q The event reported here indicates that five of  
12 six two stage relief valves tested for as found set  
13 pressure initially failed to lift within allowable  
14 range, but met criteria on subsequent lifts. Is -- Let  
15 me ask you first, are you familiar with the incident  
16 that is reported in this LER?

17 A (WITNESS BOSEMAN) Intimately with the  
18 details, no. What I would like to say, however, to  
19 clarify it, this is a post-service type testing that is  
20 required by Brown's Ferry 3 on a periodic basis, and  
21 this is the approach that is normally taken, and it is  
22 part of the operability assurance program to check  
23 certain things out, and as the LER notes, it did not  
24 meet the tolerance limit, but fell outside the tolerance  
25 limit, the magnitude of which can vary from one valve to

1 the next. I am not really intimately aware of the exact  
2 values.

3 JUDGE BRENNER: Mr. Boseman, is a total  
4 average deviation given in this summary? Does that help  
5 at all? Obviously, that doesn't give you the range of  
6 deviation.

7 WITNESS BOSEMAN: Yes, that does help. In  
8 effect, the total average of the as found prop results  
9 as it is 1.5 percent of nameplate, so in effect that is  
10 telling me that on an average basis of all of the valves  
11 that were tested the prop was really half a percent  
12 above the tolerance, the spec tolerance that is applied  
13 to the valve for that plant.

14 I would also like to add that that appears to  
15 be some of the tolerance gathered that we have seen in  
16 the past with other valves, and it also says you should  
17 readjust.

18 JUDGE MORRIS: Mr. Boseman, did I understand  
19 correctly that these valves had been in service at  
20 Brown's Ferry 3?

21 WITNESS BOSEMAN: Yes, sir.

22 JUDGE MORRIS: Do you know for how long?

23 WITNESS BOSEMAN: In this particular case, I  
24 do not know the extended length of time. No, sir. Not  
25 at this moment.

1 JUDGE MORRIS: Thank you.

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

4 WITNESS SMITH: Could I add, Judge Brenner,  
5 that the TS.2.2.B that is referenced there, I believe,  
6 is probably a tech spec limit for Shoreham-specific.  
7 The tech spec limit is 1 percent plus or minus on set  
8 point, and that is an established technical  
9 specification limit, but has nothing to do with the  
10 design limits on the valve piping or reactor vessel.

11 JUDGE CARPENTER: Would you make your reason  
12 for that distinction a little clearer, briefly?

13 WITNESS SMITH: The ASME code establishes a  
14 particular site would have a design limit for pressure  
15 on its vessel code piping and valve. For Shoreham  
16 specific, the value is 1,250 psig. The code permits us  
17 to go 10 percent above that value to 1,375 psig, and  
18 then finally the code provides that in 1 percent of the  
19 service life that we are permitted to go for 1 percent  
20 over the service, for 1 percent of the service life, we  
21 are permitted to go beyond the 1,375.

22 I was just trying to put in perspective that  
23 the deviation that is noted here is not an ASME code  
24 deviation. It is a technical specification limit  
25 exceedence which is specified between the utility and the

1 NRC staff.

2 BY MS. LETSCHE: (Resuming)

3 Q Mr. Smith, in light of what you just said,  
4 does that mean that a 1.5 percent deviation such as the  
5 Brown's Ferry valves experienced would not meet the  
6 Shoreham tech spec requirement if that occurred at  
7 Shoreham?

8 A (WITNESS SMITH) At present, although the tech  
9 specs have not been finalized, I believe that the  
10 allowable deviation on set point without reporting the  
11 incident to the NRC would be 1 percent. Yes, that is  
12 correct.

13 Q Mr. Boseman, do you know what the cause of the  
14 event that is described here was?

15 A (WITNESS BOSEMAN) No, I do not. I do not  
16 have the details regarding those test results, and I  
17 would like to add at this time this is what I considered  
18 to be a Phase 3, a followup on our part. Generally,  
19 post-service type testing, we may or may not obtain the  
20 details on something like this in a prompt fashion. As  
21 a matter of fact, this was kind of a surprise to me as  
22 far as the LEP, and as you will note, the date of the  
23 publication is approximately four months later.  
24 However, when you do follow up and review things, we do  
25 contact the utilities involved and make a request for

1 specific details. I am sorry, but I don't have details  
2 on this particular LER.

3 Q It indicates in the LER that there were  
4 previous similar events, and then it has three  
5 references after that, and all appear to be Brown's  
6 Ferry events. Are you familiar with any of the previous  
7 similar events that are referenced here?

8 A (WITNESS BOSEMAN) More than likely I am.  
9 That attachment to notification 8279, as long as those  
10 previous events were prior to September of '81, they are  
11 probably accounted for, and they have been evaluated in  
12 that matrix along with everything else that we have been  
13 able to obtain from the various utilities with regard to  
14 any LER's they may have had.

15 I would like to add one more thing. An LER of  
16 this nature, it is not in-service events, but rather  
17 post-service type tests and inspection results, do not  
18 normally get my immediate attention. The ones that  
19 definitely do are operating plant events such as Hatch,  
20 Brown's Ferry. Anything that happens real time on an  
21 operating plant, we know about it rather quickly.

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

24 Q The LER goes on to state that target rock  
25 valves will be repaired, reset, and retested prior to

1 installation. Are you aware of any kind of repair or  
2 what kind of repair would be referred to in this LER?

3 A (WITNESS BOSEMAN) It probably referred to a  
4 standard recertification type work, and that means you  
5 readjust the set points and bring them back into tech  
6 spec criterias, and get them into an as new type valve  
7 condition before returning the valve to service. That  
8 is what the description here refers to in this  
9 particular phase.

10 A (WITNESS HODGES) May I add a comment to  
11 that? In the attachment to the Board notification which  
12 was the slide presentation that Mr. Boseman had given at  
13 the NRC back in January, about five or six pages from  
14 the end of that package, there is a page that says  
15 Post-Operation As Received Set Point SRV Test Data  
16 Evaluation, which is a summary of the post-operation  
17 data at the Wyle Labs up through 6/81, which really is a  
18 summary of this type of data up to that point, and so  
19 this is just a further indication that this is nothing  
20 new that is indicated in this Brown's Ferry LER. It was  
21 something that the NRC and GE were both aware of, and it  
22 is something that we would like to fix, but it is not a  
23 terribly significant type of event with a small  
24 deviation, but it is reported, and the summary of this  
25 type of information is given in that attachment.

1 Q In light of your comment, Mr. Hodges, is this  
2 something that would be considered a generic problem  
3 with respect to the target rock two stage valves?

4 A (WITNESS HODGES) A generic problem, yes. A  
5 significant generic problem, no.

6 A (WITNESS BOSEMAN) Judge Brenner, I would like  
7 to add to that, if I may, please. Set point thrift for  
8 any safety relief, safety valve, relief valves, it is  
9 not this set point thrift problem or concerns that may  
10 exist is really common to all valves of that nature. It  
11 is really a question of the tolerance imposed. In other  
12 words, if you say plus or minus one by a tech spec, then  
13 that becomes your criteria. If, for example, a  
14 particular utility or some power plant decided that they  
15 evaluated everything and said that I will have a name  
16 plate setting effects, and it is acceptable if I have a  
17 plus or minus 4 percent tolerance and establish that as  
18 a tech spec, then only when you go outside that do you  
19 exceed the tech spec.

20 BOARD EXAMINATION

21 BY JUDGE BRENNER:

22 Q Perhaps Mr. Hodges or, if appropriate, one of  
23 the other staff witnesses could help me with this. I  
24 want to handle this on a big picture basis, because if  
25 we go event by event, we are going to be here longer

1 than I intend to be here.

2 A (WITNESS HODGES) That is why I mentioned this  
3 particular point.

4 Q I find that consistent with something I said  
5 yesterday. I find your answer consistent with something  
6 I said yesterday. Some of the testimony we have heard  
7 this morning expressly states or certainly means to  
8 imply that, don't worry about the 1 percent drift or  
9 something close to 1 percent drift, 1.5 percent. If  
10 that is the case, why is there a tech spec limit of 1  
11 percent? What was the purpose in setting the tech spec  
12 limit of 1 percent? It is not usual, I don't think, to  
13 set a tech spec so tight that it has no relationship to  
14 safety and will be rather routinely violated.

15 A (WITNESS HODGES) Well, we hope they are not  
16 routinely violated. I think you will find that most  
17 tech spec limits are set on the conservative side. The  
18 real design safety limit would be considerably different  
19 from the tech spec limit, and that is deliberate,  
20 because we want to stay well away from the safety  
21 problem, and the tech spec is there to keep you within  
22 an operating space that is safe.

23 Now, to put these numbers in perspective,  
24 because this was, I think, the means that was presented  
25 on the slide was 1.9 percent, approximately 2 percent.

1 General Electric did an analysis and said, what if the  
2 mean of these valves was off 4 percent, and that would  
3 be approximately a 40-pound set point drift, and the  
4 mean of 4 percent results in an increase in the pressure  
5 for a normal Chapter 15 transient, an increase in  
6 pressure of 15 pounds.

7 So, that is not a very significant change.

8 Q Well, I guess I still have my question of why  
9 is there a 1 percent drift. I certainly agree with your  
10 general comment that tech spec limits are set with a  
11 margin from -- tech spec limits are set with quite a bit  
12 of margin from what the code would allow or what a  
13 conservative, even a conservative analysis would allow,  
14 and in fact the basic set point has margin also, but the  
15 tone of what I am hearing this morning, if not the exact  
16 words, is 1 percent has very little relation to reality,  
17 even allowing normal margin, and I don't want to accept  
18 that without exploring how the 1 percent was set.

19 A (WITNESS CHERNY) Judge Brenner, could I add a  
20 few remarks on that? A plus or minus 1 percent is in  
21 the ASME code, and is applicable to set pressure  
22 tolerance on a brand new as manufactured, fresh shipped  
23 from the shop valve. Many, many years ago, before there  
24 even was NRC, AEC picked up on that plus or minus 1  
25 percent and started putting it in tech specs for both

1 PWR and BWR safety valves. It is extremely  
2 conservative, as Mr. Hodges has tried to say. It is  
3 probably not really a practical number.

4           Routinely, over the years, people have been  
5 doing testing of this type, and routinely valves, a  
6 rather large population of them don't meet on the as  
7 found test within the plus or minus 1 percent. That is  
8 very, very tight, and really it was meant for, as I  
9 said, a fresh valve shipped that has never been in  
10 service.

11           I would like to point out I have a copy of the  
12 actual LER here, the whole LER, not just a summary of  
13 it.

14           Q     Let me stay with your last point for a  
15 moment. I am not sure I want to get into the details of  
16 any particular event, unless it is helpful to explore  
17 the issue, but you said that the plus or minus 1 percent  
18 came from the code. Was that for all valves, even from  
19 little itty bitty ones?

20           A     (WITNESS CHERNY) Well, now I am talking  
21 specifically large capacity reactor coolant pressure  
22 boundary safety and relief valves for both PWR's and  
23 BWR's. There are different tolerances in the code for  
24 other types of safety relief valves. Just this  
25 particular type has that kind of tolerance, rather, high

1 pressure valves.

2           If I could read just a couple, about two  
3 sentences out of this LER, it might put it in  
4 perspective a little bit.

5           Q     Okay.

6           A     (WITNESS CHERNY) TVA had written in this LER  
7 regarding these five or six valves we were just  
8 discussing that this out of tolerance condition does not  
9 result in an overpressure condition of normal piping or  
10 doesn't result in any significant increase in PR  
11 operating limit. The previous evaluation performed by  
12 the GE company indicated that for the previous Unit 3  
13 operating cycle a total average deviation at set point  
14 of 5 percent could have existed with no significant  
15 effect on nuclear safety, and I think the margin reality  
16 is larger than that, but that is what they have looked  
17 at up to that point.

18          Q     Judge Morris is going to have a followup, but  
19 I want to just establish one thing. MCPR, is that  
20 maximum or minimum critical power ratio?

21          A     (WITNESS CHERNY) Minimum.

22                   BY JUDGE MORRIS:

23          Q     Mr. Hodges, are the tech specs for these set  
24 points pretty standard among the BWR's?

25          A     (WITNESS HODGES) Yes.

1           Q     Can you describe the tech spec. Is there, for  
2 example, a reporting requirement and a surveillance  
3 requirement and a shutdown requirement depending upon  
4 what the condition of the valve is?

5           A     (WITNESS HODGES) The answer to all of those  
6 is yes, and I may not be able to give you all of the  
7 gory details. If the values exceed the tech spec value,  
8 then the utility is obligated to submit an LER to the  
9 NRC, and that is why this LER has been submitted for  
10 Brown's Ferry. The actual steps to be taken for any  
11 violation of a tech spec, whether it is a valve test or  
12 otherwise, quite often is spelled out in the tech specs  
13 themselves, and it varies a little bit from each section  
14 of the tech specs. There are, for example, limited  
15 editions of operation that says a piece of equipment may  
16 be out of service for two weeks or it may be out of  
17 service for 48 hours. It depends upon the piece of  
18 equipment. You can operate on that basis. And then, at  
19 the end of that time, if it is not fixed, you have to  
20 shut down.

21                     There are other tech specs that say you can  
22 only operate this way for a few hours, and then you shut  
23 down. I am not familiar with what the conditions are on  
24 the variations for the safety relief valve. I just  
25 didn't check that before I came, and I just don't know

1 that.

2 Q Maybe we could learn that from the panel  
3 before we leave this subject entirely.

4 A (WITNESS HODGES) Yes, I think we probably  
5 could look that up.

6 JUDGE BRENNER: Ms. Letsche, could you orient  
7 me to your cross plan, because I am looking and I didn't  
8 see the reference to this event in the plan, although  
9 you have attached it, and I will tell you frankly I  
10 think you have a pretty good cross plan, both parts, and  
11 I am surprised that you are not following it, and if you  
12 are, I am not following you.

13 MS. LETSCHE: Judge Brenner, this -- I wanted  
14 to talk about this at this point in my cross  
15 examination, because it seemed logically to follow from  
16 the discussion of the GE data attached to the Board  
17 notification. The Board notification stuff is obviously  
18 not in my cross plan any more, since I didn't get it  
19 until late Monday night, so that is how it gets in, and  
20 I do not have much more on this. That is why it seemed  
21 to be the appropriate place to put it.

22 JUDGE BRENNER: Okay. I don't want to get  
23 into a long debate, but you had it attached to your  
24 cross plan prior to the Board notification, and  
25 therefore I expected to see it somewhere in the plan,

1 but all right, let me know when you pick up with the  
2 plan and tell me where you are picking up. One reason I  
3 said what I said is, I am looking through your plan, and  
4 we are going to try to hold back, because you are going  
5 to ask a lot of questions that we have, but we are  
6 anxious to have you do it.

7 MS. LETSCHE: I certainly intend to as soon as  
8 I finish with the Board notification information.

9 BY MS. LETSCHE: (Resuming)

10 Q Let me ask if anyone on the panel knows what  
11 the instruction in the Shoreham tech spec that we have  
12 been discussing here on the deviation from the opening  
13 limit, from the safety relief valves is, what the  
14 instructions are in response to that that Mr. Hodges  
15 mentioned.

16 A (WITNESS SMITH) I think you will have to  
17 clarify that. That is not particularly clear.

18 Q I guess my question is, in the Shoreham tech  
19 specs, what is an operator or what does the plant do if  
20 there is a deviation from the tech spec such as the type  
21 that is reported in this LER for Brown's Ferry?

22 A (WITNESS SMITH) The technical specifications  
23 and Reg. Guide -- I don't believe I recall the number,  
24 specify what reporting requirements must be made to the  
25 NRC. I believe Mr. Hodges said he is not aware of

1 exactly what the procedure is. I know in fact that if  
2 there are violations of tech spec limits, what those are  
3 for SRV right at this time I could not tell you. The  
4 report would be made and corrective actions and analysis  
5 would be provided to the NRC staff.

6       A       (WITNESS HODGES) Just let me add one other  
7 comment, because this deviation is not found while the  
8 valve is still on the plant, but is found in testing  
9 that occurs at the Wyle Lab after they remove the valve  
10 from the plant. In the particular LER that you have  
11 mentioned which was for Brown's Ferry, the corrective  
12 action that they listed, which I presume is probably  
13 based upon tech specs and would be similar to corrective  
14 actions that LILCO would take, said the five valves  
15 would be repaired, reset, and retested prior to  
16 installation, and unless there is something that  
17 indicates that there is a gross problem with the valves,  
18 I would expect that would be all that LILCO would do  
19 also, but we can verify that from the tech specs.

20       Q       Mr. Hodges, do you know what type of repair  
21 was required?

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1 Q Mr. Hodges, do you know what type of repair  
2 was required to the Browns Ferry valves that are  
3 referenced here?

4 A (WITNESS HODGES) No.  
5 (Counsel for Suffolk County conferring.)

6 Q Do you know, Mr. Hodges, where the testing  
7 that is referred to in this LER was performed?

8 A (WITNESS HODGES) I believe it was performed  
9 at Wyle Labs. In fact, the LER itself expressly says  
10 the tests were performed at Wyle Labs.

11 Q Mr. Cherny, are you any more familiar with  
12 this LER based upon the full LER that you have there,  
13 rather than the summary which I have marked as an  
14 exhibit? Can you tell us what the causes or cause of  
15 this particular event was?

16 A (WITNESS CHERNY) No, I don't have any more  
17 information on that than Mr. Hodges does.

18 Q It indicates in this summary that when the  
19 tests are completed a follow-up LER will be submitted.  
20 Has such a follow-up been submitted, to the Staff's  
21 knowledge?

22 A (WITNESS HODGES) Yes, it has.

23 Q Can you tell us what it said?

24 A (WITNESS HODGES) It is a similar type of  
25 listing of the valves and the set pressures and the

1 percent deviations, and it covers all 11 valves rather  
2 than just the 5 or 6 that were reported in the initial  
3 LER.

4 Q I guess I'm not clear on your answer.

5 A (WITNESS HODGES) The original LER, the one  
6 that's summarized in the document that you gave,  
7 basically listed the valve by serial number and gave a  
8 column for set pressure, a column for the as-found  
9 pressure, and a column for the percent deviation. And  
10 then it talked about the total average deviation, the  
11 operating conditions, and so forth.

12 The supplement that was issued later contained  
13 a similar table, but it gave values for all 11 valves,  
14 as opposed to the 5 or 6 that were reported in the  
15 original LER.

16 (Counsel for Suffolk County conferring.)

17 BOARD EXAMINATION

18 BY JUDGE CARPENTER:

19 Q Mr. Hodges, just to keep the record straight,  
20 what was the average deviation?

21 A (WITNESS HODGES) The average deviation in the  
22 original LER was 1.45 percent. Are you requesting the  
23 average deviation for the supplement?

24 Q Yes.

25 A (WITNESS HODGES) The average deviation for

1 the supplement was 2.82 percent.

2 Q So you said it represents a significant  
3 difference from the data reported in the Board  
4 notification, unnumbered page titled "Post-operation  
5 Setpoint, SRV Test Data Evaluation," which shows the  
6 average deviation as 1.9 percent. Would you consider  
7 the 2.8 to be considerably different from the 1.9?

8 A (WITNESS HODGES) Well, there was one valve  
9 that was tested that showed a very large deviation,  
10 which obviously affected the average. And in that sense  
11 that one valve gave a very heavy weight to the average  
12 from those 11. If you averaged all valves, all  
13 two-stage valves on the plants that have them, I doubt  
14 that the average would be significantly different, but  
15 it would be somewhat higher.

16 Q Mr. Hodges, how many of these valves can fail  
17 to pop before one is concerned about public safety? How  
18 much redundancy is there?

19 A (WITNESS HODGES) Do you mean fail to pop at  
20 all or fail to pop at a higher pressure?

21 Q Fail to pop at some reasonably higher  
22 pressure.

23 A (WITNESS HODGES) Generally, the overpressure  
24 analyses are done, or a good many of the overpressure  
25 analyses that I have looked at are done, assuming that

1 one valve failed to pop altogether. And we have seen  
2 analyses that go and take two valves and three valves  
3 and so forth on down to fail to pop at all, not just to  
4 pop at a higher pressure but do not open.

5 My recollection, and I would have to go back  
6 and check the curves to be sure of this number, but my  
7 recollection is that one valve failing to open  
8 altogether increases the pressure about 25 pounds for  
9 the worst overpressure transient. It may be as high as  
10 40. It would not be larger than 40. It's in that range  
11 and I just don't remember the exact number.

12 A (WITNESS SMITH) If I could just add to that,  
13 Judge Carpenter, that for code requirements there are 11  
14 valves installed at Browns Ferry and at Shoreham only 10  
15 are required. So there is an additional valve that, if  
16 it should not function at all, 10 valves would  
17 adequately provide overpressure protection.

18 A (WITNESS HODGES) And I think, as we mentioned  
19 earlier, a 4 percent increase in the opening pressure, a  
20 40-pound increase in the opening pressure for the worst  
21 transient, would cause only a 15-pound increase in the  
22 peak pressure for the transient. And that would be for  
23 all of the valves. If all of the valves opened 4  
24 percent high, the peak pressure for the transient would  
25 be increased only 15 pounds.

1 Q I am not a student of this subject at all.  
2 What sort of pressure, overpressures, would cause you to  
3 become concerned? You have been giving me numbers like  
4 10's, 20's, 30's.

5 A (WITNESS HODGES) Right. The design pressure  
6 for the plant is 1250 pounds. The overpressure analyses  
7 that we normally look at, there is a limit of 110  
8 percent of design, which would be 1375. For those type  
9 of pressures there are no problems. If you stay within  
10 that 1375 you have adequate margin for sure.

11 If you go up to a service level C stress,  
12 which still does not mean failure but is not a very  
13 desirable situation, that is about 1500 pounds. I have  
14 not seen any analyses that go beyond 1500 pounds. I  
15 just don't know what would happen beyond that point, but  
16 that would not, to my knowledge, result in any failures  
17 of vessel or piping attached to the vessel at 1500  
18 pounds.

19 But the design limit is 10 percent or 110  
20 percent of the design pressure, which is 1375.

21 JUDGE CARPENTER: Thank you for helping my  
22 perspective.

23 WITNESS HODGES: Just as an additional  
24 comment, the operating pressure is about 1040.

25 JUDGE CARPENTER: Thank you.

1 (Counsel for Suffolk County conferring.)

2 (Panel of witnesses conferring.)

3 MS. LETSCHE: Did the Board have more  
4 questions?

5 JUDGE MORRIS: No.

6 CONTINUED CROSS-EXAMINATION

7 BY MS. LETSCHE:

8 Q Mr. Hodges, the overpressure analysis you were  
9 just discussing with Judge Carpenter, was that analysis  
10 looking at the reactor pressure vessel integrity or at  
11 ECCS functions or what?

12 A (WITNESS HODGES) The overpressure analyses  
13 specifically look at the integrity of the vessel, and  
14 those are the reasons for setting those limits.

15 Q Just for the record, Mr. Hodges, in the full  
16 LER or the supplemental LER that you've referenced with  
17 respect to this Browns Ferry event, what is the range of  
18 the deviations for the 11 valves? I think you gave us  
19 the average.

20 A (WITNESS HODGES) The smallest deviation was  
21 .27 percent -- I'm sorry, .18 percent. I misread the  
22 table, excuse me. The smallest deviation was .18  
23 percent. The largest deviation was estimated to be 19.9  
24 percent.

25 (Panel of witnesses conferring.)

1           A       (WITNESS HODGES) All of the valves except  
2 that one very large one were less than 3 percent. I  
3 think the next largest one was 2.5.

4                   (Counsel for Suffolk County conferring.)

5           JUDGE JORDAN: I am puzzled a little bit by  
6 these figures. These are the deviations after the  
7 valves have been repaired, is that right?

8                   WITNESS HODGES: No.

9           JUDGE JORDAN: No?

10           WITNESS HODGES: No. These are the deviations  
11 in the as-found condition. So the valves were removed  
12 from the plant, shipped to Wyle Labs, and before  
13 anything is done to them they are tested. And this is  
14 for the first pop.

15           JUDGE JORDAN: Okay.

16           BY MS. LETSCHE: (Resuming)

17           Q       Does that supplemental LER indicate what sort  
18 of repairs were done on the valves?

19           A       (WITNESS HODGES) No.

20           A       (WITNESS CHERNY) I would like to make one  
21 clarification of what Mr. Hodges said. The 110 percent  
22 of design does not only refer to the reactor vessel; it  
23 is the entire reactor coolant pressure boundary.

24           Q       I wonder if perhaps during the break the Staff  
25 could make available the supplemental LER that Mr.

1 Hodges has been referring to for the parties and  
2 possibly the Board to look at.

3 A (WITNESS HODGES) Yes.

4 MR. REPKA: We will do that.

5 JUDGE CARPENTER: I am sorry, Ms. Letsche.  
6 One more question.

7 Mr. Cherny, what sorts of things would be  
8 excluded from the 1500 pounds that Mr. Hodges referred  
9 to with respect to vessel integrity? What is excluded?

10 WITNESS CHERNY: I think that on most of the  
11 BWR's we have looked at a lot of results of analyses on  
12 pressure, retaining integrity, that have been submitted  
13 the last five or six years for ATWS analyses, and I  
14 think based upon those numbers I would say that the  
15 entire reactor coolant pressure boundary on most, if not  
16 all, GE reactors would be okay at 1500 psi.

17 JUDGE CARPENTER: Thank you.

18 BY MS. LETSCHE: (Resuming)

19 Q Mr. Roseman, getting back to the attachment to  
20 Board Notification 82-79, in your discussion of the SRV  
21 in-plant service history, the anomalies and the causes  
22 and the actions to correct, I notice a number of  
23 references to SIL-196. Can you tell me, that is a GE  
24 document issued to utilities, is that right?

25 A (WITNESS BOSEMAN) It is a service information

1 letter to advise all utilities using, in this particular  
2 case, Target Rock valves of the total activity, and  
3 making recommendations as to what they should do.

4 Q I notice references to a number of  
5 supplements. The highest one I see on this document is  
6 supplement 10. What causes you to issue the  
7 supplements? Are those issued when you see a new event  
8 or what?

9 A (WITNESS BOSEMAN) These SIL's do not mean  
10 they are necessarily just event scenarios. It may be  
11 anything that we would like to advise the utilities on  
12 based on a potential anomaly that could have cropped up  
13 or a solution to an anomaly that has cropped up. It is  
14 an ongoing thing.

15 It continuously goes, depending upon what time  
16 frame you are in. The Target Rock valves have been out  
17 in the field for a long time, so as time progresses and  
18 certain items crop up the supplements get a different  
19 number for identification. It could be a one-item or it  
20 could be a multiple set of items, or it could be just a  
21 summary to focus in on the total SIL that has tracked  
22 for three or four years, so that the new reader is  
23 forced into focusing in on the whole history.

24 As a matter of fact, the latest one is  
25 SIL-196-11, which in effect summarizes to permit the

1 reader to focus in clearly on the history in a very  
2 summarized form, so he is aware of what is being  
3 recommended and what applies to which type of valve.

4 Q When was supplement 11 issued, approximately?

5 A (WITNESS BOSEMAN) Approximately April of  
6 '82.

7 Q Looking at your chart --

8 MR. IRWIN: Excuse me. Mr. Smith, do you want  
9 to add to that answer?

10 WITNESS SMITH: Yes, if I could. The SIL's on  
11 the Shoreham docket receive a complete review and are  
12 evaluated on whether or not they should be implemented.  
13 SIL's that are associated with the Target Rock valves  
14 either have all been implemented at this time or we  
15 intend to be implemented if they were applicable to us.

16 During operation we will have the same type of  
17 rigorous QA review on all of these SIL's, such that it  
18 will require the appropriate organization to evaluate  
19 them, implement them, and then after the implementation  
20 those SIL's will all be reviewed by the independent  
21 safety engineering group to see that the action that was  
22 taken was in fact appropriate.

23 BY MS. LETSCHE: (Resuming)

24 Q Mr. Smith, who does the review and the  
25 evaluation of the SIL's with respect to SRV's to

1 determine if they are applicable to Shoreham?

2 A (WITNESS SMITH) We receive them into our  
3 project engineering organization and our engineering  
4 organization evaluates them. They solicit input from  
5 the plant staff if it is an operating procedure,  
6 maintenance procedure, or procedural change. And then  
7 they consult with the valve manufacturer as to how  
8 rapidly the change could be made, if it involves some  
9 modification, what the schedule would look like.

10 (Counsel for Suffolk County conferring.)

11 Q Mr. Boseman, I believe you said that  
12 supplement 11 basically summarizes, supplement 11 to  
13 SIL-196, summarizes the history up 'til April 1982 of  
14 this SRV information. Can you summarize for us what  
15 actions to correct or recommendations GE makes in that  
16 supplement 11 with respect to the two-stage Target Rock  
17 valves?

18 MR. IRWIN: I have got to object at this  
19 point, unless we can relate it either to the scope of  
20 the testing program which was conducted in response or  
21 in response to item II.D.1 of NUREG-0737 or with respect  
22 to stuck-open relief valves. And once again, we have a  
23 very knowledgeable panel and we can talk about safety  
24 relief valves and their entire scope of operation for a  
25 long time. But I would like to see it tailored somewhat

1 to the contention if we can.

2 JUDGE BRENNER: I missed the question, so I'm  
3 going to have to get the question either repeated or  
4 read back to rule.

5 MS. LETSCHE: I can tell you what it was,  
6 Judge Brenner. It was, since Mr. Boseman indicated that  
7 supplement 11 to SIL-196 summarized the history and  
8 corrective actions and recommendations up to April of  
9 1982, could he summarize what recommendations for  
10 corrective actions GE included in that supplement with  
11 respect to the two-stage Target Rock valves.

12 (Board conferring.)

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1 MS. LETSCHE: I might add, Judge Brenner, that  
2 if that -- the reason I am asking him to summarize this  
3 is because obviously we do not have a copy of it -- if  
4 one could be supplied to us, perhaps we could look at it  
5 and ask more particularized questions.

6 But rather than go through this document and  
7 find out what the specific recommendations are in each  
8 of the supplements, I think this would be an efficient  
9 way to find out basically what GE's conclusions are thus  
10 far after having analyzed the in-plant service history  
11 of these SRVs.

12 MR. IRWIN: My observation still stands.

13 JUDGE BRENNER: Well, your objection is  
14 overruled. It is relevant at least to the challenges  
15 contention.

16 MR. IRWIN: With respect to challenges, Judge  
17 Brenner, we have no objection at all.

18 JUDGE BRENNER: Well, the testimony is  
19 combined. We are not going to have objections as to  
20 relevance to one contention and not the other. That was  
21 the purpose in combining the testimony.

22 MR. IRWIN: Understood. But if I may be heard  
23 on this for one second, the challenges were of a  
24 specific nature that arose out of the TMI accident, and  
25 our testimony was focused on them. Similarly, there was

1 a testing program that grew out of the TMI accident.  
2 The testimony focused on that. It was not focused on  
3 the entire realm of testing ever done on SRVs, nor was  
4 it focused on the entire realm of challenges to SRVs.

5 We are getting, I am afraid, into a very  
6 sprawling kind of exaination. As I said, we have an  
7 almost encyclopedic panel, and we can talk about it for  
8 weeks. I am afraid we are headed in that direction.

9 JUDGE BRENNER: Well, your latter point does  
10 not go to relevance, it goes to efficiency, and I think  
11 we have been in the forefront of that. So do not  
12 worry. Well, you can worry if you want, but we are all  
13 worried about it.

14 MR. IRWIN: But I am also concerned about the  
15 scope of the examination, Judge Brenner.

16 JUDGE BRENNER: We are going to adopt Ms.  
17 Letsche's suggestion in terms of efficiency. Give her a  
18 copy of the document, and we will have particularized  
19 questions. However, that ruling assumes relevance and  
20 at least until we hear the particular questions, and the  
21 line is relevant.

22 We had trouble reading these contentions and  
23 separating them out. That is why we suggested trying  
24 them together. The overlap is tremendous between a  
25 testing program and a program designed to reduce the

1 challenges.

2           As soon as we suggested the combination -- and  
3 I believe it was we who suggested originally before we  
4 heard it from the parties -- but as I recall the  
5 parties' reaction to that suggestion independently, the  
6 parties had been thinking about combining the panel,  
7 too. We are not going to have objections that a  
8 question does not relate to one contention and it  
9 relates to the other.

10           MR. IRWIN: No, do not misunderstand my  
11 objection, Judge Brenner. My problem is that there is  
12 more than one testing program, for instance, that is  
13 conducted on these valves. That is what Mr. Boseman was  
14 going to start off discussing this morning, I suspect.

15           JUDGE BRENNER: I guess we needed that.

16           MR. IRWIN: Our testimony was on one of these  
17 programs, and we have been discussing an entirely  
18 different set of testing programs all morning.

19           JUDGE BRENNER: It is pertinent to the  
20 question as to whether the right steps were taken to  
21 reduce the challenges. And that is our ruling. Even  
22 if it is not squarely within II.D.1, we know there are  
23 different testing programs. Now we are interested in  
24 efficiency, though, and I think Ms. Letsche's suggestion  
25 was responsive to that, and I think we have been very

1 clear about our messages to that point.

2 MR. IRWIN: I am sure the panel can answer the  
3 question.

4 JUDGE BRENNER: Well, th question was  
5 withdrawn in favor of getting the copy of the document.

6 MR. IRWIN: Mr. Boseman, do you have a copy of  
7 the document with you?

8 WITNESS BOSEMAN: Yes, I do.

9 MR. IRWIN: Is it marked up?

10 JUDGE BRENNER: Well, let us do this off the  
11 record. Let us get moving.

12 (Discussion off the record.)

13 BY MS. LETSCHE: (Resuming)

14 Q Mr. Boseman, I would like to direct your  
15 attention to the page of the GE presentation which is  
16 headed "General Recommendations to Assure Proper  
17 Performance of Two-Stage SRVs."

18 With respect to the last item on that page,  
19 "Do not operate selonoids or selonoid/air operator  
20 without reactor pressure," can you tell me what the  
21 reason for that recommendation is?

22 A (WITNESS BOSEMAN) The reason for it is if you  
23 don't have pressure -- and this is in the pilot region,  
24 which is part of the operator -- you damage the seat.  
25 There is no cushioning effect. The problem here is some

1 people are going to decide they are going to operate it  
2 and it's not pressurized, and when they do go in  
3 operation and it leaks, the complaint is the valve  
4 leaks, when they did something to cause the leak. This  
5 is a recommendation not to do that.

6 Q Is the same problem present if the reactor  
7 pressure is low rather than there being none?

8 A (WITNESS BOSEMAN) Some cushioning pressure is  
9 better than nothing. Consistent with how plants  
10 operate, we feel that it is, in fact, acceptable at low  
11 pressure, but as long as there is pressure, it is better  
12 than just no pressure at all.

13 Q How low is low?

14 A (WITNESS BOSEMAN) Anything over 50 pounds.  
15 We recommend 100 to 150. Experience has said that it  
16 seems to work fine without causing leakage.

17 Q Has this recommendation been implemented, or  
18 will it be implemented at the Shoreham plant?

19 A (WITNESS BOSEMAN) Is that directed to me?

20 Q It is directed to anyone on the panel who can  
21 answer it.

22 A (WITNESS SMITH) I am sorry, you will have to  
23 repeat the question.

24 Q Has this recommendation to not operate the  
25 solenoid/air operator without reactor pressure been

1 implemented or will it be implemented at Shoreham?

2 A (WITNESS KREPS) If I may respond to that,  
3 yes, our procedures direct us to not operate the SRVs at  
4 pressures lower than 150 pounds. Our normal  
5 surveillance testing and operational testing of the  
6 valves are all done at pressures greater than 150  
7 pounds.

8 Q Mr. Boseman, directing your attention to the  
9 next page of the GE presentation, which is headed  
10 "Conclusions," the first item there says, "No generic  
11 problems apparent with the two-stage SRV design." In  
12 GE's opinion or your opinion, how many plants have to  
13 experience a problem before it becomes a generic  
14 problem?

15 A (WITNESS BOSEMAN) You will notice I said  
16 "generic design problem." I said, "No generic problem  
17 is apparent with two-stage SRV design." I am speaking  
18 about what is a design type of problem. And if you look  
19 very closely at some of the causes that were listed,  
20 there is a high percent of those causes for the anomaly  
21 noted which are not design-related. They are basically  
22 human-related or items that are beyond the control of a  
23 valve designer.

24 And what you are seeing in the reporting phase  
25 basically is we are now beginning to get what I call

1 sufficient historical data on two-stage valves. The  
2 three-stage valve obviously had a data base because they  
3 were used earlier.

4 We went from a three-stage to a two-stage to  
5 solve a specific problem. That problem of a stuck-open  
6 relief valve type event scenario, in my opinion, has  
7 been resolved by design because at three-stage it was  
8 more of a design problem rather than operational or  
9 human error type problems.

10 I want to give you an example of stuck-open  
11 relief valves in the three-stage. I made an evaluation  
12 the other day and looked at all the event scenarios, in  
13 an evaluation that was made that one could say was  
14 design-related. I am not saying that other things could  
15 not cause a stuck-open relief valve, but categorize them  
16 for design-related. And I took the years between 1975  
17 and '78.

18 There was a total of 99,180 valve-months for  
19 that period for the three-stage valve.  
20 There were 41 stuck-open relief valve events that I  
21 assigned to a design cause. What that relates to is  
22 that it is approximately .004 events, stuck-open relief  
23 valve events, per valve-month.

24 I did the same thing with the two-stage  
25 valves. And I looked at 1979 through July of '82

1 relative to stuck-open relief valve events that had been  
2 reported. And of those, there were only two events  
3 directly related to what I considered a a  
4 design/manufacturing problem, something that you can  
5 resolve by design. That related to .0006 events per  
6 valve-month. And that had a 3202 valve service months  
7 for the two-stage Target Rock valve.

8           When I looked at that, it clearly  
9 substantiates that going from the three-stage to the  
10 two-stage valve definitely is an improvement in valve  
11 performance in the blowdown problems associated with the  
12 three-stage valves.

13           Q     Mr. Boseman, does the design of a component  
14 not have to take into consideration human problems that  
15 are going to arise in the use of that component?

16           A     (WITNESS BOSEMAN) Yes, ma'am, it does. You  
17 do take into consideration the human element as much as  
18 you feasibly can. There are things that are beyond the  
19 absolute scope of human engineering design, shall we  
20 call it. When you can't handle beyond that point, you  
21 provide recommendations.

22           A valve vendor starts off with his  
23 recommendations and an instruction manual. This is  
24 passed on to everybody that is a user of the valve. GE,  
25 for example, provides recommendations using the service

1 information letter vehicle in addition to that, many  
2 utility personnel that know me, they can pick up the  
3 phone and they will get information or they can contact  
4 the valve vendor.

5           Each utility has their own service group that  
6 monitors various equipment. They establish their own  
7 maintenance procedures. As a matter of fact, they are  
8 required to establish an operability assurance program,  
9 which they do have in place. And part of that entails  
10 when the valve first is mounted, what is the testing  
11 they are going to perform when.

12           For example, I know that Pilgrim, when they  
13 start up, they will cycle each and every valve to verify  
14 operability of the valve. They also will have scheduled  
15 a normal maintenance program or in-service inspection  
16 program. At some length of time, they will remove the  
17 valves and do very similar to Browns Ferry, get them  
18 as-received, tested and recertified. That is required.  
19 It is recommended by GE. The requirement imposed by the  
20 NRC is that you must have an operability assurance  
21 program, and each and every utility does establish one.

22           The ASME code is the backfall. It says that,  
23 in section XI, it says that you must inspect, and they  
24 say that, in effect, if no one did identify a  
25 requirement to you, you must do it once every 5 years or

1 something to that effect.

2           So the requirement is there, which is a  
3 prudent engineering thing to do no matter what piece of  
4 equipment it is. It is very similar like servicing your  
5 car, changing the oil filter and rotating your tires, et  
6 cetera.

7           Q     Mr. Boseman, do you consider set-point drift a  
8 design problem?

9           A     (WITNESS BOSEMAN) It depends upon magnitude.  
10 As earlier discussed, you have tech specs which are  
11 fairly tight. Then you have to look at its application  
12 from the safety point of view. And the only time that  
13 -- you look at design, it depends upon the cause. And  
14 the reason I am taking my time is as of a certain point  
15 in time I have not felt that there has been a design  
16 problem. There has been a concern that there might be  
17 one, and that is still being evaluated today.

18           However, you could cause a high set-point  
19 drift due to many different factors. You have to look  
20 at the simulation of the conditions in service that the  
21 valve saw, if it happened to be in service, and compare  
22 it to what the requirements were for the valve and the  
23 environment involved.

24           And if you are looking at as-received test  
25 information, you have to consider because these are

1 error modes that can alter the data base, that the valve  
2 when removed from the plant is not damaged, that the  
3 as-received testing simluates the conditions that were  
4 up on the plant or pretty close as much as humanly  
5 possible.

6           These other variables can affect your data.  
7 The numerical value that is obtained, and those are  
8 factors that definitely have to be looked at. And we do  
9 continuously look at that based upon a data point or a  
10 scatter that comes out or a plant-specific type of  
11 event. We not only look at the valve, we try to look at  
12 the whole history behind the valve.

13           And at this point I would like to add  
14 something. There have been many, many reports that have  
15 made an attempt to categorize and establish a data base  
16 from which reliability analysis could be made. I  
17 personally know that obtaining data of a valid nature  
18 and putting your apples and apples together is very  
19 difficult. And to date, I have not seen anything that  
20 has gone down the path of trying to categorize these  
21 categories.

22           In general, most of those reports I have seen  
23 haven't even identified that they did lack some detailed  
24 information. What is one person's operating conditions,  
25 what is a the maintenance practice, how do they test, et

1 cetera. They have acknowledged that that can, in fact,  
2 bias your data base.

3           What we have been attempting to do -- and it  
4 is improving -- is to get more directly involved with  
5 each one of the utilities. And one significant thing  
6 that is coming out of efforts in the last several years  
7 has been that the EWR Owners Group has contracted with  
8 -- my understanding is that they have given the contract  
9 to INPO, which is a reporting agency -- to identify  
10 problems or events, shall we say, except that now they  
11 have set it up in such a fashion that the type of  
12 information being required to be put on that particular  
13 communication system is more detailed.

14           And with time, that type of information could  
15 then establish the causes much more clearly than it is  
16 today. These causes that you have seen that were  
17 attached to the NRC took a lot of digging and a lot of  
18 time and a lot of research. In addition to that, some  
19 of them were based upon personal observations by myself  
20 or the people that work for me, when and if we had the  
21 opportunity to get there to participate.

22           Q     Mr. Boseman, I am not sure you answered my  
23 question. In your opinion, is set-point drift a design  
24 problem?

25           A     (WITNESS BOSEMAN) No.

1 Q What is the design specification for set-point  
2 drift on two-stage Target Rock valves?

3 A (WITNESS BOSEMAN) The valve specification  
4 requirement for a new valve is in accordance with the  
5 ASME code. And that is, when the valve is manufactured,  
6 it must be set and demonstrated to be within plus or  
7 minus 1 percent. And they all, each valve is  
8 production-tested after it has been manufactured. And  
9 it will not leave the shop, it will not get to a utility  
10 unless that valve, in fact, has been demonstrated to be  
11 properly adjusted for set-pressure.

12 (Counsel for Suffolk County conferred.)

13 Q Mr. Boseman, I think maybe my question was not  
14 clear. What I am asking for is the design spec for  
15 set-point, measuring the set-point drift.

16 A (WITNESS BOSEMAN) I don't really understand  
17 the question technically, because when we talk about  
18 set-point drift, you are automatically saying it is  
19 outside of a criteria or limit. So I don't see why I  
20 would intentionally want to design for drift. If I did,  
21 in effect, I would set that as an outer limit.

22 (Counsel for Suffolk County conferred.)

23

24

25

1 Q Mr. Hodges or Mr. Cherny, I am not sure who  
2 can answer this question, do you believe that there are  
3 no generic problems apparent with respect to the  
4 two-stage target rock valve design? Is that the NRC  
5 staff position?

6 A (WITNESS CHERNY) I guess the only thing I  
7 could do would be to repeat what John Boseman earlier  
8 said. I don't have anything different to say on that  
9 subject.

10 JUDGE CARPENTER: Excuse me. I believe the  
11 question was, was that the staff position.

12 WITNESS CHERNY: At this time, that is  
13 correct.

14 JUDGE CARPENTER: Thank you.

15 JUDGE BRENNER: Ms. Letsche, we are going to  
16 take a break at a convenient time, so you tell me when  
17 we reach that time, but just before we break, I want to  
18 have a brief conference with the Board, and then maybe  
19 say something to the parties just before the break.

20 BY MS. LETSCHE: (Resuming)

21 Q Mr. Hodges or Mr. Cherny, is it the staff  
22 position that set point drift is not a generic problem  
23 with two-stage target rock valves?

24 A (WITNESS CHERNY) Set point drift is a small  
25 generic problem that is associated with all pressure

1 relief valves, not just two-stage target rock pressure  
2 relief valves.

3 Q Mr. Boseman, isn't the drift idea of the set  
4 point the same as the repeatability of the valve  
5 operating at its set point?

6 A (WITNESS BOSEMAN) The term "drift" is  
7 relative to a range, and it does relate somewhat to  
8 repeatability. For example, you set the valves for plus  
9 or minus 1 percent. Afterwards, if it does plus or  
10 minus 2 percent, the delta difference is the drift.

11 Q Is there a design requirement on set point  
12 repeatability for the target rock valves two-stage?

13 A (WITNESS BOSEMAN) There is a design  
14 requirement that the valves be set for plus or minus 1  
15 percent under new valve condition. Qualification  
16 testing has demonstrated that the valve is capable of  
17 staying in a repeatable mode. When we look at the  
18 question of design, you can demonstrate the capability,  
19 and you have to take into account that from one valve to  
20 the next there may be a slight variance in actual  
21 performance.

22 That is why earlier they were saying on the  
23 tech spec it is an inherent type setup. On a tech spec  
24 you tighten your tolerance, and that is exactly what we  
25 do for the valve, so that in actual practical operation

1 its actual performance is consistent with the  
2 overpressure protection of the system. The safety relief  
3 valve is a pressure relief device. Its prime function  
4 is to protect the system, the pressurized system from  
5 overpressurizing.

6 Q Have you completed your answer?

7 A (WITNESS BOSEMAN) Excuse me?

8 Q Have you completed your answer?

9 A (WITNESS BOSEMAN) Yes, I have.

10 Q I am not sure I heard an answer to my question  
11 in there. Maybe I did. Is there a design requirement  
12 on set point repeatability?

13 A (WITNESS BOSEMAN) Not specifically, no.

14 BOARD EXAMINATION

15 BY JUDGE MORRIS:

16 Q Excuse me, Ms. Letsche. Mr. Boseman, do you  
17 think it would make any sense to have such a design  
18 criterion when the drift clearly, as you said earlier,  
19 depends on things other than design?

20 A (WITNESS BOSEMAN) No, sir. I do not think it  
21 would be that practical to establish a design criteria  
22 per se on the limits of not reliability, but  
23 repeatability, on something that is of a dynamic  
24 nature. It is similar to leakage. We do impose  
25 requirements for new valve conditions to show that it is

1 capable of doing it. However, repeatability could be  
2 misinterpreted in a design phase. We are talking about  
3 a valve that can stay within. It is an adjusted feature  
4 which, after X number of cycles, perhaps it could shift,  
5 and there is a time dependency here.

6           Generally what we do is, we design for a  
7 criteria within its manufacturing tolerances, and there  
8 are design requirements on certain performance  
9 criterias. We then go into qualification testing, and  
10 for example this design has been subjected to cyclic  
11 testing. I know for a fact that two different valves  
12 would cycle 300 times each, and we have looked at set  
13 point over a span of time in cycles.

14           There has been cycling of relief mode set  
15 point, blow down, and its leakage characteristic to see  
16 just what kind of a scatter it has, and based upon those  
17 test results as well as some three other subsequent  
18 tests of a smaller nature, it has definitely showed that  
19 on an average basis, the capability of the valve will  
20 stay within a fairly close tolerance band, and data to  
21 date is tending to show the same information field  
22 information is tending to show. There are exceptions  
23 that have cropped up from time to time, but to  
24 specifically say it is design related, I don't have any  
25 evidence that -- there is no apparent evidence that says

1 there is an inherent or generic problem in that regard  
2 with the SRV design.

3 I hope I answered your question.

4 Q Yes, it helped. Thank you.

5 BY JUDGE CARPENTER:

6 Q Mr. Boseman, just to pursue that just a little  
7 further, as a designer, what sort of things would you  
8 think of that might influence repeatability? And I am  
9 thinking of such things as internal friction between  
10 parts, et cetera.

11 A (WITNESS BOSEMAN) That is correct, sir. That  
12 is one element. Friction is a factor that is a  
13 variable. The spring itself has a slight variable.  
14 Usually you look at the spring material, and you look at  
15 it relative to its K rate and what it does with time,  
16 and at the present time I feel that the material that  
17 was selected for the spring is not really susceptible to  
18 much of a change with time or temperature. It is one of  
19 the best materials on the market for that type of an  
20 application, and there are other facets that come into  
21 play which are outside the design arena, such as  
22 handling. Handling is a major cause of many problems,  
23 and foreign material.

24 Q Earlier you said you were looking at the  
25 LER's, and that there was a large percentage which you

1 would ascribe to human factors. What fraction of that  
2 group that you called human factors is associated with  
3 foreign material?

4 I guess, to be clear, would you put foreign  
5 material, the presence of foreign material in your  
6 category of human factors?

7 A (WITNESS BOSEMAN) Okay. I will be more  
8 specific. In this handout, in this presentation  
9 material, I don't have the sheets numbered, but the  
10 heading is Item 2, under the table that states TRC  
11 Two-Stage SRV In-Plant Service History, and the subject  
12 of the anomaly is failed to close. Under the Cause, C,  
13 failed to close, Cause C, it says, "Evidence of foreign  
14 material entrapped between main valve piston and liner."

15 But this particular scenario was established  
16 because at the time, at this particular plant, there was  
17 a changeout being made between the three-stage design to  
18 the two-stage design, and there were humans working  
19 around there, and they had to do a little machining, and  
20 there was a score marked in an area between the main  
21 valve piston and liner which clearly indicates that  
22 foreign material was evident. It was not -- It did not  
23 appear to be self-generated, but rather externally  
24 induced, and that would be a classic example of a human  
25 factors type of cause.

1 Q These valves go through field service  
2 maintenance rather than being returned to the supplier  
3 for routine maintenance?

4 A (WITNESS BOSEMAN) It is a combination. Some  
5 utilities do it at site. Others obtain assistance from  
6 the valve manufacturer. It all depends on what the  
7 utility practices.

8 JUDGE BRENNER: Ms. Letsche, are you going to  
9 stop soon? Because I want to talk to the Board before  
10 the break.

11 WITNESS SMITH: Just let me add, Judge  
12 Carpenter, that prior to going into service, LILCO,  
13 because of the proximity of target rock being on Long  
14 Island to ship their valves most of the time back, but  
15 in-service because of the contamination factor, you  
16 cannot go back to the target rock shop usually. A lot  
17 of work is done at Wyle test facility when repairs are  
18 made after the set point check is established.

19 WITNESS BOSEMAN: Let me amplify on that.  
20 What Mr. Smith is saying is that because the valve  
21 vendors normally do not have the facilities to handle  
22 contaminated valves, you have to go to a facility that  
23 is so established, and Wyle happens to be one in the  
24 country, and when any maintenance is done, normally  
25 target rock or someone certified for valve maintenance

1 would perform the work.

2 BY JUDGE CARPENTER: (Resuming)

3 Q I was trying to see how much in-house  
4 capability was required by the utility vis-a-vis the  
5 availability of properly trained technicians.

6 A (WITNESS SMITH) I can only speak for  
7 Shoreham. Our mechanics, other than removing the valves  
8 and assisting the valve manufacturer if some changeout  
9 of material or modification to the valve need be done at  
10 the site, we would assist the valve manufacturer, but he  
11 would provide all of the technicians, technical  
12 personnel, and engineers.

13 JUDGE CARPENTER: Thank you very much.

14 JUDGE BRENNER: Give us a moment, please.

15 (Whereupon, the Board conferred.)

16 JUDGE BRENNER: I want to take a moment to  
17 talk about the scope of the contentions, because in the  
18 context of separate rulings yesterday and today, we  
19 don't get the opportunity that we would like to have  
20 sometimes of taking a step back, and I have been for the  
21 last short period of time up here, been going through  
22 the contentions and the references and the testimony and  
23 the cross plan again, and I want to make some comments  
24 for the parties to consider over the break, and then  
25 they can respond after the break.

1           First of all, I want to correct statements  
2 that I have made that the program to reduce the  
3 challenges under Contention 28A-6, which program is  
4 referenced in the contention as II.K.3.16 and in 0737.

5           What I want to correct is, I wanted to say it  
6 is not limited to stuck open relief valve. That is  
7 wrong. It is limited to stuck open relief valves, and  
8 if you read the contention with reference and the  
9 program, that is all they are concerned about in that  
10 program, and in fact I am reinforced in that view by the  
11 county's cross plan on that contention, which is, with  
12 the exception of the reference to the Brown's Ferry LER,  
13 is limited to that line.

14           Secondly, with respect to the test program,  
15 Suffolk County Contention 22.II.D.1, that contention, as  
16 written, is limited to two aspects of that test  
17 program: Number One, whether the program is applicable  
18 to Shoreham, whether the generic test conditions are  
19 valid for Shoreham given plant differences, and Number  
20 Two, whether Shoreham has complied with the alleged  
21 requirement to accommodate the possibility for future  
22 ATWS testing.

23           Now, I say Shoreham because that is the case.  
24 It could be through the owner's group testing program  
25 that the compliance might or might not take place. As

1 to the latter part, we discussed that yesterday, and I  
2 hope counsel have gotten together, and particularly in  
3 terms of the staff's statement that it clearly doesn't  
4 apply to boiling water reactors. They can explain to us  
5 why the strong implication of Mr. Wright's testimony is  
6 that he certainly thought it applied in the way he  
7 discussed it.

8 All right. Those are the limits of the  
9 contention. However, as almost everything else in life,  
10 there is a fly in the ointment from the point of view of  
11 LILCO's point of view. We see an apparent inconsistency  
12 in the status of the II.D.1 test program, between the  
13 staff's SER and the staff's testimony. The presumption  
14 of the contention presumably based upon the SER is that  
15 the test program generically is satisfactory, so the  
16 only thing to worry about as far as the staff is  
17 concerned is the generic applicability to Shoreham, and  
18 that is what SER Supplement 1 says at Page 22-44.

19 However, in reading the testimony on that  
20 contention, this is Mr. Wright's testimony at Page 3,  
21 the end of the paragraph that continues over from the  
22 previous page states, as I read it, and as the Board  
23 preliminarily reads it, that the staff has not come to a  
24 conclusion that the generic test program is acceptable  
25 and that all acceptable test conditions at least on a

1 generic basis are included in that program.

2           There is some wishy-washy language here as to  
3 "However, as of this date, the staff decision has not  
4 been finalized. Should the final position require  
5 testing under other conditions, still apparently  
6 relating to the generic program, the applicant will be  
7 required to participate in the development of the  
8 information requested concerning these other test  
9 conditions, again in a total vacuum without any  
10 expressed consideration of the schedule for this  
11 proceeding and the context of licensing."

12           So, if there are problems with the test  
13 program, then the SER is incorrect, not problems, but  
14 open areas, then the SER is incorrect, and it has never  
15 been corrected on this record yet at the staff's  
16 initiative, and would argue that we shouldn't read the  
17 test contention as narrowly as stated, because its  
18 premise may no longer be correct.

19           Those are some of the competing  
20 considerations, and even if we view the last possible  
21 competing consideration to broaden Contention 22, your  
22 area of inquiry, the county's area of inquiry with  
23 respect to this whole history appears to be quite a bit  
24 beyond the purpose of exploring whether or not the steps  
25 have been taken to reduce the challenges in light of the

1 stuck open relief valve problem in the challenged  
2 contention, and it does not appear to be very directly  
3 related, if at all, to the test program contention, even  
4 if we read it more broadly than just the applicability  
5 to Shoreham, and I say again your cross plan is  
6 relevant, and when we come back, I am going to want an  
7 explanation as to why we shouldn't just go into the  
8 cross plan very directly.

9 All right. The parties can comment after the  
10 break on these comments. We will break until 11:15. We  
11 will give you a little more time.

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1 (11:20 a.m.)

2 JUDGE BRENNER: Okay, we are back on the  
3 record.

4 I hope our comments stimulated a response. I  
5 would like to hear from the Staff first.

6 MR. REPKA: Judge Brenner, on your points on  
7 the scope of contention 22, on the II.D.1 test program,  
8 on the first point, the Staff does not believe that ATWS  
9 testing is required. And on the second point, the  
10 original SER position remains correct.

11 If it would prove helpful, we would solicit  
12 the opportunity to give Mr. Wright an opportunity to  
13 clarify his testimony.

14 JUDGE BRENNER: I will do that right now. On  
15 ATWS, we're going to have to hear about it either by  
16 agreement of the parties or, failing that, through  
17 witnesses also, because there is an apparent  
18 inconsistency in Mr. Wright's testimony on that, too.  
19 Not inconsistency, but not fully consistent. But I  
20 don't want to get into that now, because I want the  
21 parties to jointly propose something or tell us that  
22 they can't.

23 But on the other point, Mr. Wright, you heard  
24 my comments before the break. Why isn't that  
25 inconsistent? It looks like the Staff is holding

1 something open with respect to the generic program, too,  
2 at the end of that paragraph on page 3 that continued  
3 over from page 2.

4 In addition, I wasn't attacking you personally  
5 in this impatience that the Board has had with Staff's  
6 expressing things, as I said, just plain wishy-washy, in  
7 the sense of time frame. We are here in a licensing  
8 proceeding and we need to know, does the Staff think we  
9 have to do it before or after. Whether we agree with  
10 the Staff is something else.

11 But this business about, in the future if  
12 appropriate, in the circumstances, type language,  
13 without any reference to the time frame, that is before  
14 a license or after a license, on this record or not on  
15 this record, it just doesn't help us. So that's just a  
16 general comment to Staff counsel more than you.

17 But why don't you proceed.

18 WITNESS WRIGHT: Yes, if I can respond to the  
19 questions. If I miss a point, please bring it up at the  
20 end.

21 I want to point out that NUREG-0737, II.D.1,  
22 and the SER as written are consistent, because they do  
23 not require any ATWS testing. And as far as I am aware  
24 there are no proposed rules requiring such testing for  
25 BWR's.

## 1 BOARD EXAMINATION

2 BY JUDGE BRENNER:

3 Q I guess I wasn't clear. Hold ATWS for now.  
4 I'm talking about the end of the paragraph.

5 A (WITNESS WRIGHT) On page 3?

6 Q Yes. That starts, "The NRC Staff has  
7 completed a review of the submittal." Those sentences  
8 tell me, as I said before the break, that the Staff has  
9 not reached a finding that the generic testing program  
10 is acceptable?11 A (WITNESS WRIGHT) Okay. As far as, I will  
12 say, the practicality, the Staff's position has not  
13 changed. The testing only at low pressure is the only  
14 requirement. There is no requirement to test at high  
15 pressure.16 In terms of picking a point as to when the  
17 position is final, I think that is something that is  
18 issued up through the current change, and at this point  
19 they are still, let's say, haggling over the words in  
20 which this requirement should be expressed.21 Q I am still confused. Is it final or not  
22 final, and what is not final?

23 (Panel of witnesses conferring.)

24 A (WITNESS WRIGHT) I guess I am confused and  
25 not understanding the question. Are we talking about

1 the generic report or are we talking about the  
2 requirement to test at low pressure water conditions?

3 Q You tell me what you're talking about at the  
4 end of that paragraph and then tell me why that is not  
5 inconsistent with the SER conclusion that the test  
6 program is acceptable.

7 A (WITNESS WRIGHT) May I read the sentence to  
8 be sure we're talking about the same sentence? "Should  
9 the final position require testing under other  
10 conditions, the Applicant will be required to  
11 participate in the development of the information  
12 requested concerning these other conditions."

13 Q That is one of the sentences. You have to  
14 read the two previous ones, also.

15 A (WITNESS WRIGHT) I guess I could only say  
16 that the Staff's position is, as stated in the SER, that  
17 the requirements have been met and that this testimony,  
18 if written today, would possibly say that the document  
19 you are looking for that expresses this is not out. But  
20 the Staff's position is that they have met the  
21 requirements.

22 Q We're not speaking the same language.

23 (Panel of witnesses conferring.)?

24 A (WITNESS WRIGHT) Well, let me make another  
25 comment in terms of the NEDO document, which is a test

1 report.

2 Q Let's not get too far afield. I will  
3 certainly let you add it at the end if you still think  
4 it is helpful. I read the SER, it says everything is  
5 okay except as to whether the test program is applicable  
6 to Shoreham, and I read these three sentences that we  
7 are discussing in your testimony and it doesn't say that.

8 It talks about some things possibly still  
9 being left open and required in the future, and I don't  
10 know what these things are. It does not say, these  
11 things are only to see if the test program is valid for  
12 Shoreham. In fact, I get quite the contrary  
13 impression.

14 So I don't understand how you can say that  
15 there is no at least apparent inconsistency, and I still  
16 don't understand what is meant by these three sentences  
17 in your testimony. Maybe you ought to take a step back  
18 and tell me in your own words what you mean by those  
19 three sentences and what is still left open, if  
20 anything.

21 A (WITNESS WRIGHT) Well, I think the intent of  
22 what might be left open is whether or not, when final  
23 concurrence occurs, would high pressure water testing be  
24 required -- as far as I understand it, it is not  
25 required. There is no commitment to test under ATWS

1 conditions.

2 Q Leave ATWS out of it, unless that is related  
3 to this other item in a way that I don't see.

4 (Panel of witnesses conferring.)

5 Q Mr. Hodges, can you help me? Maybe I'm just  
6 having a bad day.

7 A (WITNESS HODGES) Let me try it and then maybe  
8 Mr. Wright can add something if he feels a need to.  
9 There are basically two parts to the problem and that I  
10 think is where the confusion is coming from.

11 First off is the generic test report itself  
12 and whether or not the results there are acceptable and  
13 applicable to Shoreham. And I think the position is  
14 that the generic report has been reviewed and we have  
15 found that to be acceptable, except that that report by  
16 itself does not do anything for a plant. You still have  
17 to show that applicability to the plant, and so in that  
18 sense it is open for Shoreham until we get these  
19 questions answered.

20 There is another question involved that says,  
21 were all the appropriate test conditions considered in  
22 the test matrix.

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1 Q In the generic test program?

2 A (WITNESS HODGES) In the generic test program.

3 Q That is the way I understood Mr. Wright's  
4 testimony. And isn't that inconsistent with what the  
5 SER says?

6 A (WITNESS HODGES) Let me amplify a little  
7 bit. We looked at a wide range of transients to see  
8 what conditions should be tested. The purpose of the  
9 test was to test the valves under two-phase or water  
10 flow conditions, either of those, when those conditions  
11 might be met in normal operations or anticipated  
12 transients. We determined, based upon looking at a wide  
13 variety of cases, that the probability of getting water  
14 to the valves was extremely low, except for a specific  
15 case which relates to alternate shutdown cooling that  
16 involves, after the vessel is depressurized, if you  
17 cannot open certain valves that feed the RHR system from  
18 the reactor vessel, if you cannot open those valves, you  
19 have to use this alternate mode of shutdown cooling, and  
20 that involves flooding of the vessel and using the  
21 safety relief valves, and in that case, yes, indeed,  
22 water would be flowing through the valves, and so those  
23 are the conditions that were tested in the program.

24 There have been some events that have  
25 occurred, let's say, in the last year, where water did

1 not get to the valves, but it indicated a possibility  
2 that water might get to the valves under other  
3 conditions. There have been internal discussions within  
4 the NRC, among our management and ourselves, should the  
5 test conditions be expanded to include these  
6 conditions. The few plants where this has occurred have  
7 not been within the bounds of what were assumed when we  
8 made the conclusion that high pressure testing was not  
9 needed.

10           The plant that had the problem specifically,  
11 we have told, either modify your plant so that it is  
12 within the bounds, or do your own high pressure  
13 testing. It is my understanding that it is either  
14 August or October, I don't remember which month it is,  
15 but this fall they will modify their plant.

16           Shoreham is already within these bounds, and  
17 so the test conditions for the test we feel to be  
18 appropriate for Shoreham, so there is some ambiguity in  
19 whether or not some plant should have tested for high  
20 pressure conditions. With some arm-twisting, we are  
21 putting those plants into the space where they don't  
22 need to, either that or they are going to have to test  
23 their own, and that is a very expensive test, and that  
24 is how we accomplished -- got into these modifications.

25           Q     All right. That is pretty clear. If that is

1 the case, what is the purpose of this sentence, "Should  
2 the final position requiring testing under other  
3 conditions, the applicant," meaning LILCO for Shoreham,  
4 "will be required to participate in development of the  
5 information requested concerning these other test  
6 conditions," and I take these other test conditions to  
7 be talking about the high pressure water test.

8 A (WITNESS HODGES) Right. That is a  
9 wishy-washy statement to include them.

10 Q Well, but, Mr. Hodges, you just told me that  
11 there would be no purpose in including them, because  
12 their plant would be within the bounds of not expecting  
13 that type of condition.

14 A (WITNESS HODGES) Right, that is correct.

15 Q So I ask again, why is that sentence in  
16 there? Somebody must have had something in mind.

17 A (WITNESS CHERNY) Perhaps I can just amplify  
18 what Mr. Hodges said in slightly different words maybe.  
19 The generic determination -- well, the generic  
20 conclusion reached by the BWR owners' group was that low  
21 pressure water testing was the only thing that was  
22 required to comply with the II.D.1 requirement. As Mr.  
23 Hodges just stated, we reviewed those analyses in great  
24 detail. One of the things, though, that is important to  
25 those analyses is the so-called generic reactor cases

1 that were analyzed to come up with that final  
2 conclusion. Assume that these reactors had certain  
3 features.

4 Mr. Hodges has just stated that Shoreham is  
5 one of those reactors that has those kind of features.  
6 The submittal that we have on the Shoreham docket so far  
7 where they reference the low pressure generic test  
8 report, I have personally reviewed that letter, and EG&G  
9 has reviewed that letter, and I think one of the  
10 questions that we asked Shoreham to respond to was to  
11 provide more specific detail, and in fact what Mr.  
12 Hodges just said is the case, that their plan has the  
13 specific features. They have not responded to that in  
14 writing yet. Mr. Hodges just answered that question for  
15 them, I guess, but we are still waiting to hear back  
16 from them formally on that. Okay?

17 Q I am trying this contention right here today,  
18 and so that is one of my points about these open time  
19 frames. If somebody knows that what Mr. Hodges said is  
20 correct, we can avoid who knows how many hours of cross  
21 examination on this sentence, and get on with what is  
22 still material. On the other hand, if we don't know it,  
23 I am not going to preclude questioning on it. That is  
24 so everybody can think about that over the lunch break,  
25 and -- well, the testimony is written, but unless I am

1 unreasonable, when I read this testimony, it is  
2 apparently inconsistent with the SER without any hint as  
3 to explaining that inconsistency, and it took quite a  
4 while here to finally get at it, and I think that kind  
5 of thing isn't very helpful in terms of efficiency.

6 BY JUDGE CARPENTER: (Resuming)

7 Q Could LILCO provide the Board with an estimate  
8 of when they will respond?

9 A (WITNESS SMITH) The question that Mr. Cherny  
10 was referencing is one of the six questions that were  
11 passed to us in a July 8th letter from the staff to  
12 LILCO, and I believe I indicated earlier that mid-August  
13 was the expected response of that.

14 BY JUDGE BRENNER:

15 Q Okay. I am going to direct the parties to sit  
16 down between today and tomorrow, and that includes the  
17 county, and identify what differences in this other  
18 plant caused the concern as to worry about whether high  
19 pressure water testing should be done absent  
20 modifications, and then, given that difference, identify  
21 whether or not these concerns do, do not, or might apply  
22 to Shoreham. Mr. Hodges apparently thinks he knows  
23 already, and I suggest that with all of the experts we  
24 have sitting here, we don't have to take up record time  
25 with questioning on it.

1           A       (WITNESS HODGES)  Would it help if I just  
2 talked about what the differences are on the record?

3           Q       If it is brief, but it might be better to  
4 organize it so that people aren't hearing it for the  
5 first time, and then we could take it up first thing  
6 tomorrow.  In other words, we could get this done  
7 comprehensively once and for all, and then find out if  
8 there are still any open questions, because if it is  
9 clear to everyone, including Suffolk County, that  
10 Shoreham would not fit within the bounds of worrying  
11 about high pressure water testing, then we don't have to  
12 talk about it.

13          A       (WITNESS HODGES)  Well, I am the one in the  
14 NRC who has had the responsibility for trying to  
15 evaluate which condition should be tested at, and it is  
16 -- my management has come back and questioned a couple  
17 of times whether or not the initial decision was  
18 correct.  That question was based upon an event that  
19 occurred at Pilgrim, which had a high water condition  
20 and did not have a level 8 trip.  Pilgrim is one of like  
21 two plants that did not have a level 8 trip.  We told  
22 Pilgrim, either you put in a level 8 trip or you do the  
23 testing, and this fall they are going to put in a level  
24 8 trip.  That was, as far as I know, the only reason for  
25 discussions within NRC or any questions about the

1 correct test conditions.

2 JUDGE BRENNER: The reason we focused on this  
3 in part, aside from not liking ambiguous statements and  
4 apparent inconsistencies between pieces of testimony for  
5 the same party, the reason we focused on this, as I said  
6 before the break, is, it will affect our reading on  
7 whether to stay to the contention as drafted, or whether  
8 there is now new information that should change it. So,  
9 we think all of the parties' experts should get  
10 together, and we will hear more about this tomorrow  
11 morning, and that is one advantage of having you all  
12 here, which we like to take advantage of.

13 I know you want to respond in August, and if  
14 you come back and tell us you can't respond until  
15 August, that is going to affect the posture of this  
16 proceeding also. Now, the answer might be, you can't  
17 tell us tomorrow, but at least we want the attempt made,  
18 and as long as you are all sitting around the same room,  
19 you can talk about ATWS too, if you haven't already done  
20 so.

21 MR. IRWIN: Maybe Mr. Smith can shed some  
22 additional light on this.

23 WITNESS SMITH: I believe we will be able to  
24 respond tomorrow morning. The time frame that is  
25 indicated, mid-August, requires internal reviews before

1 you make submittals, the QA type of reviews, and that  
2 protracts the time, but from a technical standpoint, I  
3 think we could address the questions.

4 JUDGE BRENNER: We will cut out all of the  
5 bureaucratic stuff for you.

6 (General laughter.)

7 JUDGE BRENNER: That may be the first time a  
8 hearing did something more efficiently than things  
9 outside the hearing.

10 (General laughter.)

11 MS. LETSCHE: Judge Brenner, if I might  
12 comment, I don't know if you are ready to move off of  
13 this.

14 JUDGE BRENNER: I wanted to ask the staff one  
15 more thing about the scope of the contention. What  
16 about the Board notification? Does that affect what  
17 might have been our reading as to the scope of the  
18 contentions absent the Board notification?

19 MR. REPKA: We don't believe it affects the  
20 scope of the contention. It is just another piece of  
21 information on recent events which we wanted to make  
22 available to the Board and parties.

23 JUDGE BRENNER: Well, is it relevant to the  
24 contentions?

25 MR. REPKA: It is relevant to the extent it

1 relates to the issues of the stuck open SRV's and the  
2 applicability to the Shoreham test program.

3 JUDGE BRENNER: That doesn't tell me anything,  
4 with all due respect, Mr. Repka. You know it is  
5 relevant. If it is relevant is what you just told me.

6 WITNESS HODGES: May I just comment?

7 JUDGE BRENNER: If Mr. Repka wants you to.

8 MR. REPKA: I would be more than happy to have  
9 Mr. Hodges comment.

10 (General laughter.)

11 WITNESS HODGES: I think one reason the Board  
12 notification was issued was because in the few days that  
13 I have had back at the office lately, I thought that the  
14 event was relevant, and I pushed for Board notification,  
15 and the reason I felt that it was relevant is that the  
16 solution that at least LILCO has taken and other plants  
17 also have taken to the challenge problem is, go to a  
18 two-stage target rock valve. The event occurred on the  
19 two-stage target rock valve, and it is not the type of  
20 problem that the contention gets into, which is the  
21 experience opening.

22 It is just the opposite problem, and it raises  
23 a question which -- it is just only a question at this  
24 point, and I want to emphasize that, is the cure worse  
25 than the disease, and in that sense I thought it was

1 relevant. We don't know that it is a safety problem at  
2 this point, because there have been some unique  
3 conditions that occurred at Hatch prior to this thing  
4 sticking, which may have caused the sticking, and we  
5 just don't know the magnitude of the problem. It is  
6 still being investigated, but I felt it was relevant  
7 from that viewpoint, and thought it should be brought to  
8 your attention.

9 JUDGE BRENNER: I understand that. Let me  
10 make very clear, we are not criticizing receiving it.  
11 We appreciate receiving it, and as we said on the record  
12 last week, we appreciate the attempt which was  
13 successful to get it to us in a very tight time frame,  
14 particularly in light of the fact that you and other  
15 cognizant people were here, and all I am trying to do is  
16 understand how it comes in in the contention. We are  
17 not suggesting that you shouldn't have filed it. Now  
18 that we have got it, it is a matter of applying it  
19 correctly, and your explanation makes sense to me.

20 All right. Now, we can go to either the  
21 county or LILCO.

22 MS. LETSCHE: Judge Brenner, I have a couple  
23 of responses to your question about the scope of the  
24 contention. First of all, I think in light of the Board  
25 notification, and what the staff has said about it here,

1 and as you yourself noted yesterday, the question  
2 presented in Contention 22 is the adequacy of the test  
3 program to demonstrate compliance with GDC 14 and the  
4 other items that are referenced in the contention.

5 JUDGE BRENNER: Well, not exactly, and I may  
6 have said that, and I think I said a few things that  
7 were incorrect, and that is why I tried to correct my  
8 error just before the break. I reread the contention  
9 carefully. I rethought about the testimony carefully.  
10 I reread your cross examination plan since some of those  
11 comments, and concluded that what is at issue in the  
12 contention, subject to clearing up of the sentence we  
13 were talking about with Mr. Wright and other people, is  
14 the applicability of what has been found to be  
15 acceptable generically, and not put into issue by any  
16 party, the applicability of that to Shoreham, and also  
17 the ATWS thing.

18 MS. LETSCHE: Judge Brenner, the contention as  
19 written does address -- you are right. It does contain  
20 the items that you mentioned. It also addresses the  
21 adequacy of the test program to establish compliance  
22 with GDC 14 and the other items that are mentioned in  
23 the contention.

24 JUDGE BRENNER: Can you point me to that?

25 MS. LETSCHE: I believe it is the first

1 sentence of the contention.

2 JUDGE BRENNER: You see, because that is one  
3 of the points that I now concede that I was in error on.

4 MS. LETSCHE: Suffolk County contends LILCO  
5 has not adequately demonstrated that the safety relief  
6 valves to be used at Shoreham meet the requirements of  
7 10 CFR Appendix 8 GDC.

8 JUDGE BRENNER: That is the key used at  
9 Shoreham, and then you look at the contention, and as  
10 this one goes, it is remarkably clear.

11 MS. LETSCHE: The sentence continues to say,  
12 the functionability of the valves as installed has not  
13 been established by the generic test program results.  
14 The point of this sentence is that the generic test  
15 program does not establish adequately that the -- does  
16 not establish adequately the performance capability of  
17 the valves.

18 JUDGE BRENNER: Why not, though? Because --

19 MS. LETSCHE: It does go on to mention  
20 specifics that were specific concerns of the county with  
21 respect to Shoreham. My point, Judge Brenner, is that  
22 the underlying concern of this contention was the  
23 inadequacy of the generic test program in light of the  
24 Borad notification and Mr. Hodges' reason for that  
25 notification and his concern about it. The first

1 sentence of this contention becomes much more important.

2           As you mentioned yesterday, if you have a test  
3 program which supposedly tells you that your valves  
4 work, and then you put them in the field and they don't  
5 work, and you take them back in, and you test them  
6 again, and they work when you test them, it seems to  
7 tell you something about the adequacy of your test  
8 program.

9           If that is what has been -- if that concern  
10 has been raised by the events that are mentioned in this  
11 Board notification, and by the data that is attached to  
12 the Board notification, then I think there is an open  
13 question about the general -- I don't want to use the  
14 word "reliability", but the adequacy of the test  
15 program, and that is what Suffolk County Contention 22  
16 is concerned about, whether or not that test program as  
17 applied at Shoreham, certainly, but whether or not the  
18 test program itself, even assuming it was adequately  
19 applied to Shoreham, demonstrates the performance  
20 capability of the valves, and in light of this Board  
21 notification.

22           JUDGE BRENNER: Because of the Board  
23 notification?

24           MS. LETSCHE: I think that is certainly very  
25 pertinent, in light of what we have been hearing from

1 the staff on this.

2 JUDGE BRENNER: I will go further than that.  
3 It is your only possible hook to expand the contention  
4 to go, absent the sentence we were talking about in Mr.  
5 Wright's testimony, the possibility of high pressure  
6 water testing, putting that aside, the Board  
7 notification is your only possible hook to get back into  
8 the generic test program as opposed to just looking as  
9 to whether the generic test conditions are valid for  
10 Shoreham.

11 MS. LETSCHE: I disagree with you on that,  
12 Judge Brenner.

13 JUDGE BRENNER: That is okay.

14 MS. LETSCHE: I just wanted to note that for  
15 the record. I think that concern is contained in the  
16 contention, because we are talking about the  
17 applicability of the generic test results of the generic  
18 test program to the Shoreham plant. That talks about  
19 whether it is.

20 JUDGE BRENNER: All right. I think we have  
21 discussed it enough. Our point is, the second paragraph  
22 defines the contention, and we don't go along with, for  
23 example, contentions as we have discussed many times.  
24 However, you have got a point about the Board  
25 notification, I would submit, and the Board will talk

1 about it over lunch, that with respect to the Board  
2 notification, that, too, has limits. That is, first, I  
3 want to conduct the litigation along the lines of the  
4 contention as written, and your cross examination plan  
5 does that.

6           And that is why I want you to use that. And  
7 the same goes for the other contention, although it is  
8 limited to the stuck open problem, except as possibly  
9 affected by the Board notification. I recognize how  
10 that could affect both contentions. That is, as Mr.  
11 Hodges correctly stated, does the cure give you  
12 problems, and those problems, so I want you to use your  
13 cross plan for that contention, too. Then, after all of  
14 that is done, we will consider what to do about the  
15 Board notification, and that, too, has its limits. That  
16 is, whether or not the problem exhibited in the Board  
17 notification, which is not any possible problem that  
18 could ever occur with the safety relief valve.

19           It is a problem of not lifting at the set  
20 point within the tech spec tolerance, and we can discuss  
21 whether or not that is a significant counterproblem with  
22 respect to the two-stage valve, and I think at least we  
23 are capable of eliciting testimony on that, and I think  
24 you are, too, as opposed to going event by event. Let's  
25 take the bounding event and find out what kind of

1 problem that presents, and then, depending upon where  
2 that testimony is, we can decide what we have to leave  
3 open, if anything, for the followup to the Board  
4 notification.

5           In addition, the parties are going to talk  
6 about the high pressure water test condition, that is,  
7 whether that kind of condition should be tested for  
8 Shoreham, and also the ATWS question, and we will hear  
9 more on that, so that is the sequence in which we are  
10 going to take this, and that is the efficient way to get  
11 at it.

12           MS. LETSCHE: Judge Brenner, if I might  
13 respond to your comments earlier about, and just now,  
14 about the scope of Suffolk County Contention 28.A.6, we  
15 certainly -- we do not believe that either the  
16 contention or the NUREG-0737 item II.K.3.16 that is  
17 referenced in that contention is limited to SORV events,  
18 although the NUREG item does mention in there the  
19 consequences of an SORV event, and indicates that it  
20 would be the most likely cause of a small break loss of  
21 coolant accident.

22           The point of that item, and in fact it is  
23 stated both in the initial position portion and in the  
24 clarification portion, is to investigate and to  
25 investigate the feasibility of reducing the number of

1 challenges to relief valves, and it goes on to say that  
2 challenges to the relief valves should be reduced  
3 substantially by an order of magnitude.

4           The point is that the object of the analysis  
5 that is required by this NUREG item, NUREG-0737 item, is  
6 to reduce the number of challenges, not as it is stated  
7 here, solely to reduce the number of SORV events. You  
8 mentioned that my cross examination plan seems to agree  
9 that only SORV events are the point of the contention,  
10 and that is not what the cross plan indicates. The  
11 cross plan goes to examining points that are made in the  
12 LILCO testimony. It certainly is true that the LILCO  
13 testimony limits what 28.A.6 talks about to SORV events,  
14 and that is why you find that reference in my cross  
15 examination plan, but if you look at the Suffolk County  
16 testimony on this contention, you will find that it  
17 discusses the reduction of challenges, which is a  
18 separate issue from the reduction of SORV events, and  
19 the basis for that distinction is the statements that  
20 are contained in Item II.K.3.16.

21           JUDGE BRENNER: Okay. Let me react to your  
22 points a little bit. My point about your cross  
23 examination plan was obviously a make-weight. That is,  
24 we wouldn't define the contention by your cross plan,  
25 nor would we define it by what your witnesses chose to

1 put into testimony, although it might be worthy of some  
2 consideration. So, you have now told me I shouldn't use  
3 your cross plan as a make-weight, because the reason it  
4 is limited to stuck open relief valves is because  
5 LILCO's testimony is so limited. It might be the first  
6 time your cross plan is limited to the direct testimony.

7           However, I accept that, and we will put aside  
8 the cross plan argument. Looking, I think, more  
9 importantly at II.K.3.16, in totality, that says very  
10 clearly to me that the concern is stuck open relief  
11 valves. The second sentence says, "This has  
12 demonstrated that the failure of a relief valve to close  
13 would be the most likely cause of a small break LOCA."

14           I admit we can pull sentences out where they  
15 talk about -- they say there is a general statement on  
16 the second page of the task, that the operating history  
17 of the SRV has been poor, however, and without  
18 limitation in that sentence to stuck open problems, but  
19 if you look at the whole task, that is what they are  
20 talking about.

21           Now, the only thing that would make my  
22 statement incorrect is if these failure rates that are  
23 reported are all kinds of failures as opposed to stuck  
24 open failures, and I don't know the answer to that, but  
25 I would like to ask if any of the staff witnesses do.

1 There are, more specifically, there are failure rates  
2 per reactor year quoted in the first sentence, at least,  
3 and I am looking at II.K.3.16, Mr. Hodges.

4 I inferred from the second sentence that  
5 failure rate in the first sentence was limited to a  
6 stuck open failure mode, but I don't want to rely upon  
7 that kind of inference for a final conclusion, and I  
8 would like to know if you or anyone else for the staff  
9 particularly knows.

10 WITNESS HODGES: Well, I have to take the  
11 blame or the credit or whatever for writing these words,  
12 and in some of the --

13 JUDGE BRENNER: We will find out in a minute.  
14 (General laughter.)

15 WITNESS HODGES: -- and some of the ambiguity  
16 that is there. What this refers to is in the stuck open  
17 or spuriously opening valves, and what we had on the  
18 bulletins and orders task force review, we were trying  
19 to collect data on valve problems and challenges to the  
20 valves, and because we were trying to review all of the  
21 boiling water reactors in a six-month period of time,  
22 and come up with some fairly broad conclusions to cover  
23 all of the plants, and all of the utilities were  
24 furiously scurrying around trying to get the information  
25 that we were requesting. We limited the period of time

1 that we asked them to go back and dig through their  
2 files and get the data to a three-year period, just from  
3 a practicality standpoint and the time period we had to  
4 get the information in. So this is the reason we talked  
5 about in the past three years of operation and give the  
6 numbers.

7           Indeed, the concern was with stuck open relief  
8 valves and maybe it was unfortunate that in the  
9 expression of it we only talked about reducing the  
10 challenges, that is obviously one way of reseating the  
11 relief valve.

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1 JUDGE BRENNER: Let's not talk about that part  
2 yet. I have not talked about that being irrelevant, and  
3 we are going to hear about that quite a bit.

4 WITNESS HODGES: There are obviously two ways  
5 of reducing the stuck-open relief valves. One is  
6 improve the valve design; the other is to reduce the  
7 challenges to the valve in the first place.

8 JUDGE BRENNER: Right. Not right, but I  
9 understand what you're saying. But I'm limiting the  
10 inquiry now to seeing whether this poor operating  
11 history is just an opening of the valve when you don't  
12 want it to be open or staying open when you don't want  
13 it to stay open as opposed to not opening. And I think  
14 you've answered that question.

15 WITNESS HODGES: Well, the history that's  
16 referred to here was strictly the opening when you  
17 didn't want it to or sticking open. There were a few  
18 instances with the same valves where they did not open  
19 at the setpoint, and the primary history here was with  
20 the three-stage Target Rock valves.

21 JUDGE BRENNER: We are inclined to credit Mr.  
22 Hodges' interpretation greatly. First of all, he wrote  
23 it. And second of all, it is consistent with the  
24 express language, as opposed to having to vary an  
25 inconsistency. And it is certainly the way we read it

1 without his help.

2 By putting those two sentences together with  
3 one slight broadening, I have been saying "stuck-open"  
4 and obviously we should include "spuriously opening" as  
5 well as opening when you want it to open but then not  
6 closing when you want it to close. And then those are  
7 limitations on the contention, so, subject to the Board  
8 notification which we will take up at the end along the  
9 lines I indicated.

10 (Board conferring.)

11 MS. LETSCHE: Judge Brenner, even in light of  
12 Mr. Hodges' statement with respect to the failure data  
13 he was referencing in writing this item, the fact  
14 remains that the requirement of this item is the  
15 submission of a feasibility study for reducing SRV  
16 challenges. It does not require evidence of the  
17 reduction of SORV events, as the contention stated, the  
18 one that was admitted by the Board.

19 We are talking about LILCO's failure, in  
20 Suffolk County's opinion, to accomplish a reduction in  
21 challenges to the SORV events.

22 JUDGE BRENNER: I haven't cut you off yet from  
23 inquiring into reducing the challenges and that is  
24 because you haven't asked about them yet. And yes, you  
25 can ask all you want about the challenges. I haven't

1 heard any questions about reducing the challenges.

2 MS. LETSCHE: Well, my confusion is a result  
3 of your statement that the contention -- and maybe I  
4 misunderstood your statement, but that the contention  
5 was limited to a discussion of SORV events. And it's my  
6 understanding that the contention relates to a  
7 discussion of the reduction of challenges to safety  
8 relief valves and not to SORV events.

9 JUDGE BRENNER: It is limited to reduction of  
10 challenges for the purpose of limiting SORV events.  
11 Now, it may be that when you're talking about a  
12 reduction of challenges, that is the mechanism for which  
13 the valve would be activated, some of those very same  
14 accomplishments would achieve reductions in the  
15 incidence of valves failing to open. That would be  
16 simply because, if for no other reason, they are being  
17 called upon less.

18 But you can't use that reasoning and then turn  
19 it around to say, therefore you can get at any problem  
20 related to a failure to open, again putting the Board  
21 notification aside for now. That may be your area of  
22 inquiry, but I think there is a very efficient way of  
23 conducting that inquiry.

24 So, just because there is some common element  
25 to both problems doesn't mean ipso facto you get to

1 inquire into that other element.

2 Mr. Irwin, I didn't give you a chance to say  
3 anything.

4 MR. IRWIN: Judge Brenner, we agree with the  
5 substance of your observation. If Suffolk County  
6 chooses to limit its questioning to one-half of the  
7 concern expressed in our view in this item, so be it.  
8 If they wish to inquire into two-stage Target Rock valve  
9 design, we're also prepared to discuss that as well,  
10 because we saw that as being one of the two pincers of  
11 attack on the SORV problem. We agree with the thrust of  
12 the Board's ruling.

13 JUDGE BRENNER: Okay. That goes to Mr.  
14 Hodges' clarification, which I don't think we are  
15 focusing on yet. We are not going to -- well, we're not  
16 going to limit the County if they want to inquire into  
17 whether the design is such so that you would cause  
18 stuck-open problems or spurious openings by design, as  
19 opposed to just the number of challenges. They can  
20 inquire into that and you didn't suggest anything to the  
21 contrary.

22 MR. IRWIN: No, sir.

23 JUDGE BRENNER: In fact, you want to talk  
24 about that.

25 MR. IRWIN: We don't mind at all. All I was

1 observing was that a document like this is written by  
2 human beings who know what they thought, and they talk  
3 with each other on a professional basis, and our  
4 witnesses and the Staff witnesses have had a pretty good  
5 working understanding of what was intended by this  
6 document.

7 JUDGE BRENNER: All right, I think we are  
8 going to break for lunch in a moment. This is one of  
9 these days where, I think one of the few days in this  
10 hearing, where we had a lot more discussion and legal  
11 argument than testimony, and I apologize to the  
12 witnesses for that. But we think it was important to do  
13 it, particularly since I contributed to the problem with  
14 some of my statements that I had to rethink.

15 When we come back, bear in mind the order we  
16 gave you, Ms. Letsche, about how we are going to  
17 approach this matter. That is, follow your cross  
18 plans. I don't care which one you take first. And then  
19 after that we will discuss, whenever that is, we will  
20 discuss the effect of the Board notification.

21 Tomorrow morning we will discuss the effect --  
22 we will hear from the parties on ATWS and on the high  
23 pressure water phase testing.

24 MS. LETSCHE: Let me just understand, Judge  
25 Brenner. Let me say first of all that, as I indicated

1 before, the Board notification matter was not on my  
2 cross plan because I only received it Monday.

3 JUDGE BRENNER: I know that. You've never  
4 been criticized for that.

5 MS. LETSCHE: What I intend in my  
6 cross-examination is to ask a very few additional  
7 questions related to that and then to move directly into  
8 my cross-examination plan for Suffolk County contention  
9 22. Are you now telling me that I may not ask any more  
10 questions on the Board notification?

11 JUDGE BRENNER: Yes, because I think it would  
12 be more efficient to come back and do that at the end,  
13 and I'm thinking of efficiency rather than any legal  
14 preclusion. But tell me what the lines of the questions  
15 are that you want to ask.

16 MS. LETSCHE: Basically, I was just going to  
17 wrap up the line that I was in the middle of before we  
18 were interrupted by the break. If you noticed, I was on  
19 the conclusion page of the document, and I merely had a  
20 couple of additional questions for the Staff related to  
21 that conclusion page.

22 JUDGE BRENNER: As opposed to event by event?

23 MS. LETSCHE: Yes, Judge Brenner. I have  
24 never indicated any intention to go event by event,  
25 either with respect to that Board notification or with

1 respect to anything else, although you have been  
2 suggesting it throughout your comments on my  
3 cross-examination. I did not intend to do that and I  
4 don't intend to do that.

5 JUDGE BRENNER: Actually, literally it was  
6 event by event by event, because there were three for  
7 which you did just that. But all right. Why don't you  
8 wrap up now and then we will break for lunch after you  
9 do that, along the lines you just indicated.

10 CONTINUING CROSS-EXAMINATION

11 BY MS. LETSCHE:

12 Q Mr. Cherny, in light of the data that is  
13 attached to the Board notification and your statement  
14 earlier that the setpoint drift question is, I think you  
15 called it, a small generic problem, does the Staff  
16 intend to recommend or consider any changes in the SRV  
17 test program that is required?

18 A (WITNESS CHERNY) Are you specifically talking  
19 about the II.D.1 test program with that question? Which  
20 test program are we talking about?

21 Q Yes, I'm talking about the II.D.1 test  
22 program, the qualification testing.

23 A (WITNESS CHERNY) No, I don't anticipate any  
24 changes to the II.D.1 test program as a result of this  
25 Board notification or any attachments to it.

1 Q Did the NRC request that this presentation be  
2 made by GE?

3 A (WITNESS CHERNY) I was not personally  
4 involved in how they got invited to come and make that  
5 presentation. I was at the meeting. Maybe GE could  
6 respond exactly how the request was made.

7 MR. IRWIN: If my witness is being asked I  
8 would like to know the relevance of the question.

9 JUDGE BRENNER: Ms. Letsche?

10 MS. LETSCHE: Do you want me to answer his  
11 question?

12 JUDGE BRENNER: He objected on relevance  
13 grounds.

14 MS. LETSCHE: Do you want me to respond?

15 JUDGE BRENNER: Please.

16 MS. LETSCHE: The point of my question was, if  
17 the Staff -- and my next question was going to be, if  
18 you requested it why did you request it. And I think  
19 that certainly goes to whether or not the Staff had a  
20 concern about operating data related to Target Rock  
21 two-stage SRV's.

22 MR. IRWIN: May I respond to that, Judge  
23 Brenner?

24 JUDGE BRENNER: You don't have to.

25 You didn't start off asking him about whether

1 they had a concern, which was a very broad type thing.  
2 You asked him whether they anticipated any changes in  
3 the test program. Why don't you go back to Mr. Cherny  
4 instead of worrying about who invited whom? And it  
5 doesn't matter.

6           It is just not pertinent, because it won't  
7 help you get to where you want to go. If GE jumped the  
8 gun and came in first, that doesn't mean the Staff  
9 didn't have a concern. So why don't you go back and ask  
10 Mr. Cherny or another Staff member whether they envision  
11 any changes to any of their other test programs or  
12 anything else they are doing as a result of these events  
13 in the Board notification and the overall presentation?  
14 Let's find out the overall importance in the total  
15 context.

16           And that is the kind of question I was going  
17 to allow when we got to the Board notification at the  
18 end. I think that will get you to where you want to go  
19 as well.

20           MS. LETSCHE: If you want me to ask it, I will  
21 ask that question, certainly. I just wanted to make  
22 sure you have granted the objection to my question.

23           JUDGE BRENNER: That's right. You can appeal  
24 on that question.

25           BY MS. LETSCHE: (Resuming)

1 Q Perhaps, Mr. Cherny, you could answer the  
2 question that was posed by Judge Brenner.

3 A (WITNESS CHERNY) Could I have the question  
4 repeated?

5 JUDGE BRENNER: Mr. Cherny, the Board  
6 notification indicates preliminary information on two  
7 particular events, and in addition includes portions, at  
8 least the written portions including copies of slides,  
9 of a presentation made by GE on the overall subject.  
10 What does the Staff plan to do next with respect to any  
11 concern as to valves not lifting along the lines  
12 preliminarily indicated in the two recent events?

13 WITNESS CHERNY: Well, we're talking about two  
14 recent events. In the second case, I don't really view  
15 that as a problem. The first case is a questionable  
16 case, and we are going to at this point in time follow  
17 closely the evaluations going on by GE and the valve  
18 manufacturer.

19 Until we get the information from those  
20 evaluations, I don't think we're in a position to say  
21 what might or might not be changed. Certainly one of  
22 the things that is being talked about is a possible  
23 change in in-service surveillance testing of this type  
24 of valve. But it is premature to say that is going to  
25 happen.

1 JUDGE BRENNER: You're certainly correct. I  
2 should have been more specific. You are focusing on the  
3 Hatch event.

4 WITNESS HODGES: Judge Brenner, also this  
5 conclusion slide that he is referring to is from a  
6 meeting last January, which was well before the Hatch  
7 event.

8 But as far as what's being done with the Hatch  
9 event at this point, it is my understanding that there  
10 will be a periodic cycling of the valves that are in  
11 place. There are 11 total. Two valves will not be  
12 cycled. They will be -- unless challenged for some  
13 other reason, they will be left as is until the next  
14 refueling outage, which is several months away. And my  
15 recollection is it is about once per month they're going  
16 to cycle. Maybe Mr. Boseman can support or verify what  
17 the actual period will be.

18 But the idea is, looking at whether it's an  
19 aging type of problem or not an aging type of problem,  
20 and say individual valves at Hatch will be cycled, some  
21 will be left uncycled, and these will be examined then  
22 at the end of this current fuel cycle.

23 JUDGE BRENNER: All right. Do you have any  
24 preliminary insight as to possible lessons learned, if  
25 you will, from that event that would be pertinent to

1 these valves at other plants from a design point of  
2 view? That is, that either basic design of the valves  
3 or the way they are installed? That is, something other  
4 than procedures or maintenance or something like that?

5 WITNESS HODGES: No. In fact, the same valves  
6 say approximately 10 or 11 months ago had been  
7 challenged and worked successfully, the ones at Hatch.  
8 And they -- or at least some of them. I'm not sure all  
9 of them were activated, but a few of the valves were  
10 activated.

11 So there is no apparent or there is no obvious  
12 design problem at this point. I understand that there  
13 had been a problem with water chemistry at Hatch. I  
14 don't know the details of the water chemistry problem,  
15 but that may have affected it. And so there are a lot  
16 of variables that are still being looked at.

17 JUDGE CARPENTER: When you say "water  
18 chemistry," Mr. Hodges, am I correct in translating that  
19 as the possibility there might have been some  
20 substantial or abnormal formation of what is called by  
21 you all in your jargon "crud"?

22 (Laughter.)

23 WITNESS HODGES: That is one point of  
24 speculation at this point, and if there had been such  
25 crud when the valves were opened manually when they got

1 down to 900 pounds, the crud could have been blown out,  
2 so that when you examine them later there is no  
3 evidence.

4 JUDGE CARPENTER: Thank you very much.

5 JUDGE BRENNER: You don't know as much as you  
6 would like to know about this event?

7 WITNESS HODGES: That is correct.

8 JUDGE JORDAN: With respect to the Hatch  
9 program, do you -- you say that they will be cycled and  
10 that means they will be manually cycled occasionally?

11 WITNESS HODGES: They will be opened briefly  
12 manually.

13 JUDGE JORDAN: Okay.

14 BY MS. LETSCHE: (Resuming)

15 Q Mr. Hodges, as you indicated, the GE  
16 presentation was made in January of 1982. Was there --  
17 what was the impetus for this presentation being made to  
18 the NRC Staff, do you know?

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

20 JUDGE BRENNER: I think that was the question  
21 to which I granted the objection, in slightly different  
22 words, Ms. Letsche.

23 MS. LETSCHE: Judge Brenner, I have completed  
24 my cross-examination at this time on the Board  
25 notification and am prepared to move on to my original

1 cross plan, if you would like to break for lunch at this  
2 point.

3 JUDGE BRENNER: I reiterate the comment I made  
4 earlier, that may have gotten lost in all of this  
5 criticism. Your cross plan has a lot of questions that  
6 we want to know the answers to, and that is the reason  
7 we are anxious for you to get to it. And we look  
8 forward to that after lunch.

9 Let's break until 1:30.

10 (Whereupon, at 12:10 p.m., the hearing in the  
11 above-entitled matter was recessed, to reconvene at 1:30  
12 p.m. the same day.)

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## 1 AFTERNOON SESSION

2 (1:30 p.m.)

3 JUDGE BRENNER: We are ready to proceed with  
4 the County's cross-examination. Can you tell me which  
5 plan you're starting on?

6 MS. LETSCHE: I'm sorry, Judge Brenner?

7 JUDGE BRENNER: Which plan are you going to  
8 start on?

9 MS. LETSCHE: 22. For the Board's  
10 information, I'm beginning on page 5 of the  
11 cross-examination plan, particularly item B that appears  
12 on that page.

13 Whereupon,

14 RAYMOND M. CRAWFORD

15 JEFFREY L. SMITH

16 STEVEN J. STARK

17 JOHN J. BOSEMAN

18 FRED HAYES

19 JOHN J. KREPS

20 C. A. MALOVRH

21 ROBERT J. WRIGHT

22 MARVIN W. HODGES

23 FRANK C. CHERNY,

24 the witnesses on the stand at the time of recess,  
25 resumed the stand and, having previously been duly sworn

1 by the Chairman, were examined and testified further as  
2 follows:

3 CROSS-EXAMINATION -- RESUMED

4 BY MS. LETSCHE:

5 Q Gentlemen, I don't know who to address this  
6 to, so I will address it generally and whoever can  
7 answer it can answer it. At page 6 of the testimony on  
8 Suffolk County contention number 22, there is a  
9 statement that "The alternate shutdown cooling mode is  
10 the single failure liquid discharge event, which was  
11 apparently considered as the limiting condition for BWR  
12 liquid discharge through the SRV's."

13 Is that a correct interpretation of what the  
14 owners group determined, according to you testimony?

15 A (WITNESS SMITH) That is correct.

16 Q Under what condition might a plant experience  
17 such an event?

18 A (WITNESS SMITH) The shutdown cooling mode of  
19 RHR requires that reactor coolant be supplied to the RHR  
20 pumps from the recirc piping and returned back to the  
21 reactor vessel. The hypothesis of single failure is  
22 that the suction valve supplying the RHR pump for  
23 shutdown cooling mode would fail in a shut position and  
24 thus not provide the closed loop from the vessel to RHR  
25 back to the vessel again.

1 (Counsel for Suffolk County conferring.)

2 Q What comparison was made between the various  
3 conditions in Reg Guide 1.70, Revision 2, to determine  
4 that the conditions you just described would be the  
5 limiting condition for liquid discharge through the  
6 SRV's?

7 A (WITNESS SMITH) Perhaps you ought to repeat  
8 the question.

9 Q Well, maybe I will rephrase the question. How  
10 did you determine that this was the limiting condition?  
11 I assume by that you mean by that, that is the worst  
12 case?

13 A (WITNESS SMITH) What is the worst case?

14 Q That the alternate shutdown cooling mode is  
15 the worst case event for the liquid discharge through  
16 the SRV's.

17 A (WITNESS SMITH) No, the alternate shutdown  
18 cooling mode was the event that it was determined that  
19 needed testing, because it was an expected operating  
20 event and most utilities in a design basis had  
21 established that as an operating mode in the event that  
22 you did lose the normal flow path for shutdown cooling.

23 Q Then what would be the worst case event for  
24 BWR liquid discharge through the SRV's?

25 A (WITNESS SMITH) Could you explain what worst

1 case event means?

2 (Counsel for Suffolk County conferring.)

3 Q Earlier, when I asked you if alternate  
4 shutdown cooling mode was the worst case, you said it  
5 wasn't. What did you mean by that answer?

6 A (WITNESS SMITH) I believe the question that  
7 you posed to me was, how did we establish the alternate  
8 shutdown cooling mode as a worst case event. And my  
9 clarity was that it is not established that it was a  
10 worst case event.

11 Q Okay, let me start again. Maybe this is my  
12 fault with respect to the terminology. I thought I  
13 initially asked you if it was true that the owners group  
14 had determined that the alternate shutdown cooling mode  
15 was the single failure liquid discharge event, which was  
16 considered the limiting condition for BWR liquid  
17 discharge through the SRV's. And I believe you said  
18 that that was right.

19 A (WITNESS SMITH) I don't remember those exact  
20 words, but the alternate shutdown cooling mode was  
21 determined to be the event that required testing for the  
22 II.D.1 requirement.

23 Q Why was it determined to be the event that  
24 required testing?

25 A (WITNESS SMITH) It was the event that has

1 been designed for and determined to be a likely event  
2 that may occur on a BWR and that most BWR's had been  
3 designed for that particular event.

4 A (WITNESS CRAWFORD) May I attempt a  
5 clarification? As the testimony states, the owners have  
6 investigated the Reg Guide 1.70 events with single  
7 failures with the express purpose of identifying those  
8 cases that would result in liquid or two-phase flow  
9 through the valves.

10 And based upon that investigation, it was  
11 determined that the alternate shutdown cooling mode was  
12 the appropriate event to test in response to NUREG-737  
13 II.D.1, and that was the intent of our testimony here.

14 Q Okay. Let's talk a minute about the  
15 requirements of II.D.1. Do you have that before you,  
16 gentlemen? It is attachment 1 to your testimony.

17 JUDGE BRENNER: Could I go back to your line,  
18 because I don't think you got where you want to go, and  
19 I don't think your questions were so far off that you  
20 couldn't get an answer. So let me try.

21 Anyone can answer. As I read the testimony on  
22 page 6, the goal in defining the event with single  
23 failures is to maximize the potential -- those are the  
24 words in the testimony -- for liquid or two-phase  
25 discharges through the SRV's, starting with the Reg

1 Guide 1.70 events and then considering the single  
2 failure in the analysis.

3           Yet the answer I heard from you, Mr. Crawford,  
4 was not that you were maximizing the potential, but that  
5 this was an expected occurrence. Now, those are two  
6 different things. So how have you maximized the  
7 potential for considering liquid or two-phase discharges  
8 through the SRV's if you just have used the expected  
9 occurrence?

10           WITNESS CRAWFORD: Well, let me clarify it, to  
11 the point that this does maximize the potential. And in  
12 fact, since it is a mode of operation that is common to  
13 the BWR plants, that would be something that would be  
14 worthy of testing. So I don't mean to be vague, but I  
15 would like to clarify. And if I need to make some more  
16 statements to clarify it, I would be happy to.

17           JUDGE BRENNER: Well, I want to try to better  
18 understand what "maximize the potential" means in terms  
19 of worst case event. And I think worst case event can  
20 be taken as the event with the greatest maximization of  
21 the liquid or two-phase discharge, starting with the  
22 transient analyses and with the worst single failure,  
23 worst in the sense of maximizing that potential. And  
24 does this vent do that?

25           WITNESS CRAWFORD: Let me restate your

1 question to make sure I understand it. I think you  
2 asked, is this the event which maximizes or which is the  
3 maximum or the most likely event to result in liquid or  
4 two-phase discharge through the valve.

5 JUDGE BRENNER: Not most likely. The event  
6 that would cause the maximum liquid or two-phase  
7 discharge. Now maybe you're telling me, once you get  
8 any event that causes any liquid or two-phase discharge,  
9 one is as good as another, but I don't know that yet  
10 from the testimony.

11 WITNESS CRAWFORD: Well, this would be the  
12 event that would have the most potential for resulting  
13 in liquid and two-phase flow through the valve. Now,  
14 this may not be the event that would maximize the total,  
15 the maximum stress on the valve.

16 JUDGE BRENNER: That is my question, and maybe  
17 we're not understanding what "maximize the potential" is  
18 modifying in your testimony. You are maximizing the  
19 potential for occurrence of a liquid or two-phase  
20 discharge, not maximizing the stress caused by liquid or  
21 two-phase discharge?

22 WITNESS CRAWFORD: That is correct. As I read  
23 NUREG-0737 II.D.1, it talks about reviewing both  
24 accident and non-accident events and picking out those  
25 events that would be expected to result, and this was

1 the way we addressed the testing program.

2 JUDGE MORRIS: Just to tie that down, Dr.  
3 Crawford, is your testimony here that we have been  
4 describing in response to the second sentence in  
5 subparagraph 2 of A of II.D.1? The sentence starts  
6 "This correlation must show that the test conditions  
7 used are equivalent to expected operating and accident  
8 conditions as prescribed in the FSAR."

9 (Panel of witnesses conferring.)

10 WITNESS CRAWFORD: I read paragraph 2 to be  
11 referring primarily to showing the applicability of the  
12 test results for the valves and piping system that was  
13 tested to the plant-specific case. And I would say that  
14 the test program that was conducted, the fluid  
15 conditions and so forth were applicable to the  
16 Shoreham-specific plant configuration.

17 I am not sure I fully understand the total  
18 extent of your question.

19 JUDGE MORRIS: Well, I was simply trying to  
20 relate your testimony to a direct response to the  
21 requirements of II.D.1, and if I guessed wrong on that I  
22 apologize. But maybe you can establish that correlation  
23 for me.

24 WITNESS CRAWFORD: I think the generic test  
25 program, the test program and the conditions were

1 selected on the basis that the testing would demonstrate  
2 -- and I'm reading now from paragraph 1 on the preceding  
3 page -- "should demonstrate that the valve will open and  
4 reclose under the expected flow conditions."

5           So the generic test program, I think -- and my  
6 thinking on this was that the test program should first  
7 of all demonstrate valve operability, as specified in  
8 that paragraph. And then if you go on, there is other  
9 objectives of the test program that would allow you to  
10 apply the test results to plant-specific  
11 configurations.

12           So that was another objective of the test  
13 program. And I think that paragraph 2 is more aimed at  
14 providing a test program that would allow you to take  
15 the results and apply them to the plant-specific case.

16           Does that help?

17           JUDGE MORRIS: A little.

18           (Board conferring.)

19           JUDGE MORRIS: I don't mean to usurp your  
20 line, Ms. Letsche.

21           MS. LETSCHE: That's quite all right, Judge  
22 Morris. If you have more questions, go ahead.

23           JUDGE MORRIS: Well, I think the question  
24 comes to mind, if you're talking about the potential for  
25 two-phase flow and whether this, as was mentioned, is a

1 potential in the sense of the highest probability or  
2 whether it is the potential for the worst loads on the  
3 valve itself. And so if there is that choice, why did  
4 you choose one rather than the other, or why didn't you  
5 consider both?

6 WITNESS CRAWFORD: The objective of the test  
7 program was to review the expected operating conditions  
8 that one could expect, to select those fluid conditions  
9 that would be the greatest potential to result in fluid  
10 or liquid and two-phase flow through the valve. The  
11 objective of the program was not to maximize the stress  
12 on the valve, but to select the fluid conditions and the  
13 event such that you would maximize the duty on the  
14 valve, in other words the likelihood that you would get  
15 this, and not necessarily to maximize the stress on the  
16 valve.

17 JUDGE MORRIS: That still leaves me a little  
18 puzzled. I assume an event of this kind is pretty  
19 rare?

20 WITNESS CRAWFORD: Yes.

21 JUDGE MORRIS: So that if it happens at all,  
22 that is a very unique situation, and that you would be  
23 concerned under these conditions that the valve would  
24 function.

25 WITNESS CRAWFORD: Under the alternate

1 shutdown cooling conditions?

2 JUDGE MORRIS: Yes.

3 WITNESS CRAWFORD: That's correct, and that is  
4 why we selected those conditions to perform the test on,  
5 even though it was a rare event. We did not have  
6 evidence available to us experimentally or empirically  
7 that would demonstrate clearly that the valve would open  
8 and reclose.

9 JUDGE MORRIS: Well, are there other events  
10 that would put higher stresses on the valve?

11 WITNESS CRAWFORD: We considered other events  
12 that may have perhaps put higher stresses on the valve,  
13 but they were of such low probability of occurring and  
14 the consequences of these events were well within the  
15 consequences of a loss of coolant accident that they  
16 were not considered further or considered as necessary.

17 JUDGE MORRIS: So in effect you did consider  
18 both?

19 WITNESS CRAWFORD: Yes, we did consider both,  
20 and based upon that consideration we selected the  
21 testing of the alternate shutdown cooling mode.

22 JUDGE MORRIS: Thank you. That helps.

23 JUDGE BRENNER: It doesn't help me. I don't  
24 understand what you mean by "consider." You didn't test  
25 it for those stress conditions. You considered it and

1 decided not to test it for those stress conditions, that  
2 is conditions.

3           WITNESS CRAWFORD: We considered transients  
4 that would result in subcooled and two-phased flow  
5 through the valve and other conditions. We examined the  
6 probability of occurrence and the consequences of such  
7 an event, and based upon that review the owners group  
8 determined that the only event that would give the  
9 maximum potential and that would result in something  
10 that would affect the design basis of the plant or the  
11 safety of the plant was the alternate shutdown cooling  
12 mode.

13           JUDGE BRENNER: There's a lot in your answer  
14 there, and I don't know if I can get it all.

15           JUDGE JORDAN: May I? Let me ask one or two  
16 questions.

17           Did you consider all of the events under the  
18 design basis accidents of chapter 15? Was that your  
19 starting point?

20           WITNESS CRAWFORD: Yes, it was, including  
21 single failure, both operator errors and single active  
22 failures.

23           JUDGE JORDAN: Is that statement essentially  
24 the way you decide what events are in chapter 15, that  
25 they are single failure?

1           WITNESS CRAWFORD: The initiating events that  
2 we looked at included all of the chapter 15 events, and  
3 then we went through each of those, assuming that there  
4 was either inappropriate or no operator action.

5           JUDGE JORDAN: And an additional failure, an  
6 additional single failure in addition to the chapter 15  
7 events?

8           WITNESS CRAWFORD: That's correct.

9           JUDGE JORDAN: I see. That was not clear  
10 before.

11          WITNESS CRAWFORD: And we looked at these and  
12 we examined the likelihood of occurrence, the  
13 probability of occurrence, and we looked at the  
14 consequences in terms of what does that mean.

15          JUDGE JORDAN: But if they were in chapter 15,  
16 then they were already considered likely enough that  
17 they had to be considered. You couldn't eliminate them  
18 on the basis -- that is, I'm just trying to decide how  
19 you decide that they were so unlikely that you don't  
20 need to consider them.

21          WITNESS CRAWFORD: Well, remember, we took the  
22 initiating event from chapter 15 and we superimposed  
23 either operator error or additional failures. So there  
24 was an additional consideration including these two, the  
25 single failure criteria. And we looked to see if that

1 resulted in a challenge to the safety relief valve.

2 JUDGE JORDAN: But you considered all -- you  
3 considered the chapter 15 events, you considered all  
4 possible single failures, presumably, and then -- but it  
5 sounded as though that you might have considered some  
6 single failures, but threw them out because they were  
7 very unlikely.

8 WITNESS CRAWFORD: No, I didn't mean to say  
9 that. We examined the initiating events on through to  
10 the transients, and then determined the likelihood of  
11 that occurring with the failures, with the failures.

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1           JUDGE JORDAN: And then you chose the most  
2 likely event, is that right, rather than the most  
3 stressful event?

4           WITNESS CRAWFORD: That is correct.

5           JUDGE JORDAN: All right. Then the question,  
6 I guess, that I think is bothering us: On what basis  
7 was it that you chose the most likely event rather than  
8 the most stressful event, because it was my feeling that  
9 the section II.D.1 was meant to test the valves under  
10 stressful conditions, and it doesn't appear that the  
11 condition that you chose is a particularly stressful  
12 one; that there might have been high temperature liquids  
13 or high temperature two-phase events that would also be  
14 under the single failure. Even though they were less  
15 likely than this one, they would be ones which  
16 nevertheless, are possible events and therefore should  
17 be considered in the test program.

18           Now, why were all those other events  
19 eliminated, just because they were less likely than this  
20 event?

21           JUDGE BRENNER: And let me throw one more  
22 thing in, in the hopes of efficiency. But if it gets  
23 too complex, ignore it in your answer. If you can work  
24 in why the consequences of this event are greater than  
25 events for which the stresses would be greater, that

1 might help me understand what you mean by consequences.

2           You see, you say the consequences of the event  
3 you chose were greater; yet, the stress is lower on the  
4 valve. And I don't know how that relates in the context  
5 of, as Judge Jordan said, testing the maximum stress  
6 anticipated.

7           WITNESS CRAWFORD: We examined the events in  
8 Chapter 15. We superimposed a failure; we determined  
9 the probability for the event occurrence and the  
10 probability that there would be a rupture of the valve  
11 or the discharge piping. Based upon that review, we  
12 determined that these events were two orders of  
13 magnitude less likely to occur than the current design  
14 basis accident, and that because of the low probability  
15 of occurrence of the Chapter 15 events with the single  
16 failure, because the consequences did not exceed the  
17 design basis accident, that a testing of all of these  
18 events was not warranted.

19           JUDGE JORDAN: On the basis that they were so  
20 unlikely?

21           WITNESS CRAWFORD: They were unlikely and they  
22 did not result in consequences that had not already been  
23 considered and reported in the safety analysis report.

24           The alternate shutdown cooling mode was  
25 selected because that, as I said before, was an event

1 that may very well occur, and that event which did  
2 result in liquid or two-phase flow through the line.  
3 Since it could occur with high likelihood even though  
4 the consequences were thought to be minimal or  
5 non-existent, we felt that it would be prudent to test  
6 these condition.

7 JUDGE JORDAN: If it hadn't been considered,  
8 if that event hadn't been considered likely, would,  
9 then, you have come to the conclusion that testing with  
10 any fluid would have been unnecessary? That the other  
11 events didn't --

12 WITNESS CRAWFORD: In fact, the owners group  
13 presentation to the staff, I believe in October 1979,  
14 took that position; that an examination of the Chapter  
15 15 events, an examination of the past history of the  
16 BWRs in this country and abroad, that there was not any  
17 necessity for testing.

18 We presented other information to the staff  
19 and evaluated this with the staff and concluded that it  
20 would be prudent to investigate the ultimate shutdown  
21 cooling mode since it is a design mode of operation.

22 JUDGE JORDAN: This is a design mode of  
23 operation, you say?

24 WITNESS CRAWFORD: Yes.

25 JUDGE JORDAN: All right.

1                   JUDGE MORRIS: I guess what led us down this  
2 path was the sentence under the paragraph labeled  
3 "Clarification", and I guess it is the second one in  
4 II.D.1. It says, "The single failures applied to these  
5 analyses shall be chosen so that the dynamic forces on  
6 the safety relief valves are maximized." Is it correct  
7 that you believe that what you have done is consistent  
8 with this?

9                   WITNESS CRAWFORD: The single failures were,  
10 in fact, selected so as to maximize the potential for  
11 liquid and two-phase discharge. And hence, in that  
12 sense, they are maximizing the stresses on the valve in  
13 all of the events that we considered. In other words,  
14 of the events that we considered with the single active  
15 failure that was selected and the operator error that  
16 was selected for consideration did result in the maximum  
17 stresses on the valve.

18                   JUDGE BRENNER: Could you read that answer  
19 back, please?

20                   (The reporter read the record as requested.)

21                   JUDGE MORRIS: Now I would like to ask the  
22 staff if they believe that what the owners group  
23 selected to do is responsive to II.D.1.

24                   WITNESS HODGES: Yes, we do. And maybe a  
25 little background will help at least demonstrate why.

1           The II.D.1 as written was an outgrowth of a  
2 requirement from the Lessons Learned Task Force that was  
3 stated in NUREG-0578. The concern arose out of the fact  
4 that the TMI valve saw water discharge under a transient  
5 which was a fairly reasonable transient to expect; at  
6 least initially.

7           And so the question is: Are these valves  
8 really tested for the service that they see? Now, in  
9 PWR valves, even for the steam conditions, they are  
10 tested on a small scale. They are not tested full  
11 size. For the BWR valves they are tested full size for  
12 steam conditions, and the valves are exercised while --  
13 they are also exercised to some extent at the plant. So  
14 we have the steam conditions for the BWR valves being  
15 tested in the actual valves as opposed to a PWR valve  
16 where steam conditions are not even tested full size.

17           So the only other concern that we had for the  
18 BWR valves was their performance under either solid  
19 water or two-phase flow conditions. Now we are looking  
20 at conditions where you might get water or a two-phased  
21 mixture to the valve, and you go through looking at  
22 various transients and accidents.

23           And you could take a wider range of conditions  
24 than just the Reg Guide 1.70 transients, but you have to  
25 bound it somewhere, so we chose to use those as being

1 typical of transients that might be expected to occur.  
2 And you look at the single failures that go along with  
3 them. That was strictly a mechanism for limiting the  
4 scope of the problem, just as a practicality.

5           When you do that and you look at the  
6 conditions under which you might get two-phased flow to  
7 the valve, the only one that comes up with a very high  
8 probability is the one where you have -- and even it is  
9 not a high probability -- is the condition for the  
10 shutdown cooling that has been mentioned. Furthermore,  
11 this one is called out explicitly in the emergency  
12 procedure guidelines and Shoreham's emergency  
13 procedures. It is called out as: if you get to this  
14 point, this is what you will do. So it is difficult to  
15 argue that you will never see that condition if the  
16 procedures tell him to do this. So that is an obvious  
17 condition you should test at.

18           So the only other question that remains is:  
19 should you test the valves under two-phase flow  
20 conditions at higher pressure. And then it becomes  
21 looking at how does that compare with, for example, a  
22 steam line break. If you got a two-phase discharge  
23 through the valve and you broke a discharge line and the  
24 valve stuck open, it is basically a steam line break.  
25 And that has been analyzed and there is an expected

1 frequency associated with the steam line break and an  
2 expected consequence.

3           And so now you look at are the consequences  
4 and the frequency of the stuck-open relief valve and the  
5 discharge pipe break that you might get resulting from a  
6 two-phase flow -- is it worse than the steam line break  
7 which already has been analyzed in Chapter 15 or is it  
8 better of. And if it is not as bad as the steam line  
9 break then why test it?

10           JUDGE BRENNER: I think you answered, Mr.  
11 Hoigs, the question I was going to ask Mr. Crawford, but  
12 let me make sure. In reaching the conclusion that the  
13 consequences were lower for these lower probability  
14 events -- and now I understand your comparison to be to  
15 the design basis event rather than the consequences of  
16 this alternate shutdown path -- you have assumed the  
17 failure of the safety relief valve in reaching the  
18 conclusion that the consequences were lower. Is that  
19 correct?

20           WITNESS CRAWFORD: That is correct.

21           JUDGE BRENNER: I didn't understand your frame  
22 of reference earlier of lower consequences.

23           Maybe just one other clarification since Judge  
24 Jordan and I had a quick conversation. In talking about  
25 the Chapter 15 events, is your word, that you are adding

1 the single failure to, I take it you are not talking  
2 about all of the accidents in Chapter 15, but you are  
3 distinguishing between transients and the accidents.  
4 You didn't take the design basis accident and add a  
5 single failure for this purpose, did you?

6 WITNESS HODGES: That is correct. We are  
7 talking about the anticipated operational occurrences in  
8 Chapter 15.

9 JUDGE BRENNER: As distinguished from  
10 everything in Chapter 15?

11 WITNESS HODGES: For the design basis accident  
12 you are going to be depressurizing and you wouldn't  
13 challenge the valves.

14 JUDGE JORDAN: You are what?

15 WITNESS HODGES: For the design basis  
16 accident, the full blown LOCA, the vessel would  
17 depressurize very rapidly and you should not challenge  
18 the safety relief valves, anyhow.

19 JUDGE JORDAN: Is that all you consider in  
20 Chapter 15, is a large LOCA?

21 WITNESS HODGES: No.

22 WITNESS CRAWFORD: No, sir, we do not.

23 JUDGE BRENNER: Let me Mr. Hodges finish.

24 WITNESS HODGES: I was just using that as an  
25 example of why we didn't consider everything in there.

1 JUDGE BRENNER: Judge Jordan is going to ask  
2 you about the small break LOCA in a minute, but did you  
3 want to add something, Dr. Crawford?

4 WITNESS CRAWFORD: I think Mr. Hodges cleared  
5 it up.

6 JUDGE JORDAN: Well, it is obvious then that I  
7 am still a bit confused and maybe more than a bit.

8 WITNESS CRAWFORD: Judge Jordan, we did  
9 consider a small break LOCA with a safety injection and  
10 then a failure, an active failure, which resulted in  
11 challenging the safety relief valve. Based upon Judge  
12 Brenner's comment, if, in fact, you were thinking about  
13 the LOCAs we did consider, the small break LOCA where,  
14 in fact, you wouldn't have a rapid depressurization and  
15 the safety relief valves would be called upon to  
16 function.

17 And we considered that along with the failure,  
18 the small break with a safety injection with a failure,  
19 and determined, again, that the probability of that  
20 occurring was so extremely small and then the  
21 consequences of that initiating event resulting in a  
22 line rupture which would be less than or equal to the  
23 consequences of a large break LOCA, that the whole thing  
24 was two orders of magnitude at least less than what the  
25 original design basis was.

1 I don't mean to anticipate your questions, but  
2 I was hoping that that might clarify.

3 JUDGE JORDAN: You did anticipate properly  
4 some of the problems, all right. And I guess what I  
5 would like to hear you say is any of the design basis  
6 accidents do not in themselves give stresses to the  
7 valves. In fact, do not even have liquid ejection  
8 through the valves. Is that correct for all of the  
9 design basis accidents?

10 WITNESS CRAWFORD: That is correct.

11 JUDGE JORDAN: All right. And so therefore,  
12 you had to go beyond the design basis in some respects  
13 at least in order to find an accident or an event in  
14 which there was liquid ejection.

15 WITNESS CRAWFORD: That is absolutely  
16 correct. In the owners group presentation to the staff  
17 in October of 1979, they went through all of the Reg  
18 Guide 1.70 Rev 2 events and pointed out to the staff  
19 that none of these accidents or non-accident situations  
20 resulted in a liquid challenge. And then we were told  
21 to go back and consider not only those events, but to  
22 add single failures to that. And that included both  
23 active component failures as well as operator errors.

24 And then we came back and we said all right,  
25 we do have liquid challenges under these assumptions,

1 and this is what we found for the probability of this  
2 event occurring and compared that to the consequences of  
3 record of what that would entail.

4 JUDGE JORDAN: And so therefore, tests were  
5 run, therefore, for that event, which is moderately low  
6 temperature, less than 200 and some, or something like  
7 200 degrees or less. Is that right?

8 WITNESS CRAWFORD: The alternate shutdown  
9 cooling mode consisted of water pressures from about  
10 atmospheric up to 250 psi, and from 50 degrees  
11 subcooling up to about saturated water; actually, 15  
12 degrees subcooled.

13 JUDGE JORDAN: There was one statement made,  
14 and since I have the microphone I might as well stay --  
15 and that is the source of the water -- when you are  
16 using the residual heat removal system, you said you  
17 took the water from the recirc line, pumped it through  
18 the valve and then back into the system, and I didn't  
19 see where the cooling --

20 WITNESS SMITH: It was an RHR heat exchange.

21 JUDGE JORDAN: It goes through the RHR heat  
22 exchange?

23 WITNESS CRAWFORD: There are RHR heat  
24 exchangers which would function for the long-term  
25 cooling which is more or less your heat sink to the

1 containment.

2 JUDGE JORDAN: All right.

3 JUDGE BRENNER: I want to point out that a lot  
4 of our questions bordered on the fringes of the  
5 parameters of the contention that we discussed before.  
6 If not over the fringes, but we were concerned with the  
7 tie-in with this particular part of the testimony that  
8 you starting questioning about, Ms. Letsche. And in  
9 part, the relationship to one of the items we left open  
10 to hear more about tomorrow; that is, high temperature  
11 liquid flow. And when we see a phrase like "maximize  
12 the potential," as we saw in the testimony, we thought  
13 that would bear on it.

14 In addition, as I said, I jumped in because I  
15 thought that notwithstanding some word problems, that  
16 you could have been getting more direct answers to your  
17 questions than you were getting.

18 BY MS. LETSCHE (Resuming):

19 Q Dr. Crawford, you indicated in response to one  
20 of the Board's questions about your analysis of the  
21 consequences of the events in determining which ones you  
22 were going to test for, that you assumed a failure of  
23 the safety relief valve. Was that assumption the  
24 failure of one valve only?

25 A (WITNESS CRAWFORD) In evaluating the

1 consequences, we assumed -- and let me come back to that  
2 and quantify it -- but we assumed basically that there  
3 would be a rupture in the discharge line or the valve  
4 that would result in a situation with the valve stuck  
5 open and steam discharging into the drywell.

6           Now, when I said we assumed, that was based  
7 upon a probabilistic fracture mechanics analysis of the  
8 line.

9           Q     Am I correct then, based upon your  
10 explanation, that you did assume that the remaining 10  
11 safety relief valves would operate when you were  
12 analyzing the consequences?

13           A     (WITNESS CRAWFORD) The point that we were  
14 trying to evaluate was to take these initiating events  
15 that resulted in the liquid challenge and then examine  
16 what could happen if there was a break, one of the loss  
17 of integrity. We did not rely upon the other valves  
18 operating and relieving the pressure in any way.

19           We just took the worst consequences that could  
20 happen; namely, a break, and we compared that to the  
21 design LOCA and that was -- those consequences were  
22 clearly left in the design basis LOCA. In other words,  
23 that maximum energy that you are going to be discharging  
24 in the event of a rupture in these cases is certainly no  
25 worse than the design basis LOCA, and we did not rely

1 upon any pressure-relieving capacity of other valves  
2 operating during this time.

3 (Counsel for Suffolk County conferring.)

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1 Q Dr. Crawford, is the consideration of chapter  
2 15 accidents and the single failures and the  
3 probabilities and the consequences that you have been  
4 discussing as part of your choice of the alternate  
5 shutdown cooling mode for these tests, is that  
6 consideration documented anywhere?

7 A (WITNESS CRAWFORD) The events that were  
8 evaluated was submitted by the owners group to the NRC  
9 Staff on September 17th of 1981.

10 Q When you say "events evaluated" --?

11 A (WITNESS CRAWFORD) Excuse me. Was that '81?  
12 That was 1980, I'm sorry.

13 Q When you say "events evaluated," does that  
14 mean all of the ones that you looked at, including the  
15 ones you rejected as well as the one you ended up  
16 testing?

17 A (WITNESS CRAWFORD) Yes, that does.

18 Q Mr. Hodges, is that documentation something  
19 that you have reviewed?

20 A (WITNESS HODGES) Yes, it is.

21 Q And based upon your review, is it the Staff  
22 position that the alternate shutdown cooling mode  
23 satisfies the requirement of II.D.1 that, with respect  
24 to that event, the dynamic forces on the safety and  
25 relief valves are maximized?

1           A       (WITNESS HODGES) I think I was thinking ahead  
2 to my answer before you finished your question, so would  
3 you restate the full question, please?

4           Q       Based upon your review of the evaluation  
5 submitted by the owners group, is it the Staff's  
6 position that the decision to test for the alternate  
7 shutdown cooling mode satisfies the requirement of  
8 II.D.1 that the dynamic forces on the safety and relief  
9 valves are to be maximized in the testing?

10          A       (WITNESS HODGES) If you read the sentence  
11 preceding that, it says, "Licensees and applicants shall  
12 determine the expected valve operating conditions  
13 through the use of analysis of accidents and anticipated  
14 operational occurrences." And that was done and that is  
15 what was done in that letter that Mr. Crawford spoke of,  
16 and we reviewed that.

17                   And the analyses that they considered in that  
18 letter and subsequent discussions and meetings that we  
19 had did consider that. Now, the test itself that was  
20 run does not include the worst stresses or the worst  
21 loads, but as far as the expected conditions under which  
22 you might get water or two-phase flow to the valve, and  
23 that is why those particular tests were deemed to be an  
24 acceptable set.

25                   JUDGE BRENNER: Mr. Hodges, what about the

1 sentence after the one that Ms. Letsche directed your  
2 attention to: "Test pressures shall be the highest  
3 predicted by conventional safety analysis procedures."  
4 Does it meet that sentence also?

5 WITNESS HODGES: Yes, for the conditions. You  
6 have to go back to expected operating conditions, and  
7 that is in the first sentence in the position at the  
8 top, that this whole program is for expected operating  
9 conditions. And keeping that in mind, then, yes, it  
10 satisfies it.

11 If you go to the extreme conditions well  
12 beyond those expected, then no, it would not satisfy  
13 it.

14 JUDGE BRENNER: Okay. Staying with you, Mr.  
15 Hodges, is "expected" the same as "anticipated" in the  
16 sense of the design basis accidents that have to be  
17 assumed?

18 WITNESS HODGES: Almost.

19 JUDGE BRENNER: You're going to tell me it's  
20 an anticipated operational occurrence, but not an  
21 accident?

22 WITNESS HODGES: No. We were looking for the  
23 type of transients you might expect where you could get  
24 the two-phase flow, and we added on this additional  
25 requirement of the single failure. And in that sense,

1 yes, it is the normal anticipated operational  
2 occurrence. But the AOO's themselves do not usually  
3 include that additional failure.

4 WITNESS CRAWFORD: May I attempt a little  
5 clarification?

6 JUDGE BRENNER: Yes. I don't know if this  
7 helps. I have not forgotten your earlier testimony as  
8 to the relative probability between what you've assumed  
9 and the design basis accident. And I was just trying to  
10 get at it with Mr. Hodges in a slightly different way.  
11 I don't know if that anticipates something you were  
12 going to say.

13 WITNESS CRAWFORD: The only thing I was going  
14 to point out or reiterate was that the single failures  
15 were selected to maximize the potential for the  
16 stressful condition on the valve. When we considered  
17 the normal events, we didn't even have any situation  
18 which resulted in the liquid challenges to the valve.  
19 But when we went back, the guidance that we got from the  
20 Staff was that when you pick the single failures, pick  
21 them in such a way as you are going to increase the  
22 likelihood and the stressful situation on the valve.  
23 And that is what we did.

24 Then we examined those events and the  
25 potential consequences of those events in relation to

1 what the design basis was, and selected the transient  
2 for testing.

3 JUDGE BRENNER: Okay. I will give you a  
4 little advice as to why we spent a lot of time on this.  
5 It is not a criticism and maybe it's even a compliment,  
6 I don't know. You've got a very carefully worded  
7 sentence here, the first sentence of this first full  
8 paragraph on page 6 of the testimony, in the use of the  
9 term "maximize the potential" and so on.

10 I think we understand it now. But when you  
11 have a sentence that carefully worded, it stimulates  
12 these kinds of questions to see what other carefully  
13 worded words are involved in the analysis. And I think  
14 we have got -- at least I understand what you meant  
15 now.

16 I want to at some point, and I don't know if  
17 this is a good point, and as kind of a transition to  
18 your thinking between now and tomorrow, you being  
19 counsel and experts of this high pressure liquid test  
20 possibility, ask a few questions about what the concern  
21 is in making sure you have got a liquid test. And maybe  
22 I should do that now, since some of these questions are  
23 coming close to the liquid test.

24 And Mr. Hodges, one thing I want to find out  
25 is whether the concern in making sure you've bounded

1 expected liquid flow conditions and, as you said,  
2 depending upon what is in the plant, and you cited the  
3 example of Pilgrim without the level A trip. That would  
4 affect your judgment as to what you would expect.

5           But I'm not sure if you are concerned, in  
6 looking at the liquid flow, whether it be at low  
7 pressure or at high pressure, with the valve operating  
8 at the time of the event creating the liquid flow, or  
9 whether you are worried about the future integrity of  
10 the valve after having encountered that, or some  
11 combination of the two.

12           WITNESS HODGES: It is really with the concern  
13 of the valves, having encountered two-phase flow. And  
14 it is several parts to it. One is, with two-phase flow  
15 do you still get the pressure-relieving characteristics  
16 that you need, if that is indeed the situation you have  
17 to worry about.

18           And another one is, if you break a discharge  
19 line with the two-phase flow and the valve sticks open,  
20 you don't know for sure that it won't stick open if you  
21 haven't tested it. And so if that is a likely situation  
22 and there's a chance that the valve will stick open,  
23 then you have to worry about the break in the pipe and  
24 what are the consequences of such a break. Do you  
25 rupture the containment? Is this a no-never-mind

1 event?

2           And there are a whole range of things you have  
3 to look at and the probabilities of those happening. So  
4 all that was in mind. And also, it is a very difficult  
5 transient to analyze because two-phased flow conditions  
6 don't lend themselves to ready analysis, particularly  
7 through a geometry as complex as a valve.

8           So what was done in this case by the owners  
9 group --

10           JUDGE BRENNER: I assume -- this may help me.  
11 I assume you are always going to be at relatively low  
12 pressures on two-phase flow?

13           WITNESS HODGES: Well, if it had turned out  
14 you needed to test at the high pressure conditions, the  
15 answer is no. So we were looking at high pressure  
16 conditions as well as low pressure conditions prior to  
17 deciding which conditions to test for.

18           So the analysis that they did at high pressure  
19 conditions did not so much assume two-phase flow through  
20 the valves as it did subcooled water, and it maximized  
21 or took the subcoolant so as to maximize the loading on  
22 the valves and the discharge piping, because that was a  
23 situation that could be analyzed. The two-phased should  
24 have been less severe as far as the loadings.

25           And so you started with analysis that says,

1 okay, you've got the water there, and you maximize the  
2 conditions as far as the stressful conditions by taking  
3 the subcooling of the water. That gives you the optimum  
4 loads and just what the stresses are, and then you look  
5 at the probabilities of getting into that kind of  
6 situation, and the probabilities went all the way from  
7 having only a little bit of water in the valves to  
8 having the valves flowing full of water.

9 JUDGE BRENNER: One thing I'm a little  
10 confused about. I understand you're pointing out all of  
11 these other things you would worry about in terms of the  
12 total system performance under the different flow and  
13 pressure conditions. But I thought II.D.1 was focused  
14 on the functioning of the valve, and that is why I was  
15 wondering how liquid flow would affect the functioning  
16 of the valve at the time of the flow, and also whether  
17 you were concerned about how -- what the valve, even if  
18 it worked then, what condition it would be in for  
19 possible future service.

20 WITNESS HODGES: For example, if the valve did  
21 not reclose, if the water flow caused a deformation in  
22 the valve so that it would not reclose, then it becomes  
23 a concern. If the valve operates and encloses, it is  
24 not much different than any other transient where the  
25 valves open and close.

1           And again, previously the valves have been  
2 tested for steam conditions, so we're only talking about  
3 in this case water conditions.

4           JUDGE BRENNER: Maybe we will find out more  
5 later. I don't know why maximizing -- I'm going to try  
6 one more -- why maximizing the dynamic forces would be  
7 the condition under which to worry about the situation  
8 you just talked about, that is the two-phase situation,  
9 somehow leaving the valve so that it wouldn't close.

10           It would seem to me, if you were thinking of  
11 it simplistically, as I do in these complex things,  
12 thinking about maximizing the dynamic forces, I'm more  
13 likely to pop the valve open, and then you might have  
14 closure problems, is what you're telling me.

15           WITNESS HODGES: Yes.

16           JUDGE BRENNER: Partly because these forces,  
17 being dynamic, are difficult to predict in terms of  
18 their affect on the valve, in terms of closure effects,  
19 is that right

20           WITNESS HODGES: I didn't understand your  
21 statement.

22           JUDGE BRENNER: Well, you are not worried  
23 about just a maximum force. As II.D.1 says, it is a  
24 dynamic force and therefore you are worried about what  
25 affect it would have within the internals of the valve,

1 through the pilot operator and then the main valve and  
2 that effect on closure.

3 WITNESS HODGES: Yes, it gets into really  
4 looking at the valve opening. It is really kind of a  
5 rate, a water load as opposed to a steam load. It gets  
6 into reclosing. Is there deformation in the valve?  
7 There are a lot of things like this that you could  
8 consider, and in fact we found out in the PWR program  
9 that some of the PWR valves behave very poorly with  
10 water going through them.

11 JUDGE BRENNER: Thank you.

12 MR. IRWIN: Excuse me, Judge Brenner. I think  
13 Dr. Crawford was trying to supplement that answer.

14 WITNESS CRAWFORD: I was going to attempt to  
15 put things in perspective. Wayne spoke about the  
16 capacity of the valve, and that is something that has to  
17 be addressed. And he talked about the opening and  
18 closing of the valve and the effect that the dynamic  
19 loads due to the fluid or the passing through the valve,  
20 as well as due to the dynamic forces that are  
21 transmitted to the valve by the attached piping.

22 All of these factors have to be considered on  
23 whether that valve is going to operate, namely open and  
24 close. And it was primarily the purpose of this test to  
25 demonstrate the valve operability, namely that it would

1 open and close under those dynamic loading conditions,  
2 not only from the fluid in the pipe but the interactions  
3 between the piping and the valve, the stresses, if you  
4 will; and then also to determine the capacity, the  
5 pressure-relieving capacity of this valve.

6           So all of these things are in fact  
7 inter-related, and in this process you seem to be  
8 getting -- you know, we are answering a little bit of it  
9 at a time, and I was hoping to try to put that  
10 together.

11           JUDGE BRENNER: That is helpful. And mostly I  
12 was trying to see if there would be a certain direction  
13 between today and tomorrow in hearing back. I was  
14 trying to put a context on the liquid flow and what the  
15 concerns were, and both you and Mr. Hodges have helped  
16 me a lot on that. Thank you.

17           (Pause.)

18           Incidentally, the other three people up here  
19 probably knew all of this, but I didn't.

20           (Laughter.)

21           BY MS. LETSCHE: (Resuming)

22           Q     Dr. Crawford, I believe in response to a  
23 question from Judge Jordan you indicated that you  
24 considered a case where the SRV discharge line ruptured  
25 and discharged into the drywell. That was one of the

1 events that you considered, is that right?

2 A (WITNESS CRAWFORD) Yes, that's correct.

3 Q Did you also consider a discharge line rupture  
4 into the wetwell?

5 A (WITNESS CRAWFORD) We looked at the stresses  
6 in the line for the severe pipe high pressure loading  
7 cases and we took a typical line and analyze that  
8 line. There was a reduced scale test that was performed  
9 and these results demonstrated, both analytically and  
10 the reduced scale test, that the maximum loads occurred  
11 in that portion of the line that was in the drywell, and  
12 that we have no reason to believe that the stresses or  
13 the loads in the line in the wetwell are greater than  
14 they are in the drywell.

15 And we have no reason, since there is less  
16 line in the wetwell, to consider a break in the  
17 wetwell.

18 (Counsel for Suffolk County conferring.)

19 Q So I take it the answer to my question was  
20 no?

21 A (WITNESS CRAWFORD) We did not analyze for a  
22 double-ended break in the wetwell, no.

23 Q Mr. Hodges, are high pressure liquid flow  
24 events real events that have happend at BWR's or are  
25 they just hypothetical?

1           A       (WITNESS HODGES) Do you mean high pressure  
2 liquid flow through the relief valves, I assume?

3           Q       Yes.

4           A       (WITNESS HODGES) I believe it has occurred on  
5 two occasions. Maybe more, but I'm aware of two.

6           Q       What were the consequences of those in  
7 general?

8           A       (WITNESS HODGES) They were not very severe,  
9 at any rate. There may have been in one case a stuck  
10 valve. I don't recall for sure.

11          A       (WITNESS CRAWFORD) I can add some  
12 clarification to that. Based upon the information that  
13 is contained in the 9/17 submittal, there were four  
14 events where there was some suspected two-phase or  
15 liquid flow through the valves and there was specific  
16 evaluation and it was reported that there was no damage  
17 to the valves or their mounting.

18                   (Counsel for Suffolk County conferring.)

19          A       (WITNESS CRAWFORD) And these plants, at the  
20 time that these events occurred, did not have the level  
21 A trip.

22          Q       The events that you are mentioning there, were  
23 they all domestic, in the United States, plants in the  
24 United States?

25          A       (WITNESS CRAWFORD) Three were in the United

1 States and one was a reported event in Germany.

2 (Counsel for Suffolk County conferring.)

3 Q Mr. Hodges, would a vessel overfill at a high  
4 pressure cause higher dynamic forces than the alternate  
5 shutdown cooling mode event?

6 A (WITNESS HODGES) If that vessel overfill  
7 resulted in filling the steam lines and it occurred at  
8 high pressure, that most likely would be the case.

9 JUDGE BRENNER: Mr. Hodges, what failures do  
10 you have to assume to get to that point?

11 WITNESS HODGES: First you have to look at  
12 what is causing the overfill, and if you take the worst  
13 case, which would be a rapid fill, it has to be a  
14 failure in the feedwater system at high capacity, would  
15 give you the most rapid filling of the vessel. Then you  
16 would have to have a level A failure to trip the feed  
17 pumps.

18 You would also have to have a failure of the  
19 operator to shut off the feed pumps or to switch, and  
20 there also are trips of the turbine which would cause  
21 closure of the main steam line isolation valves, which  
22 then would stop the supply of steam to the feedwater  
23 pumps. You trip the turbine on vibration due to high  
24 moisture.

25 So that it would be a combination of failures

1 that would have to occur before you got to that  
2 condition, and all of these would occur prior to the  
3 filling of the steam lines, or even to the water getting  
4 up to the steam lines.

5 JUDGE JORDAN: Are you saying that these  
6 events are so unlikely that you didn't have to consider  
7 them

8 WITNESS HODGES: That was our conclusion.

9 JUDGE BRENNER: That is the part that hasn't  
10 been bureaucratically finalized, but you are going to  
11 tell us more about that tomorrow, is that right

12 WITNESS HODGES: Yes.

13 JUDGE BRENNER: In light of what you said in  
14 answer to my question, when you do explain more tomorrow  
15 I would be interested in why Pilgrim gave rise to the  
16 concern. I understand it doesn't have the level A trip,  
17 but there are a lot of other things that have to happen  
18 also. And what I want to get at tomorrow is whether  
19 this actually occurred at Pilgrim or whether you saw  
20 enough there as to be worried about an event as a  
21 possible precursor to something else.

22 WITNESS HODGES: I can talk about it now or  
23 tomorrow, whichever is your preference.

24 JUDGE BRENNER: I will let you talk with the  
25 parties and counsel first, so we don't get it in many

1 different places.

2 JUDGE JORDAN: Ms. Letsche, did I understand  
3 your question was with respect to BWR's or PWR's?

4 MS. LETSCHE: It was with respect to BWR's.

5 JUDGE JORDAN: Thank you.

6 (Counsel for Suffolk County conferring.)

7 JUDGE BRENNER: You look a little puzzled Mr.  
8 Hodges, and maybe it's my fault. Let me try one  
9 question at this point. At Pilgrim did you have liquid  
10 flow at high pressure through the SRV's?

11 WITNESS HODGES: No, you did not.

12 JUDGE BRENNER: Okay.

13 BY MS. LETSCHE: (Resuming)

14 Q Did you have that condition at Dresden 2, Mr.  
15 Hodges?

16 A (WITNESS HODGES) That condition occurred at,  
17 I think it was, two of the Dresden plants, not just  
18 Dresden 2, at two of the Dresden plants prior to the  
19 installation of the level A trip. And in fact, that  
20 was, I think, the motivation for putting on the level A  
21 trip.

22 JUDGE JORDAN: But I do remember, I believe,  
23 that the level A trip is not safety grade; is that  
24 right?

25 WITNESS HODGES: That is correct.

1 BY MS. LETSCHE (Resuming):

2 Q Gentlemen, on page 7 of your prefiled  
3 testimony, you state that the generic test results are  
4 applicable to Shoreham, and that they documented the  
5 Shoreham SRVs meet the NUREG-0737 requirement. Was the  
6 Shoreham piping configuration used in the generic test  
7 program?

8 A (WITNESS MALOVRH) The piping configuration in  
9 the test facility was not identical to the Shoreham  
10 piping configuration.

11 Q What is the basis for your conclusion here  
12 that the Shoreham valve performance has been adequately  
13 tested, in light of the fact that the configurations  
14 were not the same?

15 A (WITNESS MALOVRH) There are many  
16 considerations. I presume you are referring  
17 specifically to the difference in piping at this time?

18 Q Yes.

19 A (WITNESS MALOVRH) The first thing that needs  
20 to be done is to identify in what manner differences in  
21 piping configuration could potentially affect the  
22 conclusions of the test program. We have looked at that  
23 in some detail and we have identified essentially four  
24 potential ways in which piping configuration could have  
25 some effect on the applicability of the test results.

1 And we have evaluated each of these possible  
2 considerations and concluded that, in fact, in those  
3 regards, the test facility was applicable to Shoreham.

4 JUDGE CARPENTER: Excuse me, is that  
5 documented anyplace?

6 WITNESS MALOVRH: The specifics are not at  
7 this time, no, sir.

8 JUDGE CARPENTER: Thank you.

9 BY MS. LETSCHE (Resuming):

10 Q What are the characteristics that you  
11 identified?

12 A (WITNESS MALOVRH) First of all, the primary  
13 concern would be whether or not the flow conditions that  
14 occurred during the test in the test facility would be  
15 comparable to or bounding to those that would be induced  
16 in the Shoreham piping.

17 Taking them one at a time, the first  
18 considerations would be the general characteristics and  
19 amplitudes of the dynamic loads themselves; the initial  
20 transient part of the dynamic load that resulted from  
21 the discharge event; and in terms of piping  
22 configuration, the single feature there which could  
23 potentially have an effect would be the length of piping  
24 which is submerged beneath the pool surface.

25 The reason for that is that in the discharge

1 event, there is some significant pressurization of the  
2 air volume in the process of trying to clear out the  
3 water, which has some inertial force that has to be  
4 overcome. In the test facility, the submerged length of  
5 piping was approximately 13 feet. In Shoreham, the  
6 as-built piping configuration is such that depending  
7 upon the pool surface elevation, which does vary within  
8 some small range under operating conditions, the range of  
9 submergence on Shoreham is approximately 12 1/4 feet to  
10 13 1/4 feet, which is extremely close to the test  
11 configuration. And at worst, 1 or 2 percent deviation,  
12 which is certainly not significant insofar as affecting  
13 the conclusions of the test.

14           This is the first concern. Would you like me  
15 to go on?

16           Q     Let me ask you a couple of questions about  
17 that one, please. In the test configuration, was the  
18 submergence of the discharge line vertical or horizontal  
19 in the water?

20           A     (WITNESS MALOVRH) It was at approximately an  
21 18 degree slope.

22           Q     So that is pretty close to horizontal, right?

23           A     (WITNESS MALOVRH) Yes. 18 degrees deviation  
24 from horizontal.

25           Q     And it is vertical at Shoreham, is that right?

1           A       (WITNESS MALOVRH) That is correct. The  
2 concern, however, is really the mass of water which is  
3 entrained within the pipe, and the fact that it is  
4 entrained in a nearly horizontal position versus  
5 vertical is really not significant in any manner.

6           Q       Wouldn't that have significance with respect  
7 to the back pressure?

8           A       (WITNESS MALOVRH) No. The key parameter is,  
9 again, the length which determines the mass of the  
10 liquid which has to be cleared from the line. And the  
11 proper mass was in the test configuration as compared to  
12 Shoreham.

13                       (Counsel for Suffolk County conferring.)

14          Q       What was the -- you can go on with your  
15 considerations that you were telling me before. What is  
16 the next one you considered?

17          A       (WITNESS MALOVRH) First of all, I was  
18 addressing in general the flow conditions in the  
19 discharge pipe. And again, I first described the  
20 initial effect which is the initial pressurization.

21                       The next concern of significance is the steady  
22 state back pressure which would be developed in the  
23 discharge piping after the initial transient. The key  
24 parameter here is the total pressure loss from the valve  
25 through the discharge device. Insofar as that resultant

1 back pressure is concerned, in an actual plant, the  
2 majority of that pressure loss is due to losses through  
3 the quencher discharge device.

4           In the test configuration, an orifice plate  
5 was installed and it was sized such that a direct  
6 measurement of the back pressure would demonstrate that,  
7 in fact, the proper back pressure resulted from the line  
8 losses, primarily resulting at either the quencher in an  
9 actual plant, or primarily because of the orifice plate  
10 in the test facility. And in fact, the back pressures  
11 that were achieved in the test facility were somewhat  
12 greater than those which will occur in Shoreham.

13       Q     I would like to ask you a couple of questions  
14 related to that. The test configuration, is it a ram's  
15 head configuration for the discharge? Is that right?

16       A     (WITNESS MALOVRH) That is right.

17       Q     Shoreham has a "tee" quencher, is that right?

18       A     (WITNESS MALOVRH) That is correct.

19       Q     Did you analyze the significance of that  
20 variation?

21       A     (WITNESS MALOVRH) As I described the  
22 consequence of that variation is that the resultant back  
23 pressure during steady state would be substantially, or  
24 could be substantially different, depending upon which  
25 discharge device is installed. The analysis of Shoreham

1 obviously analyzes the case with a quencher device in  
2 determining what the required or expected back pressure  
3 would be.

4           And as I said, the orifice plate was used in  
5 the test facility and the actual back pressure that  
6 resulted was measured to confirm that, in fact, the  
7 proper conditions did occur.

8           In other words, we did adequately simulate the  
9 effects of the dequencher insofar as the flow conditions  
10 are concerned.

11           Q     That the generic test simulated the use of the  
12 "tee" quencher? Is that what you are saying?

13           A     (WITNESS MALOVRH) Exactly, yes.

14           JUDGE CARPENTER: I would like to ask for the  
15 numerical value of the back pressure.

16           WITNESS MALOVRH: I have not committed to  
17 memory the exact numerical values. I believe that in  
18 the test configuration the resultant back pressure was  
19 approximately 40 percent of the inlet pressure. Perhaps  
20 someone else on the panel could confirm that.

21           WITNESS CRAWFORD: The test configuration was  
22 set up with the orifice so that the steady state back  
23 pressure was between 35 and 40 percent of the inlet  
24 pressure, which exceeded the back pressure of all of the  
25 plants that were members of this test group.

1                   WITNESS MALOVRH: Does that answer your  
2 question?

3                   JUDGE CARPENTER: And what is a typical inlet  
4 pressure?

5                   WITNESS CRAWFORD: In the case of the water  
6 test, the inlet water pressure was from zero to 250, or  
7 atmospheric to 250. In the case of the steam tests that  
8 were performed, I think the maximum steam pressure was  
9 about 1080 or 1100 psi.

10                  JUDGE CARPENTER: Thank you.

11                  BY MS. LETSCHE (Resuming):

12                  Q     Mr. Malovrh, did the generic tests take into  
13 account the difference between the length of the  
14 discharge line on the test facility and on the Shoreham  
15 discharge line?

16                  A     (WITNESS MALOVRH) As stated in the testimony,  
17 the test configuration had a piping configuration with a  
18 length of 112 feet from the valve to the discharge. In  
19 Shoreham, there are 11 lines; each one is somewhat  
20 different. The average is approximately 137, I believe,  
21 or very near to that.

22                  The significance of this difference that does  
23 exist or the potential effect would show up primarily in  
24 some additional line losses because of additional  
25 friction in the line in the extra length. And the

1 consequence of that is primarily insofar as it could  
2 affect the back pressure. However, the overriding  
3 factor in the back pressure are losses through the  
4 quencher device, and therefore, the overall line losses  
5 in the entire line are actually small compared to those  
6 across the quencher. And secondary variations between  
7 the test facility and the actual plant are, in fact, not  
8 of consequence.

9 Q Can you quantify the variations that you  
10 mentioned?

11 A (WITNESS MALOVRH) I think I quantified the  
12 variation in lengths.

13 Q No, that isn't what I meant. I meant at the  
14 end of your answer where you said the variations are not  
15 of any consequence.

16 A (WITNESS MALOVRH) Let me answer that by saying  
17 that the actual length of the Shoreham lines obviously  
18 were used in our analyses which calculate the back  
19 pressures in the Shoreham plant. And that as we said  
20 earlier, the back pressures achieved in the test were  
21 somewhat in excess of what is expected at Shoreham,  
22 which bears out that however small those differences  
23 are, they are overshadowed by the fact that the actual  
24 back pressure achieved did bound Shoreham, regardless of  
25 these differences that did exist.

1 MS. LETSCHE: Judge Brenner, I wonder if this  
2 might be an appropriate time to take the afternoon  
3 break. I would like to go through my cross plan and see  
4 where I am going to go from here.

5 JUDGE BRENNER: Let me ask one quick question  
6 on your last point.

7 Mr. Malovrh, in comparing the back pressure in  
8 the Shoreham-specific analysis to the back pressure  
9 simulated through the test facility, and your conclusion  
10 that the test facility back pressure bounded the  
11 Shoreham condition, were you comparing average back  
12 pressures for Shoreham to average back pressure for the  
13 test facility? Or were you talking about the maximum  
14 back pressure?

15 WITNESS MALOVRH: It was the maximum back  
16 pressure calculated for Shoreham.

17 JUDGE BRENNER: I don't know if that is an  
18 important question.

19 WITNESS MALOVRH: It is. What ultimately is  
20 controlling for the sum total of the 11 valves is that  
21 one which would have the largest back pressure.

22 JUDGE BRENNER: Is there much of a variability?

23 WITNESS MALOVRH: As I recall, it is on the  
24 order of 10 to 15 percent perhaps between the 11 valves.

25 JUDGE BRENNER: Okay. Let me try one more

1 because it is lingering and this is somewhat pertinent  
2 to Mr. Boseman, and this is a follow-up to something you  
3 testified to yesterday. And it took a while yesterday  
4 because I don't think there was a meeting of the minds  
5 between the questioner and you.

6           You talked about the generic design of a valve  
7 and also, the different variances and your object to  
8 bound the range of atmosphere to -- well, to 15 percent.  
9 Strike atmosphere. To bound the range of 15 percent to  
10 45 percent. And then, the question I think that was  
11 implicit in some of the questions is: why do you need  
12 specific differences in some of the accoutrements to the  
13 valve, if you will, bellows and so on, if you can bind  
14 it? And I want to make sure I understand your answer.

15           Your answer is because of the way it evolved.  
16 That is, at first, you had the plant-specific designs  
17 and now you have achieved the generic design with a  
18 range, from which I infer from this point on, you would  
19 not expect to have to have those variances for the  
20 changes. Am I right?

21           WITNESS BOSEMAN: That is correct, sir.

22           JUDGE BRENNER: I asked that only because  
23 there was some surprise when you said the generic one,  
24 in fact, bounds the individual ones, and it was a matter  
25 of the chronology in which they were developed.

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Let's take a break until 3:20.

(A short recess was taken.)

1 JUDGE BRENNER: We are ready to continue with  
2 the County's questioning.

3 I guess for the record I should disclose we  
4 had a brief ex parte conversation with Ms. Letsche to  
5 talk about the sequence of the cross plan down to a  
6 detail that would have disclosed the substance. The  
7 purpose was that I have some questions. In the name of  
8 efficiency, if they were going to be covered at certain  
9 points I was going to be able to hold off and not  
10 disrupt the flow.

11 BY MS. LETSCHE: (Resuming)

12 Q Mr. Wright, has the NRC Staff performed any  
13 analysis of the Shoreham piping configuration with  
14 respect to the applicability of the generic test  
15 results?

16 A (WITNESS WRIGHT) You're talking about the  
17 piping configuration. I think Mr. Cherny could better  
18 answer that question.

19 Q Well, let me ask you, Mr. Wright, to refer to  
20 -- you filed the testimony on this contention, isn't  
21 that right?

22 A (WITNESS WRIGHT) That's correct.

23 Q On page 4 of your prefiled testimony, you  
24 discuss the current status of the Staff's review of the  
25 results of the Applicant's test program, and you state

1 there that -- this is the answer to question 8:  
2 "Although the Staff has not completed its detailed  
3 review of NEDE-24988-P or the applicability of this  
4 document to the Shoreham-specific SRV's, based on a  
5 preliminary review the Staff has concluded that the  
6 Shoreham SRV's have been demonstrated to open and  
7 reclose under the conditions tested for."

8           Now, in the preliminary review referenced in  
9 there, has the NRC Staff performed an analysis of the  
10 piping configuration?

11           A       (WITNESS WRIGHT) The answer is no.

12           Q       Have you performed any analysis of the  
13 Shoreham piping or supports for the liquid discharge  
14 condition?

15           A       (WITNESS WRIGHT) No. I believe we have asked  
16 for some of these things from them in the list of  
17 questions that is out.

18           Q       All right. Before I get into that, which I am  
19 going to go on to in a minute, let me ask you what your  
20 preliminary review was that you referenced in your  
21 testimony. What did you look at?

22           A       (WITNESS WRIGHT) Well, in general we were  
23 looking at the type of valves, the pressures under which  
24 the test was conducted, the sequence of events in terms  
25 of steam flow, and then valve opening under liquid

1 conditions, looking at the instrumentation, making what  
2 I would say is a general determination that the generic  
3 program was, let's say, properly focused into what it  
4 was accomplishing.

5           Now, beyond that we are at the stage of having  
6 that report in, of now saying that the claim that has  
7 been made in the generic report that bounds all of these  
8 plants, asking specific questions of the Applicant, each  
9 one, as to -- well, I don't want to get into the list,  
10 but basically that is what I'm leading to, is describe  
11 your piping configuration and that of the generic  
12 program and tell us why you feel it is representative.

13           They did send in a letter that said that their  
14 conclusion was there just wasn't enough basis for us to  
15 make that judgment. And I think that is why the issue  
16 remains open at this point, although there is nothing  
17 wrong with the generic report that we have or any  
18 comments we have on that right now.

19           Q     I am going to get to your specific questions  
20 in your letter and I know you want to talk about that.  
21 But before I get there, I do want to understand what it  
22 is you're talking about in your prefiled testimony. The  
23 preliminary review that you have conducted thus far, was  
24 that based just on looking at the generic test results  
25 and the information contained in the NEDE document?

1           A     (WITNESS WRIGHT) Yes. In reviewing that  
2 document, we're looking at it from a generic point of  
3 view as opposed to a Shoreham specific.

4           Q     And the preliminary review that you reference  
5 in the answer to question 8 of your testimony did not  
6 involve any review of any Shoreham-specific information,  
7 is that right?

8           A     (WITNESS WRIGHT) That is correct to the  
9 extent that if you're talking about Shoreham piping  
10 configuration, Shoreham snubbers or pipe supports and  
11 things of that nature, no, that is not in the review.  
12 In terms of was it the same valve, of course we are  
13 looking at which plant has which valve and which model.

14          Q     So you know it is the two-stage Target Rock  
15 valve?

16          A     (WITNESS WRIGHT) Yes.

17          Q     Did your review involve your looking at any  
18 Shoreham-related documents other than the submittal  
19 letter that you referenced?

20          A     (WITNESS WRIGHT) No.

21               MS. LETSCHE: I would like to have marked as  
22 Suffolk County Exhibit No. 34 for identification a  
23 four-page document, which is a letter dated July 8,  
24 1982, from A. Schwencer, chief, licensing branch number  
25 2, division of licensing, to Mr. M.S. Pollock, vice

1 president - nuclear, Long Island Lighting Company,  
2 "Subject: Request for Additional Information, Shoreham  
3 Nuclear Power Station," with an address list and an  
4 enclosure entitled "Request for Additional Information  
5 by the Equipment Qualification Branch, TMI Action Plan  
6 II.D.1."

7 JUDGE BRENNER: We are getting copies now for  
8 the first time. It would have been helpful to get it at  
9 the beginning of the break.

10 MS. LETSCHE: I apologize for that, Judge  
11 Brenner.

12 (The document referred to  
13 was marked Suffolk County  
14 Exhibit No. 34 for  
15 identification.)

16 BY MS. LETSCHE: (Resuming)

17 Q Mr. Wright, do you have a copy before you of  
18 what has been marked as Suffolk County Exhibit No. 34  
19 for identification?

20 A (WITNESS WRIGHT) Yes, I do.

21 Q Is this the letter that you have referred to  
22 that was recently sent to LILCO requesting additional  
23 information relating to the II.D.1 NUREG item?

24 A (WITNESS WRIGHT) Yes, it is.

25 Q Did you prepare the request that is contained

1 on the enclosure to this exhibit?

2 A (WITNESS WRIGHT) I prepared the enclosure,  
3 yes. Yes. I might amplify that. In terms of preparing  
4 the enclosure, the report, the NEDE report, the  
5 proprietary version was reviewed by one of our technical  
6 assistance contractors, EG&G, which came up with a  
7 question and comment list which was sent to NRC. And  
8 from that list -- it was not taken verbatim. There were  
9 changes. I would have to make a comparison now, but  
10 from that list or using that list these questions then  
11 were prepared.

12 Q Were there questions and answers on the EG&G  
13 recommendation or questions for information that you did  
14 not include on this enclosure?

15 A (WITNESS WRIGHT) Not to my knowledge. I  
16 think it was a question of consolidating the number of  
17 questions we were going to ask. I'm just saying,  
18 instead of where they had two or three which we thought  
19 we could consolidate into one, I think that was the  
20 approach used. But I would actually have to make a  
21 direct comparison.

22 Q Did you do the consolidation or whatever,  
23 revisions, of the EG&G questions yourself?

24 A (WITNESS WRIGHT) Yes, I did the  
25 consolidation, and Mr. Cherny and another person in his

1 branch reviewed that consolidation.

2 JUDGE BRENNER: Ms. Letsche, excuse me. I  
3 would like to ask the Staff.

4 Was this served on the Board at the time it  
5 was issued? I'm not saying it wasn't, but none of us up  
6 here recall it.

7 MR. REPKA: I don't recall that, either. We  
8 are trying to figure that out ourselves. We don't know  
9 if this went out. We routinely try to send these things  
10 out, so we assume that it was. But we're just not  
11 sure.

12 JUDGE BRENNER: Well, we have had a standing  
13 order in this case that we get all of the  
14 correspondence.

15 MR. REPKA: We're aware of that, and that is  
16 why I say we assume it went out. Routinely, we try to  
17 send these things out.

18 JUDGE BRENNER: We're not listed on the list  
19 here.

20 MR. REPKA: That is because of the  
21 bureaucracy. Licensing and ELD have separate service  
22 lists, for reasons which are not apparent to me.

23 JUDGE BRENNER: I never figured that one out,  
24 either, in a lot of years. So good luck.

25 (Laughter.)

1           JUDGE BRENNER: All right. We may have  
2 received it. I only raise it so that for the future you  
3 touch base with all of the licensing documents coming  
4 out on follow-up questions, particularly since, as you  
5 know, we've been focusing on a lot of these open items  
6 and this is an easy way for us to be apprised of matters  
7 happening related to them.

8           However, bear in mind that if something is key  
9 that you want to bring to our attention formally, that  
10 informal service may not be sufficient, because we get a  
11 lot of papers. We have had that conversation in another  
12 context before, also.

13           So thanks. If you've been checking, thank  
14 you. And keep checking.

15           (Pause.)

16           BY MS. LETSCHE: (Resuming)

17           Q    Mr. Wright, directing your attention to the  
18 enclosure, to the letter that has been marked as Suffolk  
19 County Exhibit No. 33 -- I'm sorry, 34 -- you relate  
20 that to the December 9, 1981, letter of LILCO. That,  
21 you indicate in this enclosure, does not provide the  
22 basis for LILCO's conclusions that the generic test  
23 results are applicable to the Shoreham bounds.

24           Was any request for additional information  
25 sent by the Staff to LILCO at any time prior to this

1 request between the December 9th letter from LILCO and  
2 this letter here?

3 A (WITNESS WRIGHT) None to my knowledge.

4 Q Directing your attention to the first item on  
5 here, that is the enclosure, where you request that  
6 LILCO describe the discharge pipe configuration used at  
7 Shoreham and compare the anticipated loads on valve  
8 internals in the Shoreham configuration to the measured  
9 loads in the test program and discuss the impact of any  
10 differences in loads on valve operability, what prompted  
11 you to ask for that information?

12 A (WITNESS WRIGHT) Well, I think I will step  
13 back just a little bit and say, the letter that was  
14 received basically references the NEDE report and draws  
15 a conclusion. At this point we aren't arguing the  
16 conclusion. We're just saying we don't see the basis  
17 and we want to see that basis to make sure the  
18 conclusion has been properly drawn.

19 We recognize in the generic report that each  
20 plant is going to have somewhat different piping  
21 configuration, and what we are asking for, which in  
22 earlier cross-examination that was coming out, was what  
23 is this basis that allows you to draw the conclusion.  
24 That is what we're asking for. Not that we doubt that  
25 conclusion at this point; just merely that the basis is

1 not there.

2 Q When you say you don't doubt the conclusion,  
3 is the conclusion that you're referencing the fact that  
4 the generic test results are applicable to the Shoreham  
5 configuration?

6 A (WITNESS WRIGHT) They are applicable in terms  
7 of what was done, yes. Okay, now -- well, okay. The  
8 test that was done is claimed to be representative.  
9 We're asking now -- we're not asking only Shoreham, but  
10 we're asking each Applicant, look at your piping  
11 configuration and tell us in your words why you think  
12 the generic report is representative in terms of loads  
13 that would be placed upon a valve due to various  
14 discharge lines.

15 Q Now, with respect to this particular request,  
16 the difference between the ram's head configuration and  
17 the "Tee" quencher configuration, did you ask for this  
18 information because you anticipate a possibility that  
19 the load -- that there would be a load differential?

20 A (WITNESS WRIGHT) No. I think that, as  
21 opposed to knowing the answer before you ask the  
22 question, I think it was a matter of, one of an example  
23 in terms of asking for the discharge piping at Shoreham,  
24 to note that there are differences between what was in  
25 the generic program and what is at the plant. And I

1 think it is more as an example than it is a specific  
2 concern.

3 Q Are you saying that what you need from LILCO  
4 is not just a comparison of the loads, the load  
5 differentials relating to the ram's head versus the  
6 "Tee" quencher, but also a comparison of all loads that  
7 would be involved in the testing?

8 A (WITNESS WRIGHT) Yes. We want a comparison  
9 not merely of just one item, but if there are  
10 differences to have them all reported.

11 JUDGE CARPENTER: Ms. Letsche, I want to be  
12 sure I understand. What is meant by "loads"?

13 WITNESS WRIGHT: Well, as a liquid, let's say,  
14 would discharge through an orifice or a ram's head or a  
15 "Tee" quencher, that movement creates a force which is  
16 called the load. It places a load. So there would be a  
17 liquid load if you had moving liquid through the pipe.  
18 If there are supports, a snubber or what-not, there  
19 would be a load or a force at that particular point.

20 JUDGE CARPENTER: Are you including any  
21 possible movement of the pipe which would apply a force  
22 to the valve?

23 WITNESS WRIGHT: Yes. If the discharge of the  
24 liquid would cause significant movement of the pipe,  
25 that would be a load. Now, on the other hand, there

1 might be snubbers or other devices to stop the movement  
2 of the pipe, and that is what we are asking for.

3 JUDGE CARPENTER: Thank you for the  
4 clarification.

5 BY MS. LETSCHE: (Resuming)

6 Q Going on to the item number 2 of this  
7 enclosure, it states, "The test configuration utilized  
8 no spring hangers as pipe supports, but the  
9 plant-specific configurations do use spring hangers in  
10 conjunction with snubber and rigid supports."

11 I assume the plant you're talking about there  
12 is Shoreham; is that right?

13 A (WITNESS WRIGHT) Yes. Well, I would say --

14 A (WITNESS CHERNY) Could I answer that? I  
15 would like to say, that did not come from our  
16 consultant. That came from my branch, as a matter of  
17 fact.

18 MS. LETSCHE: Judge Brenner, I don't want to  
19 cut Mr. Cherny off, but I believe Mr. Wright indicated  
20 he wrote, prepared this enclosure, and if that is not  
21 the case then maybe Mr. Cherny should explain it, if he  
22 wrote this instead of Mr. Wright. But I would like Mr.  
23 Wright to explain what he meant if in fact he wrote it.

24 JUDGE BRENNER: I think we just started to  
25 hear that from Mr. Cherny. I don't care which one of

1 the two explains. What is the source of that request?

2 WITNESS CHERNY: The concern there arises --

3 JUDGE BRENNER: No, wait. Who was the source  
4 of that request? Did you write that request?

5 WITNESS CHERNY: It came from one of the  
6 people in the mechanical engineering branch, of which I  
7 am a member.

8 JUDGE BRENNER: All right.

9 WITNESS CHERNY: Who happened to review the  
10 test configuration.

11 I think I mentioned yesterday that there have  
12 been a lot of people involved in the review of this  
13 report at a couple of branches within the Office of  
14 Nuclear Regulation. We have had a person from research  
15 on loan to us who has participated in this --

16 JUDGE BRENNER: Let me cut you off there.  
17 That is not the problem. My problem is understanding  
18 something Dr. Wright attested to earlier. Dr. Wright, I  
19 thought you said you wrote these in consultation with  
20 EG&G. Did I misunderstand your previous testimony?

21 WITNESS WRIGHT: I am possibly not  
22 understanding the proper language. Some of these -- and  
23 I would have to go back, and certainly not number 2 --  
24 were a consolidation of questions asked by EG&G, and I  
25 would have to go back and check and tell you which

1 ones.

2           Some of them came from the mechanical  
3 engineering branch, such as question 2, in terms of  
4 their review. If the word "preparation" meant that I  
5 wrote every line in this enclosure word for word, then  
6 that was my misunderstanding of the word "preparation."

7           If the question really was, was I responsible  
8 for generating this list of questions and aware of what  
9 they were and wrote some of them, then that is a more  
10 correct response.

11           JUDGE BRENNER: Well, "generating" to me also  
12 means wrote. You kind of coordinated it, and as part of  
13 that coordination you wrote some of them and some of it  
14 was input from other Staff members, as well as from  
15 consultants?

16           WITNESS WRIGHT: That is correct.

17           JUDGE BRENNER: Okay. It sounds like this one  
18 is Mr. Cherny's, Ms. Letsche.

19           MS. LETSCHE: I think you're right, Judge  
20 Brenner.

21           JUDGE BRENNER: Well, it's hard for counsel to  
22 know who to ask and that is why counsel asks some of the  
23 preliminary questions that were asked.

24           WITNESS CHERNY: Could you re-ask the original  
25 question?

1 BY MS. LETSCHE: (Resuming)

2 Q Well, the first question I asked, which was I  
3 believe where you broke in, Mr. Cherny, or wanted to add  
4 something, was the reference to plant-specific  
5 configurations, does that refer to Shoreham?

6 A (WITNESS CHERNY) Yes. I don't think we have  
7 sufficiently detailed information on all of the  
8 different supports and things associated with each and  
9 every discharge pipe on the Shoreham plant to be able to  
10 address this question ourselves. It is generally known  
11 that spring hangers are used on this type of piping, but  
12 we don't really have the information housed in-house to  
13 know whether Shoreham has any or not.

14 That is really what prompted this question.  
15 There is a concern that when you put liquid flow through  
16 these pipes the weight of the water, the mass of water,  
17 is going to be heavier than when you have steam going  
18 through them, and that can cause or it has a potential  
19 for causing larger deflections on the piping, the other  
20 supports, and on the valve itself than would necessarily  
21 occur from the lighter weight on steam. That is what is  
22 behind this question.

23 Q Mr. Wright, is number 3 one of your items?

24 A (WITNESS WRIGHT) Yes, it is.

25 Q Number 3 refers to the fact that the generic

1 report did not identify any valve functional  
2 deficiencies or anomalies encountered during the test  
3 program, and then you request that LILCO provide a  
4 description of the impact on valve safety function of  
5 any valve functional deficiencies or anomalies  
6 encountered during the program.

7           Can you explain what the point of this request  
8 is?

9           A       (WITNESS WRIGHT) Yes. Sometimes in the  
10 conduct of a test program anomalies or deficiencies  
11 occur, however later on in the program a series of  
12 successful tests are completed. And our concern was to  
13 make sure that if none were reported none actually did  
14 occur. And so it is a question to confirm that there  
15 weren't any anomalies or deficiencies somewhere else  
16 that were decided not to be reported.

17          Q       Could it also be the case that the criteria of  
18 a given test program would be so general that certain  
19 anomalies wouldn't come out in light of those criteria?

20          A       (WITNESS WRIGHT) No, I think the Staff is  
21 satisfied with the criteria used in the test program.  
22 There is no question about the criteria. It is just a  
23 question of whether something occurred once and then was  
24 put aside and then the same valve taken up later, was  
25 tested successfully in the earlier part and was not

1 necessarily reported.

2 Q That is something you've encountered with  
3 other test programs?

4 A (WITNESS WRIGHT) Well, I must say, not  
5 necessarily in the nuclear industry, but in test  
6 programs, yes, I have seen that occur.

7 Q Moving on to number 4 --

8 JUDGE BRENNER: Ms. Letsche, could I stay with  
9 number 3 for a moment?

10 MS. LETSCHE: Certainly.

11 JUDGE BRENNER: Dr. Wright, I like to  
12 categorize things sometimes, and as we approach this  
13 contention I had at least two categories in mind. That  
14 is, questions the Staff would have as to the generic  
15 efficacy of the test program and then questions the  
16 Staff would have as to the validity of applying that  
17 generic program to the plant-specific situation at  
18 Shoreham.

19 Given those rough categories, I thought I  
20 understood from the conclusion in the SER and your  
21 explanation as to how your testimony matched up with the  
22 SER that the only thing left open was the second  
23 category, that is the application of the generic program  
24 to the plant-specific situation. And in fact I thought  
25 this list of questions in general was characterized as a

1 list that would fall in that category, because that was  
2 what was said and that was the open area in the SER.

3           However, as I look at item 3 and possibly one  
4 other that we haven't gotten to yet, it looks to me like  
5 that is not a plant-specific question at all, but is  
6 going to the efficacy of the program and in fact could  
7 have been asked of the owners group, rather than the  
8 specific utilities. Am I misreading that?

9           WITNESS WRIGHT: I think that is a fair  
10 interpretation, the mechanism of which -- we were  
11 looking for the response, seeing that a number of valves  
12 were tested, could come either way. You could ask this  
13 question once of several Applicants and get an answer  
14 and have it over with, or you could go back to the  
15 owners group.

16           JUDGE BRENNER: All right. But there is a  
17 finding in the SER that the Staff is happy with the  
18 test. Yet you're still asking questions about the test,  
19 and can you straighten me out on that apparent  
20 inconsistency?

21           And I don't want to jump too far ahead, but  
22 item 5 looks like it might fall in that category also.  
23 I don't know what item 6 means, so I can't comment about  
24 that.

25           I'm trying to get a handle on what is closed

1 and what's still open on this contention and in the  
2 Staff's review as related to this contention. And I  
3 don't know if that explanation helps you understand my  
4 question.

5 WITNESS WRIGHT: Well, I think you are  
6 properly addressing, in terms of categorizing, as you  
7 suggested, that we should be more careful, if we have a  
8 question about the generic report, to refer it back  
9 through the BWR owners group as opposed to an  
10 Applicant. And you are picking out 3 and 5.

11 JUDGE BRENNER: I don't care who I ask. My  
12 real concern is, it is inconsistent with the conclusion  
13 in the SER that the generic program is fine and dandy  
14 and you are only worried about the application.

15 MS. LETSCHE: Judge Brenner, I hate to  
16 interrupt you, but I think there is a certain amount of  
17 coaching and discussion going on between counsel and the  
18 witness panel, which I don't think is appropriate.

19 JUDGE BRENNER: I guess I didn't see it at  
20 all. I'm sorry. Do you want to tell me more? Well,  
21 can I get the answer first and then you can tell me?

22 MS. LETSCHE: Well, I just noticed Mr. Irwin  
23 and Mr. Smith carrying on a conversation.

24 WITNESS SMITH: I was wondering whether it  
25 would be appropriate to interrupt and I didn't have your

1 attention. And I think I have an answer to your  
2 question about why the owners group was not submitted  
3 the question.

4 JUDGE BRENNER: That is really not my  
5 question. That was Dr. Wright's answer. And I'm not  
6 worried about who was asked. I'm worried about the  
7 conclusion in the Staff's SER which I paraphrased as  
8 saying they have no questions about the efficacy of the  
9 generic program. And we learned there is one possible  
10 caveat from your testimony, and now I see two other  
11 possible caveats in items 3 and 5 in your questions. So  
12 that is the point of my questions.

13 WITNESS CHERNY: Could I comment briefly on  
14 the SER words? I don't have a copy handy, but I believe  
15 that what most of these SER's had in them was a lead-in  
16 phrase that said, based upon a preliminary review of  
17 generic test results. Is that different for Shoreham?  
18 I'm afraid I don't have a copy of it.

19 JUDGE BRENNER: I'm afraid you left your  
20 caveat home when you wrote this one, because it doesn't  
21 say that, at least not in the final conclusion.

22 You know, we accept words at reasonable face  
23 value, because we will be here forever if we have to  
24 question every word. And I think it is a fair reading  
25 of the totality of the SER that the Staff had nothing

1 left with respect to the generic efficacy of the  
2 program. And if any of the witnesses think I am reading  
3 that wrong, I would sure like to hear about it.

4 WITNESS CHERNY: I don't have a copy of it.

5 JUDGE BRENNER: Well, I think I have Dr.  
6 Wright's agreement with my categorization, anyway, on  
7 3. I don't know, do you agree with me on 5 also?

8 WITNESS WRIGHT: I think that is more a  
9 question in terms of the alternate shutdown cooling  
10 mode, where they expect to cycle the valves.

11 JUDGE BRENNER: But it isn't plant-specific.  
12 It is a question about the overall efficacy of the  
13 owners group testing program, correct?

14 WITNESS WRIGHT: Could you repeat that,  
15 please?

16 JUDGE BRENNER: As I read item 5, it is not in  
17 the category of plant-specific applicability; rather, it  
18 is a question as to the efficacy of the owners group  
19 testing program from a generic point of view.

20 WITNESS WRIGHT: I can't argue that point, or  
21 against that point, I should say.

22 WITNESS HODGES: Just a comment. My first  
23 reading of these questions was at noon today, so I was  
24 not familiar with them prior to today. But as I read  
25 that question, that really has nothing to do with the

1 program itself, the test program or the test conditions,  
2 because the cycling that will occur while the plant is  
3 being cooled down is a depressurization. It will all  
4 occur with steam.

5 JUDGE BRENNER: All right. You're not  
6 disputing my categorization. You're disputing whether  
7 or not the question should have been asked.

8 WITNESS HODGES: Yes.

9 MR. IRWIN: Judge Brenner --

10 JUDGE BRENNER: Well, I will tell you what.  
11 Just from being in this hearing, I know the Staff has  
12 some of this information asked, but that is another  
13 story. For example, whether or not there is a high  
14 level trip in the plant.

15 MR. IRWIN: I was just going to observe that  
16 Mr. Smith's characterization of our non-interchange was  
17 accurate, and I think he may have some information. And  
18 I frankly don't know what it is.

19 JUDGE BRENNER: I will help you out this far.  
20 It is certainly correct that Mr. Smith didn't have my  
21 attention, because, as I said, I didn't see any of it  
22 when you brought it to my attention, Ms. Letsche. I was  
23 trying to stay with the Staff, because I am interested  
24 in a couple of things substantive, as well as procedural  
25 posture of why I'm wasting my time having Staff

1 testimony on this contention now when the contention is  
2 focused on the applicability of the program to  
3 Shoreham.

4 We deferred contentions for which the Staff's  
5 review is open and when I get to the Staff's testimony  
6 it says, we don't know yet as to the very thing the  
7 contention is all about.

8 I know I said I would save it for the end, but  
9 I just can't wait, Mr. Repka. Am I missing something?  
10 I don't want to be unfair, but shouldn't this have been  
11 in that deferral category based upon the standards we  
12 applied to the other ones?

13 MR. REPKA: It may well be. I'm simply not  
14 prepared to argue that point. I was not responsible for  
15 that list and I can't address it right now. Maybe when  
16 we get to the end I will be better able to do that.

17 JUDGE BRENNER: Well, you see, Ms. Letsche's  
18 going to ask questions, as is her right, about this list  
19 of questions and what the Staff still has left open, and  
20 those are exactly the kind of things we wanted to  
21 shortcut, in fairness to the County's resources, the  
22 Board's resources, LILCO's resources, and the Staff's  
23 resources, about which we have been hearing that they  
24 deserve saving.

25 And we certainly agree with that, that wait

1 until the Staff's review is complete and then we can  
2 find out what's up. And maybe the Staff will find that  
3 there are plant-specific things which lead to problems  
4 and further questions. Maybe the Staff will conclude,  
5 after getting the answer to a question, that they didn't  
6 have to ask the question.

7           You know, there is that iterative process when  
8 questions are asked. And yet, here we are.

9           WITNESS CHERNY: I would like to comment, if I  
10 could, on the difference between, the apparent  
11 difference between the questions and the SER words. It  
12 is quite clear to me from looking at the SER words, at  
13 least those just handed me, that those were written  
14 somewhat earlier in time.

15           The last thing that I have here talks about a  
16 July 21st letter from LILCO, which is five months  
17 earlier than the latest submittal that we are now  
18 talking about that the questions are related to, and  
19 also, prior to the time that the Staff even had the NEDE  
20 report in question.

21           JUDGE BRENNER: I'm nodding vigorously.  
22 You're not disputing my point at all. You are  
23 supporting it. You have got a stale conclusion or  
24 possibly a premature conclusion.

25           WITNESS CHERNY: No, I think all we said was

1 they did the best they could as of the date when this  
2 was written. That is all it says.

3 JUDGE BRENNER: That is what, "Based upon the  
4 satisfactory test results for the Shoreham  
5 plant-specific valves and the commitments, we conclude  
6 that the Applicant has complied with this item pending  
7 confirmation by the final plant-specific evaluations,  
8 "that is what that paragraph means to you?

9 WITNESS CHERNY: Well, maybe the words could  
10 have been a little more prolific, but that is what it  
11 means to me, because I know the context in which that  
12 was reviewed, yes.

13 JUDGE CARPENTER: Prolific or accurate, sir?

14 WITNESS CHERNY: More detailed.

15 JUDGE BRENNER: We don't want to get to the  
16 point of arguing with you, and I wouldn't let counsel do  
17 it, either. Mr. Cherny, I think you hit the nail on the  
18 head when you said you know the context. Anybody  
19 knowing the context should realize that those words  
20 don't reflect the context, now that we understand it  
21 fully enough, to be understood by a Board that doesn't  
22 know the context.

23 (Board conferring.)

24 JUDGE BRENNER: Dr. Wright, let me ask you one  
25 other question. In the answer to question 9, starting

1 at the bottom of page 4 and going over to page 5 of your  
2 testimony, the question is: "Has it been demonstrated  
3 at this time that the specific requirements of item  
4 II.D.1 of NUREG-0737 have been met?" Those are the  
5 words of the question.

6 The answer is: "In view of the current status  
7 of the Staff review, as discussed above" -- and I won't  
8 quibble with you at this time as to whether the status  
9 of the Staff review is accurately discussed above in  
10 your testimony -- "and on the test results to date, the  
11 Staff concludes that the Applicant has demonstrated to  
12 the extent practicable at this time that the specific  
13 requirements of item II.D.1 have been met."

14 In that context, what did you mean by "to the  
15 extent practicable at this time"? And I guess your  
16 usage of the word "demonstrated" might be helpful also.

17 WITNESS WRIGHT: Well, in terms of the generic  
18 work being complete, that test report being delivered to  
19 the NRC and reviewed, we are at the point where we are  
20 going to plant-unique or plant-specific responses.

21 JUDGE BRENNER: It wasn't practicable --

22 WITNESS WRIGHT: So to the extent that the  
23 report is done and that a number of plants are now going  
24 to have to, on a plant-specific basis, demonstrate the  
25 conclusions that they have already mailed in on a

1 one-page letter, that they have met the requirements,  
2 that we are looking for the basis for those conclusions  
3 now.

4           If they -- if a more thorough basis had been  
5 provided with the letter, the reviews possibly could  
6 have been done. But now we're going back and on a  
7 plant-specific basis looking for the basis of their  
8 conclusion.

9           JUDGE BRENNER: All right, here are the  
10 options. We can stop the litigation right now on  
11 anything related -- not anything, but stop litigation  
12 right now on the core of Suffolk County contention 22,  
13 the test program, and wait until the review is complete,  
14 so we can litigate this altogether. Or we can go ahead  
15 now and we will write our findings based upon the record  
16 as it is going to stand after the completion of the  
17 litigation this week.

18           Either of those two options. The option that  
19 I'm not going to give you is litigate it now and then  
20 litigate it again. That does not mean that we don't  
21 want to hear about ATWS, because we think we can. The  
22 accommodation for ATWS and whether it's necessary, in  
23 other words the meeting that we want to take place  
24 should still take place with a report back, the ATWS  
25 accommodation and the high pressure and temperature

1 thing.

2 I'm giving you those options because on its  
3 face the Staff review is not complete. We would be  
4 willing to go ahead anyway if the Staff and LILCO and  
5 the County want us to. I guess we will give Staff and  
6 LILCO the option, but we will hear from the County. But  
7 Staff and LILCO have the problem. The Staff  
8 particularly has caused us this problem.

9 We are not excited about the fact that there  
10 are questions asked per se, and in fact we have some  
11 preliminary views based upon what we know from a lot of  
12 contentions on this record as to whether those questions  
13 had to be asked, whether all of those questions had to  
14 be asked. That is, Mr. Hodges, has a view that some  
15 questions maybe didn't make sense to ask anyway. I've  
16 got a view that the Staff knows the answers to part of  
17 one question, at least.

18 Maybe this is just bureaucratic and this  
19 review really is conducted or has been conducted or can  
20 be conducted right now. I don't know. But I'm not  
21 going to sit here twice. I agree with saving resources,  
22 too.

23 Any suggestions, comments?

24 MR. REPKA: I would just suggest that we take  
25 about five minutes, so that we could talk with our

1 witnesses.

2 JUDGE BRENNER: All right. And a general  
3 request: Go through the contentions we haven't  
4 litigated yet. This is to the Staff. Identify what  
5 items of review are still open, so that we don't run  
6 into this problem again.

7 Now, I understand there may be open item that  
8 bear on the contentions subject, but for which you feel  
9 we can still go ahead with the contention. That could  
10 well be your conclusion. But we would like to -- we  
11 would like to discuss that.

12 And also, if you find an item like this, you  
13 may well conclude that it is not ripe to go ahead, and  
14 we would like to consider that also. But I will be  
15 honest with you, when I saw Dr. Wright's testimony I had  
16 questions about the superficial nature of the  
17 testimony. It didn't address the contention at all.  
18 And now I understand why. The Staff hasn't done the  
19 review necessary to address the contention.

20 MR. REPKA: The one aspect of the contention  
21 --

22 JUDGE BRENNER: You're talking about 22?

23 MR. REPKA: The applicability to Shoreham.

24 JUDGE BRENNER: That is the whole contention  
25 as we define it.

1           MR. REPKA: Well, there is also the ATWS  
2 portion.

3           JUDGE BRENNER: You're right.

4           JUDGE CARPENTER: Dr. Wright, could you  
5 confirm Judge Brenner's characterization?

6           WITNESS WRIGHT: Yes, I would.

7           JUDGE CARPENTER: Thank you.

8           JUDGE BRENNER: And it is partially a  
9 disclosure problem. You know, I like to think I  
10 understand the meaning of words, but I don't have the  
11 time to parse every word as carefully as would have been  
12 necessary to reach Mr. Cherny's conclusion about what  
13 the SER says, to understand Mr. Hoiges' explanation of  
14 how, reading Dr. Wright's testimony with the SER, I can  
15 come out with a consistent, reasonably consistent  
16 result.

17           Witnesses have got to look at the SER and  
18 where the words are different explain the difference.  
19 And if the testimony has already been filed on  
20 contentions coming up, prepare them to explain it  
21 orally. And the same goes for LILCO in the FSAR.

22           It just takes a very long time to have to do  
23 it this way, and it is tiring for me.

24           (Laughter.)

25           JUDGE BRENNER: All right. The five-minute

1 break is just to decide whether to go ahead, not for the  
2 answers of all of the contentions coming up, obviously.

3 Let's come up with a practical solution that  
4 would be good for the Staff in terms of efficiency and  
5 good for the other parties in terms of efficiency, and  
6 also good for the record.

7 MS. LETSCHE: Judge Brenner, as a matter of  
8 practicality, to enable people to get out and come back  
9 in, could we make it, let's say, a ten-minute break?  
10 I'm not sure if anyone can talk about anything in five  
11 minutes.

12 JUDGE BRENNER: All right. We will come back  
13 at 4:15.

14 (Whereupon, at 4:05 p.m., the hearing was  
15 recessed, to reconvene at 4:15 p.m.)

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1           JUDGE BRENNER: Maybe I should explain since  
2 the cold record does not reflect it. You are getting  
3 the depth of feeling in our comments because we are all  
4 working very hard to work out smooth scheduling in this  
5 proceeding because there are problems enough. And then  
6 when we come up to something like this when we were  
7 worried about husbanding our resources for the last 2  
8 weeks before that break, it is just particularly  
9 disappointing and was knowledge easily within the  
10 Staff's ken to see this. Somebody prepared the  
11 testimony, somebody filed it, somebody should know what  
12 the posture of the proceeding is.

13           And I do not know what the problem is, that  
14 there are too many cooks involved for each party, but  
15 people had better start talking to each other, because  
16 we are not here to coordinate those kind of problems,  
17 unless we are missing something and the Staff's review  
18 was really not open.

19           MR. IRWIN: Judge Brenner, could I make a stab  
20 at trying to summarize where I think we have come out in  
21 our proposal to the Staff? And I do not know, frankly,  
22 whether we will be successful or not. As you know,  
23 there is a lot of information which the LILCO witnesses  
24 have available, some of which is starting to be  
25 presented this afternoon, particularly through Mr.

1 Malovrh. We have additional information here with us in  
2 documentary form.

3 We have proposed to the Staff, and the Staff  
4 has tentatively accepted, the idea of holding a  
5 technical meeting this evening to see which, if any, of  
6 these issues can be closed out, on an admittedly  
7 subject-to-confirmation basis, from this July 9 letter,  
8 and making our report to the Board tomorrow morning on  
9 the status of that.

10 And if the fact is that the Staff believes  
11 they can close them out, we would propose to present in  
12 such further detail as is necessary through our  
13 witnesses right on the stand tomorrow morning that  
14 further information to close them out. We could do it  
15 right now, but I frankly think it would be a little more  
16 orderly if we could gather a more detailed impression of  
17 the Staff's concerns.

18 JUDGE BRENNER: Well, let me raise these. Let  
19 me hear from the Staff, and then we will have some  
20 questions before we hear from the County.

21 MR. REPKA: I would just like to say that Mr.  
22 Irwin's proposal, and which we have tentatively agreed  
23 to, would take the approach we reached this morning on  
24 question 4 of the six questions and expand it to all six  
25 and see how far we can go. And that way, in the morning

1 we would be able to report exactly what remains open and  
2 possibly narrow it from the six down to a couple or  
3 three, who knows.

4 But at least we could make an effort similar  
5 to on question 4 to narrow the scope of the open items,  
6 since we have most of the experts we need right here.

7 JUDGE BRENNER: When you say question 4, do  
8 you mean the high-pressure liquid flow?

9 MR. REPKA: That is correct.

10 JUDGE BRENNER: That is not clear to me that  
11 question 4 is limited to that. That is the only reason  
12 I asked that. But I do not see how that is efficient,  
13 because we are going to have to hear it orally. We are  
14 going to have to hear it orally for the first time. And  
15 consistent with what we have done on other contentions,  
16 that deprives the County of their opportunity for prior  
17 direct testimony, written direct testimony.

18 So if I took that route, I would not do it,  
19 and I would talk to the Board. But consistent with what  
20 we have done before, we would not do it without giving  
21 the County an opportunity to have liberal rights of  
22 recall of the witnesses. And the Board might have  
23 questions that would have to think about, because here  
24 we are getting a lot of potential, a potential lot of  
25 information for the first time.

1           Now, it might be that the questions asked by  
2 the Staff are stupid, to put it bluntly -- I am not  
3 suggesting that is the case; that is a hypothetical --  
4 and as a result, the explanation is going to be very  
5 simple as to why we do not have to worry about it. And  
6 that is, the Staff should have been able to reach their  
7 conclusion without these questions.

8           If that is the case and there is a simple  
9 explanation for that, that might be a different story.  
10 I did not hear any suggestion that you were going to  
11 involve the County in this dialogue between LILCO and  
12 the Staff. What about that?

13           MR. IRWIN: I have two observations on that.  
14 First of all, our direct testimony has already set  
15 forth, I think, the basis of our case for believing that  
16 the generic results are applicable to Shoreham. So it  
17 is not as though nobody has had notice.

18           To come to your direct question, it was not  
19 the County that had these open items, it was the Staff.  
20 And that is normally subject to a review between the  
21 Applicant and the Staff in the first instance. If the  
22 County desires to understand what the results appear to  
23 be of the meeting, I can understand that, and we would  
24 have no objection to that. I would prefer, frankly, to  
25 have the opportunity to explain directly to the Staff in

1 the first instance.

2 JUDGE BRENNER: Well, you are not fully  
3 correct on a few counts, and I will tell you why: First  
4 of all, Intervenors are invited to those kind of  
5 meetings. The fact that it is often inconvenient for  
6 them to attend does not mean they are not entitled to  
7 attend. That is number one.

8 Number two is, we are not talking about  
9 standard Staff review here, we are talking about it in  
10 the posture of this proceeding for which it is the  
11 County's contention that is the guts of what we are  
12 about here. And that exacerbates the other problem I  
13 pointed out, that they will be hearing it for the first  
14 time.

15 So if you want to propose to do it without  
16 them, I do not see any possible gain in efficiency.

17 MR. IRWIN: I was not proposing to do it  
18 entirely without them, Judge Brenner. We frankly  
19 believe that some of the questions, while not being  
20 within the "stupid" category, are ones which are not  
21 subject to substantial concern.

22 I will not object to the County's presence.  
23 If we can reach an accommodation, heaven knows that is  
24 better for everybody. I hate to see, as everybody does,  
25 the assemblage of people and time and talent brought to

1 an aborted end, as I fear we are approaching on this  
2 issue. And I frankly think --

3 JUDGE BRENNER: I am sorry, you hate to see --

4 MR. IRWIN: An assemblage of people and time  
5 and talent brought to an aborted end, as we run the risk  
6 of seeing on this issue right now. We have brought a  
7 lot of people together and done a lot of work ourselves  
8 on it.

9 JUDGE BRENNER: I am sensitive to your point,  
10 because it is not LILCO's fault, to put it bluntly. And  
11 if I have not been clear on the record, let me put it  
12 expressly, it is the Staff that has left us in this  
13 very bad situation, the same party that in the past has  
14 been so concerned about the scheduling of its  
15 witnesses.

16 Am I correct that the Staff has not reviewed  
17 the NEDO document? And was that not your testimony, Dr.  
18 Wright?

19 WITNESS WRIGHT: Has not reviewed the NEDO  
20 document? I don't think that is true. EG&G has  
21 reviewed it. I have personally reviewed it.

22 JUDGE BRENNER: Okay. I guess I was  
23 incorrect.

24 JUDGE JORDAN: On page 4 of your testimony, in  
25 answer to question 8, you said, "Although the Staff has

1 not completed its review or detailed review of the NEDO  
2 document," and so is that the case, that you have not  
3 completed the review?

4 WITNESS WRIGHT: Well, I think it is the case  
5 in terms of when testimony is written of having read it,  
6 do you have questions, okay, and I think we have reached  
7 the point where we have our questions now. I am not  
8 sure how to answer you.

9 JUDGE JORDAN: On the general program, not  
10 just for the Shoreham application part, you have still  
11 some questions remaining on the generic program?

12 WITNESS WRIGHT: Well, there are basically  
13 two, okay, that could refer back to the generic program,  
14 which could have been answered by going back to the BWR  
15 Owners Group or by going to an Applicant. We possibly  
16 have chosen the wrong route.

17 JUDGE BRENNER: Again, that is not the  
18 concern. We do not care whom you asked. It is much  
19 more fundamental than that.

20 JUDGE JORDAN: But are you saying that you  
21 have reviewed indeed the entire document, you are now  
22 convinced that the NEDO program, that the test program  
23 meets all the requirements, the generic program and  
24 excepting for two questions, and if you had those two  
25 questions answered, then you would be home free and that

1 is it?

2 WITNESS WRIGHT: That is correct.

3 JUDGE BRENNER: And also excepting for the  
4 thing we discussed this morning, except perhaps that is  
5 encompassed in item 4, and I cannot tell from a quick  
6 reading -- or question 4.

7 WITNESS WRIGHT: I guess I didn't understand  
8 that.

9 JUDGE BRENNER: In thinking of the "excepts,"  
10 I add the item discussed this morning, the high-pressure  
11 liquid flow. However, it may well be --

12 WITNESS WRIGHT: No, I think that is pretty  
13 plant-specific, question 4. The NEDO document describes  
14 the generic, and now we are asking each plant do they  
15 fit within that envelope.

16 JUDGE BRENNER: Okay, you are right. That is  
17 a question, but it falls in the other category. You are  
18 correct.

19 Give us a moment -- well, I did not hear from  
20 the County. Did the County hear this proposal over the  
21 break, or are they hearing it for the first time?  
22 Because that was the purpose of the break, for everybody  
23 to talk.

24 MS. LETSCHE: This is the first time we have  
25 heard of it, Judge Brenner. Our position is consistent

1 with one of the observations you made, which is that  
2 this idea of having some sort of a conference and then  
3 some presentation of the results of that conference  
4 tomorrow morning is not consistent with the way this  
5 litigation is supposed to run, which is getting prefiled  
6 testimony and the parties having an opportunity to  
7 review it, certainly, and prepare their  
8 cross-examination.

9 We would not be given that opportunity if we  
10 were to go this route that has been suggested. It is  
11 the County's position that everyone is here and everyone  
12 has prepared for the litigation of this contention, and  
13 the most efficient thing to do is to go ahead and do it  
14 and finish it. And if at some later point there are --

15 JUDGE BRENNER: We cannot finish it in the  
16 sense that the Staff and LILCO would like us to finish  
17 it. We will be happy to give them a finding based upon  
18 the record we will adduce here, and I presume you would  
19 be happy with that finding.

20 MS. LETSCHE: My point, Judge Brenner, is that  
21 that is right, that that is the way it should be. And  
22 if they are not happy with that finding at some point,  
23 they can file a motion to reopen. And if they show good  
24 cause, it could be reopened. But that is the procedure  
25 that should be followed.

1                   JUDGE BRENNER: I do not want to reopen. I do  
2 not want to try it twice. That is the problem. If the  
3 Staff had been alert and correct in identifying this  
4 item earlier, we would have deferred it, I believe. I  
5 believe the Staff itself might have suggested that,  
6 consistent with what they suggested on other  
7 contentions.

8                   (The Board conferred.)

9                   JUDGE BRENNER: Mr. Irwin, I certainly  
10 understand why you made the suggestion you made.  
11 However, it seems to us that the Staff cannot have its  
12 cake and eat it, too; that is, it comes here saying the  
13 review is not complete and in terms of trying to  
14 efficiently see whether it, in fact, has enough  
15 information to reach a conclusion, it would do it in the  
16 context of a dialogue with LILCO rather than in the mode  
17 that we have encouraged and, in fact, directed in this  
18 proceeding -- settlement-type discussions.

19                   We understand total settlement is unlikely,  
20 but the idea is to have that interchange among all of  
21 the parties. And, in addition, if it happened that way,  
22 we would confirm our view -- and we have discussed it  
23 with the Board and they confirm my view -- that that  
24 would be depriving the County of their right to prior  
25 notice through direct written testimony of matters to

1 ask questions on, reinforced by our view by the fact  
2 that we are not talking about some little piece of  
3 information that maybe relates to the contention but it  
4 is on the fringes. This is the guts of the contention,  
5 ATWS aside. That is, the applicability of the test  
6 program to Shoreham.

7           Furthermore, I do not know if there is new  
8 information on the efficacy of the test program  
9 generically. It depends upon the Staff's views on the  
10 answers to 3 and 5, or the Staff's views of why they  
11 really had to ask those questions. And maybe these  
12 things can be resolved efficiently.

13           But if you are going to meet with the Staff to  
14 have an exchange of technical information with the  
15 Staff, it is going to have to be done on a schedule that  
16 would allow the County to review the written product of  
17 that, unless you involve them as part of the same type  
18 of settlement meetings that we have been having with  
19 counsel and their experts and everybody getting a handle  
20 on what the situation is.

21           Now, the County may not agree with the Staff's  
22 conclusions after hearing that, but they will have been  
23 apprised of what those conclusions are and what they are  
24 based on, in sufficient detail, so as to be able to  
25 pursue the inquiry. And on that basis, we would attempt

1 to pursue the inquiry.

2           However, I want a candid appraisal first thing  
3 tomorrow morning from the Staff, particularly, that if  
4 they do not know enough detail to justify their  
5 conclusion, and by now you know what that means in this  
6 hearing, that we are not going to go ahead and then find  
7 out we have to stop 3 hours into the questioning, if the  
8 Staff wants to take a position.

9           Now, if the Staff does not want to take a  
10 position, I guess we could permit examination just on  
11 LILCO's knowledge. But the problem is I feel we would  
12 have to hold the record open for the Staff's review,  
13 consistent with what we did on the other contentions.  
14 And I think we would be wasting our time because we then  
15 would have questions back and forth that would involve  
16 LILCO's witnesses, too.

17           This does not mean we do not think that we  
18 cannot go ahead with respect to the other contention on  
19 the challenges. Even if you cannot, even if the Staff  
20 cannot reach a conclusion on the test program and the  
21 applicability of the test program, we could pursue the  
22 testimony on the SRV challenges, and we can hear back  
23 tomorrow on ATWS also, if the County wants to  
24 participate in that.

25           MS. LETSCHE: I am not sure I understand

1 exactly what is being proposed here.

2 JUDGE BRENNER: We want you to all get  
3 together and figure which end is up.

4 MS. LETSCHE: Judge Brenner, are you talking  
5 about meeting tonight?

6 JUDGE BRENNER: Yes.

7 MS. LETSCHE: There is a very major problem  
8 with that, and that is that if all of us and our experts  
9 are going to have to be involved in some sort of meeting  
10 tonight --

11 JUDGE BRENNER: We would adjourn right now.

12 MS. LETSCHE: Regardless of that, we are not  
13 going to be able to file an opposition to an ATWS motion  
14 to strike Friday morning, and we certainly would want to  
15 be present at any kind of meeting between LILCO and the  
16 Staff and be able to participate in that meeting, as is  
17 our right as an Intervenor.

18 JUDGE BRENNER: You would have to be involved  
19 with the motion to strike also?

20 MS. LETSCHE: Yes, I do. More important even  
21 than my involvement is the involvement of our technical  
22 experts. They do have to be involved in both.

23 JUDGE BRENNER: Yes, I can certainly  
24 understand why you would want them involved in the ATWS,  
25 in response to the ATWS motion.

1           I suppose it would be overly redundant to say  
2 the Board resents being put into this position. And I  
3 do not mean the County, I mean the Staff. You know, we  
4 have lost a day and a half of hearing, probably, to a  
5 large extent. We are going to lose more time by  
6 allowing for the process to go forward that you  
7 contemplate. The goal was to get a certain amount done  
8 in this time period. And then we hear cries that  
9 parties are interested in efficiency in the hearing.

10           MR. REPKA: Judge Brenner, might I suggest  
11 that we defer II.D.1 slightly to give a greater chance  
12 for this open item to resolve itself? We can go ahead  
13 with the rest of it, the rest of the contention on 22  
14 and 28(a)(vi). We have not totally lost the day and a  
15 half. We have gone through the cross-examination on the  
16 Board notification.

17           But it might be the best solution for all  
18 parties if we just deferred the II.D.1, and maybe the  
19 Staff and LILCO and everybody can try to resolve that  
20 item on a very expedited schedule. But it seems to be  
21 the only practicable approach at this point. I mean we  
22 obviously have blundered, and ~~now~~ it is best to make the  
23 best of a bad situation.

24           JUDGE BRENNER: That sounds like a good  
25 suggestion.

1           MR. IRWIN: We agree that the questioning on  
2 the SORV challenges can go ahead. I also want to say  
3 for LILCO's part that we stand ready to talk at any time  
4 day or night between now and the adjournment of this  
5 witness panel's presence here to try to do what we can.  
6 And we frankly think that the County, which has pretty  
7 substantial resources of its own, that the County can  
8 assist in that process. And I call upon the County to  
9 let us know when they will be available.

10           JUDGE BRENNER: Well, let me say this on the  
11 County's behalf. I made that point from time to time  
12 with respect to the County, too. And I know they have  
13 disagreed with me, but I believe there were other  
14 circumstances in which that observation was true, but  
15 not this week. We have accelerated the responses to the  
16 motion to strike. Mr. Minor is involved in both of  
17 them, both that motion plus this.

18           I think LILCO will agree that, in large part,  
19 the technical input is important into response to your  
20 motion to strike, that motion that we are taking very  
21 seriously. Therefore, it behooves the County to do a  
22 good job on the response.

23           MR. IRWIN: I was not suggesting tonight was  
24 the only time we could do it. Perhaps tomorrow  
25 evening. I do not know what the County's schedule is

1 for preparation of its motion. We are ready at all  
2 times. We believe that there are a lot of people here,  
3 and we would like to finish the issue if it is  
4 possible.

5 JUDGE BRENNER: Let us try this as a possible  
6 compromise. We are not going to require the County to  
7 participate in a meeting tonight. However, we will not  
8 preclude the Staff and LILCO from meeting if they wish.

9 However, if the Staff believes it can close  
10 these items up because the matters are simple, then a  
11 further meeting involving the County has to take place,  
12 explaining in sufficient detail the bases for that.  
13 And, in fact, I would suggest that you in some written  
14 form outline the bases for that for the County.

15 And then, if that all can be done, we will  
16 consider whether we can proceed back to the test program  
17 after the SRV challenges questioning. I am not saying  
18 we will. We will hear from the County.

19 But, Ms. Letsche, what I have in mind is this  
20 will save you burning up your time on these preliminary  
21 discussions. But they have to bring you in to tell you  
22 what has happened, if anything, before they come back to  
23 the Board to litigate it.

24 MS. LETSCHE: Judge Brenner, you have  
25 characterized those as preliminary discussions. In

1 fact, they will be discussions of some sort of substance  
2 between the Applicant here and the Staff. And the  
3 County certainly wants to be present at that discussion  
4 and has a right to be. And even if we would be able to  
5 get to be involved later on or receive something in  
6 writing, that does not take care of our definite desire  
7 to be in on whatever substantive meeting there is between  
8 the Staff and LILCO.

9 JUDGE BRENNER: I understand that desire, but  
10 the County cannot have everything in life either, and  
11 I think it is a reasonable compromise. I cannot  
12 prohibit any two parties from meeting, in any event.

13 What we are requiring is that either you meet  
14 with them at the beginning, at your option, or they have  
15 to disclose fully the bases for why the Staff thinks it  
16 can now close those items. And maybe the bases will be  
17 simple, maybe it will be complicated. You will see.  
18 Maybe the Staff will conclude they cannot close those  
19 items. And that involves not only the applicability to  
20 Shoreham now but these other items in the questions.

21 And I think that is reasonable. You can have  
22 somebody there to keep an eye on them if that is part of  
23 your desire, take notes, that type of thing, even though  
24 you cannot have all of the people you would want  
25 present. You can monitor the meeting in some fashion if

1 you wish, and whether you monitor it or not, you will  
2 get the results back. So I am not going to prohibit  
3 them from meeting.

4           What I am doing is trying to provide the  
5 safeguards I think the County is entitled to, and even  
6 after they present those results to you, depending on  
7 the complexity and the form in which they present them  
8 to you, we will hear further as to whether we can go  
9 ahead, and when.

10           So I am not going to stop progress outside the  
11 proceeding. And I think that is reasonable, and we will  
12 see what the situation is and hear from you some more.

13           MS. LETSCHE: Well, I have noted what our  
14 position is. And I would like to know when the meeting  
15 is going to be.

16           MR. IRWIN: We will let you know as soon as we  
17 schedule it.

18           (Discussion off the record.)

19           JUDGE BRENNER: All right, we are going to  
20 take care of a few housekeeping matters related to the  
21 Suffolk County exhibits, thanks to Mr. Heer's  
22 alertness.

23           But the meeting will take place along the  
24 lines that we indicated; that is: If the County wants  
25 to be involved from the beginning, they are to be

1 involved. The type of meetings would be a combined  
2 technical interchange that the Staff would typically  
3 have with the utility, plus the settlement-type,  
4 narrowing-type conferences that have been held all along  
5 in this proceeding with, we think, quite good results.

6 If the County chooses not to be at the initial  
7 meetings in full force or at all, that is okay. In  
8 either event, the County is to be presented with the  
9 results of what the Staff and LILCO want to do.

10 The Staff is free to conclude whatever it  
11 likes; if the Staff believes that it does not have  
12 enough information, that they should tell us; if you  
13 have some information and we could narrow some of it,  
14 whatever the situation is.

15 We are certainly not trying to force the Staff  
16 into any rapid decision. It is just to inform us of  
17 what the case is.

18 MS. LETSCHE: I was just going to say or note  
19 that we do intend to be present at whatever meetings are  
20 going to take place.

21 JUDGE BRENNER: Incidentally, the County's  
22 presence does not excuse the kind of presentation after  
23 it, and maybe the County is going to be present and the  
24 Staff and LILCO will come up with some conclusions after  
25 the meeting and obviously the loop is to be closed

1 before coming back to the Board. It may be that you  
2 have only some people at the meeting, and you want  
3 further reports in addition to the report of whoever is  
4 monitoring the meeting for you. I think the parties are  
5 well equipped to implement our goals without our having  
6 to work out all the mechanics.

7           We are sensitive to the position LILCO is in,  
8 Mr. Irwin. I want to emphasize that. But going ahead  
9 without the Staff would likely, not necessarily, lead to  
10 a request to reopen by one party or another, depending  
11 upon what the results of the Staff's further work is.  
12 And very likely, circumstances would require us to do  
13 that, and we do not want to litigate it twice.

14           MR. IRWIN: We both share your concern and  
15 appreciate your flexibility. We will do what we can on  
16 this one issue. And maybe it is not time to try the  
17 challenges and the SORV events.

18           JUDGE BRENNER: We feel that about everybody's  
19 witnesses, and at the moment LILCO's witnesses and the  
20 Staff's witnesses, because in response to our comments  
21 earlier in the hearing, we have got a very wide-ranging  
22 panel which, in its totality, has been very capable of  
23 covering all of the disciplines involved in these  
24 contentions, and we appreciate that. And that is why it  
25 is particularly important not to let these kind of

1 scheduling problems crop up at the last minute, because  
2 we do not want to discourage that kind of expertise.

3 All right. With respect to that kind of  
4 expertise being present for our benefit and for the  
5 benefit of the parties on the record, so we apologize to  
6 the witnesses also.

7 Now, with respect to Suffolk County Exhibit 33  
8 for identification, I would like to bind it in at this  
9 point for convenience, even though it has only been  
10 marked for identification.

11 (The document referred to, Suffolk County  
12 Exhibit Number 33 for identification, follows:)

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Copy-in#2

JUN 21 1982 SC# 53

NUREG/CR-2000  
ORNL/NSIC-200  
Vol. 1, No. 4

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# Licensee Event Report (LER) Compilation

For month of April 1982

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Oak Ridge National Laboratory

Prepared for  
U.S. Nuclear Regulatory  
Commission



1           JUDGE BRENNER: With respect to Suffolk County  
2 Exhibit 34, that, too, would just be for  
3 identification. And it is not of an evidentiary  
4 nature. And we would like to bind that in at this point  
5 also so it will be clear to anybody who will read this  
6 record part of what the problem has been.

7           (The document referred to, Suffolk County  
8 Exhibit 34 for identification, follows:)

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

JUL 8 1982

Lay-in #3  
JUL 10 1982 SC#34

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~~EB~~

RB Sho DL  
SRV

cket No. 50-322

Mr. M. S. Pollock  
Vice President - Nuclear  
Long Island Lighting Company  
175 East Old Country Road  
Hicksville, New York 11801

Dear Mr. Pollock:

Subject: Request for Additional Information - Shoreham Nuclear Power Station

As a result of our review of your application for an operating license for the Shoreham Nuclear Power Station, we find that we need additional information regarding the applicability and justification of that applicability of the generic test results as issued in the report NEDE-24988-P, "Analysis of Generic BWR Safety/Relief Valve Operability Test Results" to Shoreham's Safety/Relief valves. The specific requests for information are provided in Enclosure 1.

If you have any questions on this matter, please contact the NRC project manager, Edward J. Weinkam III at (301) 492-8430.

Sincerely,

A. Schwencer, Chief  
Licensing Branch No. 2  
Division of Licensing

Enclosure:  
As stated

cc: See next page

Shoreham

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Enclosure

Request for Additional Information by the  
Equipment Qualification Branch

TMI Action Plan II.D.1

Your December 9, 1981 letter does not provide the basis for your conclusion that the test results presented in NEDE-24988-P on safety/relief valve testing are applicable to Shoreham valves. Describe the basis thoroughly, as indicated below.

1. The test program utilized a "rams head" discharge pipe configuration. Shoreham utilizes a "tee" quencher configuration at the end of the discharge line. Describe the discharge pipe configuration used at Shoreham and compare the anticipated loads on valve internals in the Shoreham configuration to the measured loads in the test program. Discuss the impact of any differences in loads on valve operability.
2. The test configuration utilized no spring hangers as pipe supports. Plant specific configurations do use spring hangers in conjunction with snubber and rigid supports. Describe the safety relief valve pipe supports used at Shoreham and compare the anticipated loads on valve internals for the Shoreham pipe supports to the measured loads in the test program. Describe the impact of any differences in loads on valve operability.
3. Report NEDE-24988-P did not identify any valve functional deficiencies or anomalies encountered during the test program. Describe the impact on valve safety function of any valve functional deficiencies or anomalies encountered during the program.
4. The purpose of the test program was to determine valve performance under conditions anticipated to be encountered in the plants. Describe the events and anticipated conditions at Shoreham for which the valves are required to operate and compare these plant conditions to the conditions in the test program. Describe the plant features assumed in the event evaluations used to scope the test program and compare them to plant features at Shoreham. For example, describe high level trips to prevent water from entering the steam lines under high pressure operating conditions as assumed in the test event and compare them to trips used at Shoreham.

5. The valves are likely to be extensively cycled in a controlled depressurization mode in a plant specific application. Was this mode simulated in the test program? What is the effect of this valve cycling on valve performance and probability of the valve to fail open or to fail closed?
6. Describe how the values of valve  $C_v$ 's in report NEDE-24988-P will be used at Shoreham. Show that the methodology used in the test program to determine the valve  $C_v$  will be consistent with the application at Shoreham.

1 (The Board conferred.)

2 JUDGE BRENNER: We have nothing else. Perhaps  
3 I should confirm that our prehearing conference order on  
4 emergency planning matters, in fact, did issue  
5 yesterday.

6 MS. LETSCHE: Judge Brenner, I have a  
7 question, in light of this turn of events and new  
8 schedule of events for this evening. Am I correct in  
9 assuming that the Board's request for some other  
10 meetings concerning the high-pressure testing and the  
11 ATWS issue are held in abeyance pending this meeting  
12 tonight?

13 JUDGE BRENNER: No. I would think you have  
14 got the same people involved and that it should take  
15 place as part of that meeting.

16 MS. LETSCHE: Well, Judge Brenner, as I  
17 pointed out, I am not sure our people are going to be  
18 able to be in two places at the same time.

19 JUDGE BRENNER: I guess I thought it would be  
20 the same place. Take those two items up. That meeting  
21 would have taken place if these other problems did not  
22 arise. You are talking about the same people. Take  
23 those items up at the beginning of the meeting, and then  
24 you can leave if you want. But either they are  
25 susceptible of a simple solution or they are not. And

1 if they are not, obviously you are not going to grind on  
2 forever if you reach that determination. But we would  
3 like to do what we can.

4           While we are thinking about the schedule,  
5 depending upon when we finish SRV matters, it might --  
6 well, right now we are scheduled to go to SC27, which,  
7 aside from the specification that is now available --  
8 that is, the specifications in response to the motion to  
9 strike -- we had hoped that there were some further  
10 discussions that would go on toward narrowing that  
11 contention.

12           Given that and the fact that that contention  
13 would probably take longer than the portion left of the  
14 materials cracking issue, SC24, have the parties  
15 considered flexibility in possibly switching that order  
16 if it turned out that it was near the end of the week  
17 and maybe we could squeeze SC24 in but not SC27?

18           MR. LANPHER: Could I be heard on that  
19 briefly?

20           JUDGE BRENNER: You may.

21           MR. LANPHER: 24, we had scheduled some  
22 conversations on 24. We are attempting to see if there  
23 is a means of further narrowing and maybe eliminating  
24 the item I. And you know what I am referring to on  
25 that. I think both LILCO and the County have a

1 practical problem that we have witnesses for LILCO from  
2 GE and ourselves from the San Jose area. And Mr.  
3 Reveley and I talked about that an hour ago or 2 hours  
4 ago.

5 Both witnesses were on hold to fly out  
6 tomorrow morning. And given the progress, we contacted  
7 our witnesses and told them not to fly this week because  
8 we were going to have these discussions.

9 JUDGE BRENNER: You do not want to move it up  
10 because you want to have time for those discussions?

11 MR. LANPHER: We want to have time for those  
12 plus to bring them back for Friday morning. And if they  
13 did not complete, then we think it is going to be fairly  
14 short.

15 But we are not sure that it can be all done  
16 just then. Probably in an all-day session on Tuesday  
17 and Wednesday morning, it would all be done. For a  
18 number of complications, I do not think we would like to  
19 move them up in that manner.

20 JUDGE BRENNER: Well, would we be ready to  
21 start SC27 on Friday if we got to it, or tomorrow  
22 afternoon?

23 MR. LANPHER: Ms. Letsche tells me we would.

24 MR. IRWIN: We would.

25 JUDGE BRENNER: Staff?

1           MR. BORDENICK: We would not be in a position  
2 to start on 27 that early.

3           JUDGE BRENNER: I guess I do not understand  
4 that. It was scheduled to come up right after SRVs,  
5 and, in fact, I thought the progress of it might have  
6 permitted us to start it tomorrow. That is, I thought  
7 before we started this week.

8           Well, I guess the parties had better meet,  
9 because I do not want to waste a day. Now, it may be  
10 that SRVs are going to take that long, but I do not  
11 think so, because either it is going to be a simple  
12 resolution on the test program or we are going to defer  
13 it. So it is not likely to take that long. Maybe I am  
14 eternally optimistic.

15           I think if the parties discuss their  
16 anticipated time on SRVs in the context of what is  
17 resolved or not resolved at this meeting, you will all  
18 be in a much better position by tomorrow morning to  
19 assess what the situation is.

20           I am also worried about willy-nilly getting to  
21 SC27 when there is a possibility of narrowing that. On  
22 the other hand, I was at one time determined to start  
23 ATWS and not necessarily finish it, but at least start  
24 it, next week.

25           All right, let us talk about it, and let us

1 know if it is the mutual consensus that we not look  
2 towards another contention this week after SRVs. We  
3 will consider that. But again, once again, it will have  
4 been slower progress than we would have hoped. If  
5 anybody can think of something to do on Friday in case  
6 we finish SRVs, we would sure like to hear about it.

7 MR. LANPHER: This was the first that we heard  
8 that the Staff was not prepared to go on 27. It was our  
9 assumption that we would go to 27 next.

10 JUDGE BRENNER: That is what we thought. But  
11 why do you not talk to the Staff off the record and  
12 report back to us tomorrow morning. It may be a moot  
13 question, depending upon -- we will know how important  
14 the question is after we see a little more of what the  
15 situation is on safety relief valves.

16 (The Board conferred.)

17 JUDGE BRENNER: Should we start at 10:00  
18 tomorrow morning to give the parties tonight as well as  
19 tomorrow morning without exhausting all of the  
20 witnesses, who are then going to have to spend the whole  
21 day on the stand, possibly?

22 MR. LANPHER: Judge Brenner, I think that  
23 would be a good idea because Mr. Bridenbaugh was  
24 tentatively going to be talking to Mr. Kascsak right  
25 after this meeting on 24. But their alternate time was

1 tomorrow morning. So one time or the other, it would be  
2 awfully good for them to be able to have that  
3 discussion. We are talking about starting this meeting  
4 almost immediately. We have got a lot of meetings.

5 JUDGE BRENNER: Let us go off the record.

6 (Discussion off the record.)

7 JUDGE BRENNER: Let us go back on the record.

8 All right, the parties are going to be  
9 discussing a lot of things, including where we are going  
10 to go on safety relief valves, possible further  
11 settlement beyond the draft preliminary indications of  
12 narrowing on Suffolk County 24 dealing with materials  
13 cracking. In addition, the parties are going to be  
14 discussing a possible narrowing of Suffolk County 27.

15 In the interest of all of these possibilities,  
16 we are not adjourning early. It is 5:00 o'clock  
17 already. But we are going to start later tomorrow  
18 morning, at 10:00 o'clock, with the joint strong  
19 agreement of the parties that the hour or so lost from  
20 the hearing may redound to the benefit of much greater  
21 time saved.

22 So if there is nothing else that need be done  
23 on the record today, we will adjourn until 10:00 o'clock  
24 tomorrow morning.

25 (Thereupon, at 5:00 p.m., the hearing in the

1 above-entitled matter was adjourned, to reconvene at  
2 10:00 a.m. on Thursday, July 29, 1982.)

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NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the  
BEFORE THE ATOMIC SAFETY & LICENSING BOARD

in the matter of: Long Island Lighting Company (Shoreham Nuclear Power  
Station)

Date of Proceeding: July 28, 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)