

NUCLEAR REGULATORY COMMISSION

ORIGINAL

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:

LONG ISLAND LIGHTING COMPANY

(Shoreham Nuclear Power Station)

DOCKET NO. 50-322-OL

DATE: May 5, 1982

PAGES: 1182 - 1412

AT: Riverhead, New York



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1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION
3 BEFORE THE ATOMIC SAFETY AND LICENSING BOARD
4 - - - - - x
5 In the Matter of :
6 LONG ISLAND LIGHTING COMPANY : Docket No. 50-322-OL
7 (Shoreham Nuclear Power Station) :
8 - - - - - x

9 Riverhead County Complex
10 Center Drive
11 Riverhead, New York 11901
12 Wednesday, May 5, 1982

13 The hearing in the above-entitled matter
14 convened, pursuant to notice, at 9:06 a.m.

15 BEFORE:

16 LAWRENCE BRENNER, Chairman
17 Administrative Judge

18
19 JAMES H. CARPENTER, Member
20 Administrative Judge

21
22 PETER A. MORRIS, Member
23 Administrative Judge
24
25

1 APPEARANCES:

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C O N T E N T S

WITNESSES:

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Richard B. Hubbard,
Gregory C. Minor
Marc W. Goldsmith, and
Susan J. Harwood (Resumed)
By Mr. Ellis

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LILCO No. 1

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LILCO No. 2

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LILCO Exhibit Number 1.....Page 1313

Recesses:

Morning - 1232

Noon - 1279

Afternoon - 1323

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

2 JUDGE BRENNER: Good morning. We are ready to
3 proceed at this time. We will go through the
4 miscellaneous preliminary matters that we referred to
5 yesterday and then continue with the testimony
6 thereafter.

7 I understand that there has been an order agreed
8 upon for the litigation of the testimony that was filed
9 yesterday, and if that is the case I'd like to get that
10 on the record.

11 MR. LANPHER: Judge Brenner, the parties have
12 consulted and on the May 4 testimony the order we
13 propose is as follows: SOC 19(e,) next Suffolk County
14 --

15 JUDGE BRENNER: SOC 19(e)?

16 MR. LANPHER: Yes.

17 JUDGE BRENNER: We may have a problem. I had
18 a prelisting of all of the testimony I thought was due
19 yesterday. I didn't check it against what was filed.
20 What is the topic of 19(e)?

21 MR. LANPHER: Seismic.

22 JUDGE BRENNER: Wrong list. I was looking at
23 the May 25th list. All right.

24 MR. LANPHER: SOC 19(e)E; next Suffolk County
25 28(a)(iii), paired with SOC 7.A(1), topic, iodine
monitoring.

1 JUDGE BRENNER: Afterwards I wonder if you can
2 give the reporter a list of the contentions, because
3 with our strange numbering some of them are capital,
4 some are small, some are Roman.

5 MR. LANPHER: I'll do that right now.

6 Next SOC 16, clad swelling and flow block;
7 next, 28(a)(i), the Suffolk County 28(a)(i) paired with
8 SOC 7.A(1), ECCS cutoff.

9 Next, SC 31 paired with SOC 19(g), electrical
10 separation;

11 Next, Suffolk County 26, ALARA;

12 Next, Suffolk County 24 paired with SOC 19.C,
13 19.D, cracking of materials and some other topics.

14 MR. REVERLEY: Did you, Mr. Lanpher -- that is
15 SC 28(a)(iii) is paired with SOC 7.A(3)?

16 MR. LANPHER: I believe I did. If I didn't I
17 apologize.

18 JUDGE BRENNER: All right, thank you. If you
19 didn't -- I think all of you know, but if you didn't, on
20 the last session of this week, which will presumably be
21 Friday, we want to discuss as to how many of the
22 contentions you have just listed we need
23 cross-examination plans filed on.

24 And we're going to depart from the normal
25 Tuesday filings because of the schedule of the break.

1 As I indicated, the Board needs to receive the first set
2 and then to receive their set by Thursday, May 13th.

3 MR. BORDENICK: Judge Brenner, getting back to
4 the schedule that Mr. Lanpher just read, during the
5 discussions between the parties I had indicated that
6 with respect to Suffolk County 26, the ALARA contention,
7 that there was a problem from the standpoint of the
8 availability of the staff witnesses on that contention
9 during the period June 14 through 30.

10 In my mind, I am less than certain when we
11 will reach that particular contention. I pointed out to
12 the parties, I now point out to the Board, that if that
13 particular contention comes up during the period June
14 14th through the 30th, one of the Staff witnesses will
15 not be available.

16 I don't know if that's going to present a
17 problem or not, but I pointed it out to the parties and
18 I pointed that out to the Board ahead of time.

19 MR. LANPHER: Judge Brenner, this is Mr.
20 Lanpher.

21 When we discussed this I should have mentioned
22 Mr. Bordenick's concern, and it was our view that we
23 will have several weeks, approximately three weeks time,
24 to address these issues. Presuming that most of the
25 issues from this first week -- maybe they won't all be,

1 but probably after 7.B we're going to move a little
2 faster.

3 JUDGE BRENNER: I hope so.

4 MR. LANPHER: So at least for myself, I'm
5 pretty confident that 26 will be reached and completed
6 before June 14. The reason that we wanted 26 and 24 in
7 fact toward the end is that Mr. Bridenbaugh, who is on
8 each of those panels, is scheduled to be in a hearing on
9 May 25 on another case.

10 JUDGE BRENNER: Well, you're going to have to
11 work it out. What I don't want to do is separate the
12 case. I want all the testimony on one subject put
13 together. We're not going to hold you to this
14 inflexible order. With reasonable notice the order can
15 be adjusted, obviously. You have to guesstimate when we
16 will reach these things and nobody knows with great
17 certainty.

18 The reason for getting the approximate order
19 is frankly so we can set up the order of
20 cross-examination plans, and also so that I know which
21 testimony to start reading first, and so you will know
22 which testimony to start preparing your examination on
23 first.

24 Now, if you are going to adjust the order you
25 have to do it sufficiently in advance so that we can get

1 the cross-examination plan in if it is not already
2 filed, and that is another reason for keeping an
3 inventory of cross-examination plans as we have been
4 doing.

5 Obviously, quite a few of them come in far in
6 advance of the week minimum. That's one reason for
7 that, so that we have some flexibility.

8 (Pause.)

9 JUDGE BRENNER: This might be the appropriate
10 time for someone to put in the record the status of the
11 settlement discussions or agreement on the three
12 contentions that have been alluded to from time to
13 time.

14 MR. REVERLEY: Judge, I think we have in fact
15 reached a settlement of SC 2, SC 17, and SOC 19(j). I
16 believe that Mr. Lanpher has given the Board papers on
17 SC 2 and 17, and we supplied you with papers on SOC
18 19(j).

19 JUDGE BRENNER: All right. The Board hasn't
20 had a full opportunity to discuss them all and we will
21 do that at the time. For now we will not be taking any
22 testimony on these issues. We'll try to get back to you
23 this week while we are here.

24 At the time we do come back to this subject,
25 in addition to filing these documents formally on the
service list, when you get a chance I think it might be

1 a good idea to bind one copy of each document into the
2 transcript at the time we come back to it to discuss
3 it.

4 One preliminary question I have, and after
5 discussing it with the other Board members I might not
6 have the question. But let me raise it, not for an
7 immediate response but for your consideration for when
8 we come back to it. As I look at the proposed
9 resolution of Suffolk County contention 2 on the diesel
10 generator relays, the last paragraph on page 2, which is
11 in fact the last paragraph in the proposal, continuing
12 over to page 3, begins with the proposal that each of
13 the steps specified above shall be implemented by LILCO
14 prior to fuel load.

15 Obviously, from the view of the Staff that is
16 not the case. It is a bit confusing. It may be only
17 one step that is implemented prior to fuel load, and I
18 would like some clarification on that, because as I read
19 that what this proposes is more of an addition of some,
20 at least one prior step. It's kind of an ongoing
21 program.

22 And another reason I raise that is the further
23 sentence that "LILCO shall document its accomplishment
24 of the steps by serving that documentation on the
25 Board." Some of these steps contemplated appear to be

1 carried out into the future beyond this Board's
2 jurisdiction. That wouldn't be the case for the one
3 prior to the fuel load. So maybe we could get some
4 clarification, so if not a written amendment -- maybe
5 I'm missing something. I raise it at this point.

6 MR. REVERLEY: My understanding is we were
7 talking about putting in place procedures and programs
8 that would continue and that that would be the
9 documentation in question. We will consult with the
10 county and clarify that language.

11 JUDGE BRENNER: I see.

12 MR. BORDENICK: Judge Brenner, could I make
13 two brief observations on these settlement matters?

14 JUDGE BRENNER: Yes.

15 MR. BORDENICK: I'm sure the Board has noted
16 that the Staff has not signed the settlement agreement.
17 So we're not a party to it generally speaking. Of
18 course we would have no objection to an Intervenor
19 withdrawing the contention.

20 However, in the case of these three
21 contentions there are certain additional matters beyond
22 the mere withdrawal of the contention. With respect to
23 SOC 19(j), for example, there is a requirement for
24 additional technical specifications, and we have in fact
25 already checked that out with our technical people and

1 we have no objection. And if the Board accepts the
2 agreement, the provisions in the agreement will in fact
3 be included in the technical specifications.

4 With respect to SC 17, we have no objection.
5 That agreement with respect to SC 2 which the Board was
6 just, or which Judge Brenner was just discussing, we
7 have been unable to discuss that particular document
8 with the staff technical person responsible for it,
9 since he is on sick leave presently. And hopefully at
10 the time the Board concludes its deliberations with
11 respect to that matter we will be able to advise the
12 Board with respect to what our position is.

13 Offhand, I don't see any particular problem
14 with it, but we do have to check with the technical
15 people involved or the technical person involved.

16 JUDGE BRENNER: You mentioned at least as to
17 19(j) you would have no trouble including it in your
18 technical specifications. I have been involved in a
19 similar approach in another proceeding. That is, there
20 was a proposal for ongoing requirements. The staff of
21 its own might not have required them, but there would be
22 no problem in including them for purposes of the
23 settlement along the line you indicated here, on 19(j)
24 at least.

25 The next question is whether the Staff would

1 include it in their inspection program, and beyond the
2 mere existence of the specification. That is, it would
3 be included within the scope of the general duties of
4 the resident inspector in the general inspection
5 program, so that any deviations would at least be
6 noted.

7 I'm not going so far as to inquire into any
8 potential penalties, but at least it would be noted, so
9 that the record and presumably the still-interested
10 parties, such as SOC, would be apprised if they chose to
11 follow the future inspection reports. And that would be
12 something that we would like also.

13 I think the best course of events, we would
14 appreciate your preliminary indication, if we could get
15 it, when we come back to this -- and we'll probably come
16 back to it this week -- it would be good if the Staff
17 could follow up with a filing at its convenience during
18 a break over the next few weeks indicating its agreement
19 if that is the case and setting forth what that
20 encompasses in the Staff's view, that is, inclusion in
21 the specifications and inspection program and so on in
22 general terms.

23 MR. BORDENICK: We'll do that.

24 JUDGE BRENNER: The next miscellaneous matter
25 -- and I take this up in no order of importance,

1 necessary order of importance -- is the request to defer
2 some of the testimony presently due on May 25 until June
3 22nd. There's agreement among all of the interested
4 parties that the QA-QC contentions, Suffolk County
5 contentions 12 through 15, would be deferred until June
6 22nd, and in fact we all contemplated when this was
7 raised at the prehearing conference that this would
8 likely be a subject for that deferral.

9 In addition, all parties have agreed to the
10 deferral of the filing of the testimony until June 22nd
11 on Suffolk County contention 16, which is the ATWS,
12 A-T-W-S, contention. There is disagreement on the part
13 of the Licensee -- I'm sorry, the Applicant, at least,
14 with respect to the pair of contentions, Suffolk County
15 contention 25 and SOC contention 19(a), related -- I
16 guess it can be loosely described as reactor pressure
17 vessel integrity and testing, and also disagreement by
18 LILCO with respect to the filing of the testimony on the
19 pair of contentions relating to reduction of the safety
20 relief valve challenges, which would be Suffolk County
21 contention 28(a)(vi), and SOC contention 7.A(6).

22 From the Board's point of view, there is a
23 good chance we would not run out of testimony if all
24 four -- if those matters were also deferred until June
25 22nd. However, we're not sure and we don't see any

1 compelling case for deferring those items that far,
2 given the deferment is spread out.

3 However, since it would not delay the course
4 of the proceeding, the Board agrees with Mr. Shea's
5 observation at the prehearing conference that, despite
6 our fears as to the sequencing of testimony, it appears
7 to be working quite well so far. We are going to split
8 the difference and require the filing on those two items
9 to be June 8th, Tuesday, June 8th, which also completes
10 the symmetry of every other Tuesday.

11 The one reason we didn't want to defer it
12 until June 22nd, even though we might not get to it
13 until then, we are not sure what week we will recess in
14 that period and we wanted to make sure we had testimony
15 filed sufficiently in advance so the parties can study
16 it, so the cross-examination plans can be filed, and if
17 there are motions to strike or the like, we don't have
18 to be put in a last minute situation again.

19 So that is our ruling on those two pairs of
20 contentions. The next miscellaneous item that I have is
21 the request by the county, with the agreement of Stone &
22 Webster -- there's no mention of LILCO in there, and
23 I'll talk about that again in a moment -- for an
24 extension of the time to report on the use of the Stone
25 & Webster documents which may be proprietary, at least

1 in Stone & Webster's view.

2 There was no problem with the initial deferral
3 and my secretary hopefully did contact the interested
4 parties and inform them of that, to get you by May 4th.
5 I'm a little concerned about waiting until May 25th,
6 even though Stone & Webster agreed. If we have a
7 disagreement and the Board rules against Stone &
8 Webster, I don't know if Stone & Webster fully
9 appreciates the necessary appellate procedures that they
10 might have a right to insist upon before we could try
11 the issue, and that is something that may take some
12 time.

13 And I do not want to go in camera on a mere
14 possibility that we might be reversed on appeal. So I
15 want the parties to think about that in terms of the
16 schedule.

17 I also realize the practicality of identifying
18 very far in advance of the conclusion of the testimony
19 what you may use. But you could err in the direction of
20 being conservative. If you're not sure, don't include
21 all the documents just for the sake of including it or
22 we'll have the same dispute we started with. But if it
23 is a close question and you might use it, include it in
24 the list for which you might use it and get together
25 with the interested parties.

1 Now, from the Board's point of view the
2 interested parties in this dispute is not just Stone &
3 Webster and the county. We want LILCO's position and
4 advice on it also as it develops. I guess I would be
5 surprised if you took a position on the record in out
6 and out disagreement with Stone & Webster's bottom line
7 You may wish to defer to them and their judgment as to
8 whether it is proprietary or not.

9 However, that does not exclude you from the
10 obligation of a party to advise us in the law and
11 procedures and whether, given their view as to why
12 something is proprietary, it fits the precedent and so
13 on.

14 MR. REVERLEY: May I speak to that briefly?

15 JUDGE BRENNER: Yes.

16 MR. REVERLEY: We have been and will continue
17 to be very interested in this. Indeed, we ultimately
18 suggested the order to resolve the discovery dispute,
19 having spent an inordinate amount of time attempting to
20 get the county and Stone & Webster to agree. We will
21 continue to follow the matter closely.

22 And the tradeoff, the potential delay that you
23 just mentioned, bothers us quite a bit. On the other
24 hand, we thought it unlikely that we could resolve it by
25 urging the county to specify more quickly those portions

1 of Stone & Webster documents you might want to use. But
2 rest assured, we will use our good offices and strong
3 arm to produce order out of chaos if it develops.

4 JUDGE BRENNER: Well, more than using your
5 good offices or bad offices, depending on whom you're
6 talking to, behind the scenes, I would want to get your
7 views on the record too. You may or may not have
8 noticed that we modified your proposed order in one
9 small detail and that was to add LILCO.

10 MR. REVERLEY: We did notice and we shall
11 certainly make our views known on the record.

12 JUDGE BRENNER: I'm also interested in the
13 staff's views, if we get down to a dispute, particularly
14 the staff's views as to whether the type of items for
15 which Stone & Webster may be asserting proprietary
16 treatment are typical of items for which proprietary
17 treatment has either been granted or denied in the past
18 as to Stone & Webster or as to other
19 architect-engineers.

20 It seems to me that the staff has a wealth of
21 experience in that area and it would be interesting if
22 the same documents that Stone & Webster is asserting
23 proprietary treatment for have in fact been routinely
24 available, or similar documents. Of course, that is one
25 of the problems of the test. So we would appreciate

1 that assistance from the Staff.

2 MR. BORDENICK: Assuming we can gather the
3 information, we'll provide it to you.

4 JUDGE BRENNER: Well, I assume the way this
5 has been developing is the parties should be in close
6 communication on the subject. So when we get -- when we
7 do agree on a date for which this information will be
8 filed with the Board, all of the parties should be
9 together on knowing what is going to be presented in the
10 positions.

11 If you do end up agreeing on essentially May
12 25th, one minor request would be that the information be
13 provided at the opening of business on May 24th to the
14 Board at our Bethesda offices. If there is a dispute in
15 addition to the substantive dispute, it would be helpful
16 if you could suggest in that filing, probably a joint
17 filing, the procedural steps that we should then follow
18 in terms of the dispute, including the possibility of
19 ruling against an asserted claim for proprietary
20 treatment on some or all of the documents.

21 I don't know when Suffolk County 27 is going
22 to come up. You did identify, I guess that was,
23 document 6 to that contention. Am I correct, you're
24 going to use it? I don't know what Stone & Webster's
25 position is as to whether they're going to assert

1 confidential treatment or not.

2 MR. LANPHER: Judge Brenner, I talked with
3 Stone & Webster's Washington counsel and one of his
4 colleagues last week, I think on Wednesday and Thursday,
5 and he was out of town, and I told them that I was
6 filing this. In fact, I read it to them. I thought
7 that they were going to file something with the Board by
8 today, though I didn't explicitly talk with them about
9 it.

10 I don't know exactly what their position is.
11 It was Mr. Edgar of the law firm of Morgan, Lewis and
12 Bockius, and he was away on travel until the end of last
13 week and he may be away still. He may be away still.
14 But he was handling it for Stone & Webster.

15 But I can try to get in touch with him if
16 you'd like.

17 JUDGE BRENNER: I think we'd like to find out
18 before the day the testimony is to be heard, and the
19 sooner the better. We can discuss the reasons of why we
20 would like to be able to resolve these matters with as
21 much time as possible. If we agree with that
22 proprietary claim, we will have to have some in camera
23 sessions.

24 MR. LANPHER: I don't know what their position
25 is. So let me during a break try to put in a call to

1 them.

2 JUDGE BRENNER: Hopefully, now, you've
3 identified the document with them. That is the first
4 step. Hopefully, you can become more refined in
5 discussions with them as to whether their claim is to
6 the whole document and whether there are portions you
7 can use and still do everything you need to do for your
8 case.

9 You might be able to rely on portions for
10 which their confidential claim is less strong, shall we
11 say, than other portions, and so on. So I'm not setting
12 a due date. I want to give you time to get together
13 with each of the parties, including Staff, LILCO, and
14 Stone & Webster's counsel, and the sooner you can get
15 back to us on it the better.

16 But we did appreciate the county separating
17 out that item, since it will all be heard in that
18 contention.

19 MR. LANPHER: Judge Brenner, could I mention
20 one preliminary thing also that we had mentioned at the
21 bench yesterday and you said that we should put it on
22 the record at some point? That pursuant to agreement
23 among the parties, the parties will not be serving their
24 cross-examination plans on other parties. And while one
25 of your earlier orders suggested that or directed that

1 we do that, none of us wants the others to see our
2 cross-examination plans, frankly. And we don't believe
3 anyone is trying to ex parte the Board on these.

4 JUDGE BRENNER: All right. You took me out of
5 order, but I'll jump to my general cross-examination
6 plan since you brought it up.

7 That is fine with the Board as to the parties
8 here now. If when we get to another phase of the
9 hearings and we end up with another party -- I am
10 thinking of NSC, the North Shore Coalition in the
11 emergency planning phase -- and Mr. Shapiro decides he
12 wants an exchange -- in other words, you need unanimous
13 agreement.

14 If any one party wants to insist on its right
15 to receive copies after the fact, they would be entitled
16 to it. It doesn't have to be me. That's why we set it
17 up. We thought this kind of schedule we contemplated
18 would be convenient to collect everything.

19 As to these parties here, for this phase of
20 the hearing, that is fine with the Board if you don't
21 want to receive it. I don't know why you don't want
22 to.

23 MR. LANPHER: Well, Judge Brenner, I'll be
24 frank. From the court's point of view, we decided to
25 try to make these meaningful documents for ourselves,

1 and frankly, if we have to exchange them with LILCO and
2 the Staff we're going to make them much more brief,
3 because we put some of our theories, thoughts and mental
4 processes in them.

5 The Board needs them to follow the course.
6 That is acceptable.

7 JUDGE BRENNER: We're talking about an
8 exchange well after the fact of their use.

9 MR. LANPHER: But well before the findings and
10 the briefing.

11 JUDGE BRENNER: All right, we accept that
12 mutual agreement of the parties, with one caveat. I may
13 -- and I will ask the parties in advance -- want to use
14 one set as an illustration, after it is used of course,
15 filed by some or all of the parties. I'll probably want
16 to keep it to the set filed by the different parties on
17 the same contention, because there is a variance with
18 the cross-examination plans from the different parties.

19 I alluded to that yesterday. But it's
20 difficult for the Board to discuss meaningfully unless
21 we see what you're talking about.

22 MR. LANPHER: How about from another case?

23 JUDGE BRENNER: Well, that would take a bit of
24 effort on my part to go through the files.

25 MR. REVERLEY: I think once you tell us in

1 more detail, perhaps, what would be useful to the Board,
2 you will not find that that variance exists, at least so
3 far as LILCO is concerned. And we heard yesterday --

4 JUDGE BRENNER: I'm referring to the county's
5 plans.

6 MR. REVERLEY: We heard yesterday loud and
7 clear that if it were a contest the county won. Well,
8 we don't like to lose contests, so if you tell us
9 exactly what the rules are we'll meet them.

10 JUDGE BRENNER: Let me try this for
11 discussion. We certainly do not require every question
12 in there, and I think that would be counterproductive of
13 your time and it would just be a formalistic ritual
14 which would not assist you either as experienced
15 counsel. Sometimes non-counsel choose to put every
16 question in and it helps them, but it is not necessary.
17 If you want to do it that way, it's fine.

18 The county, although not putting every
19 question, had some good detail, enough detail so that we
20 see the connection and the continuity as well as the
21 scope to where they're going. We see the main subject
22 and then the sub-subjects, so that we can predict -- not
23 that each sub-subject, if you will, is a question.
24 There might be three or four questions on each point for
25 all I know, and obviously questions come to the

1 cross-examiner's mind in terms of necessary follow-up
2 depending on the answer just received. But at least I
3 can see the trend of the questions and where it is going
4 quite well.

5 What the county has done is filed the
6 equivalent of a major heading -- what LILCO has done is
7 filed the equivalent of a major heading of the county's
8 plan, with some of the detail but not enough to see the
9 true progression. Again, we're not going to hold you
10 absolutely to the plan, but if I see a plan that just
11 has three or four sentences and then five hours of
12 cross-examination later we're still discussing it -- and
13 that was a bit of my problem with item one on the first
14 plan.

15 And again, I didn't mean to be critical. It
16 is this trial and error and experimentation process, and
17 we perhaps should have given you more guidance
18 initially, and it's difficult to discuss without
19 disclosing the plan. Subjectively, I expected less
20 questioning on the first item, and I also expected the
21 questioning to be directed somewhat differently, given
22 the subject heading.

23 I'm not cutting off -- I did not at any point
24 cut off examination for that reason. I only brought it
25 up for the future, and that's the only reason.

1 As to the Staff, there is some variance within
2 the plans filed by the Staff, so maybe I cannot address
3 it so the Staff would understand it. The plan filed by
4 the Staff on 7(b) is quite close to the type of plan
5 filed by LILCO, and I can't tell until I hear the
6 cross-examination whether the examination will greatly,
7 slightly, or not at all exceed the plan.

8 It was a very helpful plan. It may be that
9 some more detail would be useful, but maybe not. I'll
10 know more after the questioning. That's why I made the
11 observation I made as to LILCO, because I had been
12 questioning as to some of the Staff's other plans.
13 They're really not helpful for the reason we need the
14 plans.

15 I have in mind just as an example, and it's in
16 my mind, the plan the Staff filed on passive valve
17 failure, as I recall it, contention 11. It would merely
18 suffice as the introductory paragraph to the rest of the
19 cross-examination plan, unless it turns out you have
20 almost no questions.

21 I emphasize this is not that we are in school
22 and we're not grading the plans. I'm just attempting to
23 provide guidance for the future.

24 MR. BORDENICK: I am mindful of the fact that
25 the Board indicated they wanted coordination on the one

1 hand by the Staff, on the other hand Suffolk County and
2 SOC. And I think one of the problems that I had on this
3 first round was there just wasn't enough time to
4 coordinate beyond 7(b) with the Applicant. That has
5 been my personal experience. This case may be
6 different, I don't know.

7 But in the past, I think the problem I am
8 having will be solved, hopefully, on subsequent rounds
9 of these plans by better coordination with the
10 Applicant. But it's been my experience that since the
11 Applicant precedes the Staff in cross-examination, by
12 and large they will have covered at least identifying
13 general headings, they will have covered essentially the
14 same grounds we have covered. There may be an
15 additional one or two areas they didn't cover which
16 will, and there could well be some follow-up questions
17 on the areas they did.

18 And with the exception of 7(b), that is how we
19 prepared our cross-examination plan, after a brief phone
20 conversation which is essentially the only coordination
21 we had this time. Keeping in mind further, better
22 coordination next time, and also the guidance that the
23 Board has given this morning, I think the plan will be
24 something different the second time.

25 JUDGE BRENNER: I appreciate that and I should

1 have mentioned that the staff's plans were phrased
2 conditionally. I assume we could just confirm that part
3 of what they were raising was not being sure, how much
4 the staff wanted to be sure would be covered on the
5 record would be covered previously by LILCO.

6 I guess the point is, if you haven't performed
7 the coordination as fully as you might like, then
8 there's no use it being in your plan and it can be
9 eliminated, as opposed to the other way around.

10 MR. REVERLEY: Judge, may I make two quick
11 observations? One, we will certainly be more
12 enthusiastic about filing these plans now that we know
13 the county and SOC are not going to be reading them.

14 Second, it does seem to us that often,
15 particularly given the cost of business in this
16 proceeding, that one's thinking advances after one has
17 filed the plan. Would it be feasible for us, and the
18 other parties if they chose, to file an amended plan
19 with you, assuming our thinking has materially
20 advanced? In the real world, you simply can't get ready
21 in time when you file the plan, though certainly you can
22 do a lot before you file the plan.

23 JUDGE BRENNER: Yes, we will accept that. We
24 won't require it.

25 My favorite is a plan that covers one or two

1 subjects in two or three sentences and then, the day
2 before cross-examination, suddenly there's a four-page
3 detailed plan. But that is not what you're talking
4 about.

5 MR. REVERLEY: That's not what I'm talking
6 about. I'm talking about perhaps discovery in a new
7 area or realizing you wish to organize it in a
8 singularly different fashion.

9 JUDGE BRENNER: Yes, that would be helpful.
10 We won't require it. In other words, you can vary the
11 plan with your knowledge without filing an amendment.
12 But that would be helpful.

13 You'll find that these can serve to provide a
14 running index of the record, not keyed to the transcript
15 page, but it's a beginning where you might pull some of
16 your findings out and so on. I have used them for that
17 in the past.

18 While we're on the subject of
19 cross-examination plans, let me confirm what I think I
20 mentioned in one or two places, but I want to make it a
21 ruling now. If you're going to file a motion to strike
22 the testimony before any examination, that is on the
23 basis solely of the written testimony, that motion
24 should be filed at the same time that the
25 cross-examination plan is filed. This is on a receipt

1 basis. That motion should be served on the other
2 interested parties.

3 If such motions are filed, depending on the
4 timing, we can then discuss whether the response can be
5 oral or should also be in writing.

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1 MR. LANPHER: Judge Brenner, do those motions
2 or do you contemplate those motions also covering
3 motions where a party wants to raise questions as to the
4 expertise of a witness to sponsor a particular piece of
5 testimony?

6 JUDGE BRENNER: No, because it seems to me you
7 are almost inevitably going to want to do some voir dire
8 as a basis for the motion.

9 What we would want in that sense -- and it
10 would be in the realm of educating a witness -- that is
11 why the kind of motion I am talking about does not
12 depend at all on the questioning of the witness and
13 there is no reason not to require it in advance at the
14 time indicated, and also to the opposing parties.

15 And the filing or non-filing of that type of
16 motion to strike does not preclude moving to strike at
17 any point in the questioning or after the questioning.
18 If you are going -- if you are planning in advance that
19 you may be leading up to a motion to strike based on
20 expertise or something, we would expect that to be
21 indicated in the cross examination plan, not in terms of
22 a motion but, depending on the above questions, mainly
23 to strike on this basis -- a notation like that.

24 Of course, you may get surprised by some
25 answers which would give rise in your mind to a motion

1 to strike. Then you could contemplate that the answers
2 would be so bad, in your view, that you could move to
3 strike and we will be flexible.

4 Mr. Shea, let me mention that the U.S. Mails
5 are not a real good form of getting cross examination
6 plans to us on a received date. The plan you filed that
7 was postmarked Monday, we received it Thursday. The
8 receipt due date was Tuesday. I am sure you didn't
9 contemplate it would be that long of a delay.

10 If you are going to first send it off the day
11 before it is due, this will not be a problem when we are
12 here in session. It will be a problem, perhaps, for
13 this filing we are requiring on that Thursday filing,
14 which was -- I have lost track of the date now -- which
15 was the 13th for us to receive it for the ones we have
16 not identified yet.

17 You are going to have to find a more expedited
18 means for getting it to us -- Express Mail, at least,
19 and perhaps, even better than that.

20 Another miscellaneous matter. The Staff at
21 the prehearing conference had estimated that we would
22 receive the Staff's analysis on a remote shutdown panel
23 which related to Suffolk County Contention 1 by the end
24 of April. If we were to have received it, I sure missed
25 it, and I remind the Staff if in fact it was not filed

1 of our strong point that if you are not going to make a
2 schedule that we were depending on for procedural steps
3 in this proceeding we would be advised of that instead
4 of just letting the date pass with silence.

5 MR. REPKA: Judge Brenner, we are now in a
6 position to revise that schedule. On our interim March
7 29 filing we were awaiting a further submittal from the
8 Applicant. That submittal was due sometime in April.
9 It has not yet arrived and until that arrives the Staff
10 cannot complete its review.

11 JUDGE BRENNER: When you gave me the estimate,
12 I guess about two weeks ago -- maybe a little longer --
13 we were not informed of that. I had the definite
14 impression that the Staff had everything in hand. I
15 recognize schedules are guestimates, but if we are this
16 far off on our scheduling and you are estimating
17 something that happens in just the next two weeks, it
18 doesn't assist us in looking ahead.

19 MR. REPKA: Judge Brenner, if you look at our
20 status report filed on the 29th, it says very clearly
21 that we are awaiting a further submittal. We cannot
22 complete the review until that submittal comes. The
23 Staff cannot manufacture information.

24 JUDGE BRENNER: Does LILCO agree with that
25 assessment and, if so, what are we talking about? When

1 will it be filed?

2 MR. REVERLEY: I don't know, Judge, but I'll
3 try to find out.

4 JUDGE BRENNER: Well, we ought to key the
5 schedule, rather than specific days, to filings, but I
6 would reiterate, please don't let these dates pass in
7 silence without letting us know when something is not
8 going to occur, especially something that we are looking
9 to see when it will fit in for the schedule of testimony
10 that we have already established and we are going to
11 have that problem with respect to the other items also.

12 Some of these matters are going to fall
13 outside the normal schedule in which we are going to
14 have findings on other general safety issues. Right now
15 it looks like we are going to have three broad bases of
16 findings -- the safety issues that we are taking up now,
17 security issues and emergency planning issues related to
18 LILCO's actions. I guess later on there will be a
19 fourth phase on emergency planning actions relating to
20 governmental authorities.

21 We are also going to have this apparently
22 miscellaneous matters where if they had followed in the
23 schedule normally would have been included in this
24 phase. So we want to keep abreast of what is occurring,
25 and how we can schedule hearings for these other

1 matters -- schedule them best. So I want an update from
2 LILCO and the Staff as soon as possible as to further
3 developments on the remote shutdown panel, since that is
4 the one we expected at that time.

5 MR. REVERLEY: I think I can give you that
6 update from the Applicant's perspective. It was just
7 handed to me. It apparently is included in a letter
8 from LILCO to the Staff dated April 20, 1982, and
9 labeled SNRC-691. A copy of that letter was sent to all
10 parties and to the Board, I assume -- I trust.

11 So if this information is accurate, we have
12 supplied the information.

13 JUDGE BRENNER: That is not what Mr. Repka
14 thinks. At least he doesn't know that you did.

15 MR. REPKA: I am not aware of that information.

16 JUDGE BRENNER: Can you check on it this week
17 and get back to us on the record? My point here, the
18 Staff has a substantive problem. I am certainly not
19 talking about pressuring the Staff with respect to a
20 schedule to do your job and do it right, but if it is a
21 matter of the Staff scheduling the order in which it is
22 doing things, in lieu of ignorance of what we want to do
23 in this proceeding -- I am not talking about those
24 present. I am talking about people who may be doing
25 work on it who are not as aware of what is going on.

1 I do not want that to happen. And if this
2 gets filed at a point when there is less than that
3 40-day gap that we provided for the filing of testimony
4 so that 40-day gap goes beyond June 22, then we are
5 going to have a problem. I don't want it to get that
6 tight if that can be avoided in the event some
7 unsuspected matter comes up with respect to discovery on
8 it and so on.

9 So if you could communicate that, we would
10 appreciate it and also get back to us in terms of
11 whether the Staff now has received the information and,
12 if that is the case, whether we can get an estimate as
13 to whether what is involved appears to be -- I don't
14 know whether it is a week's worth of work or three
15 weeks' worth.

16 I assumed from the previous schedule that once
17 you had the information and absent any substantive
18 problem which, of course, could occur, upon review of
19 the information that you were contemplating a matter of
20 a week or two. I am saying that now based on the
21 previous estimate.

22 So if you could get back to us, we would
23 appreciate that.

24 MR. REPKA: We will check on that as soon as
25 possible.

1 JUDGE BRENNER: The Board indicated previously
2 that we would discuss the format for proposed findings
3 in the future. Off the record, Mr. Lanpher asked me
4 about that also. We contemplate doing that at some
5 point after the break. I am not sure whether it will be
6 the first week or the week thereafter, but we are not
7 going to wait until the end of the proceeding.

8 We realize that parties should begin some work
9 on the findings. But I can mention one thing with
10 respect to the findings. In the past, at least,
11 Licensing Board initial decisions sometimes have quite a
12 lengthy section on procedural background and it is not
13 until page 20 or 30 or 40 that you get to the evidence
14 in the hearing and the hearing opening and so on.

15 Our view is that is not necessary to be
16 included in the front of the decision and, therefore,
17 should be included in the front of the proposed
18 findings. However, it is useful as part of the decision
19 in the case. But we would make that an appendix to our
20 decision and perhaps even an unpublished appendix, so it
21 would be there on the record and the Appeal Board would
22 have it for their use.

23 Usually that background engenders little
24 controversy between the parties and, therefore, what we
25 would hope to have occur is that the parties can agree

1 essentially on the procedural background and file one
2 version that they agree with. I would suggest that
3 perhaps the Staff and/or LILCO could provide the initial
4 draft and then make it available to SOC and the County
5 for their comments.

6 Now you don't have to reach agreement, but
7 what we would contemplate is this -- and we will talk
8 about a more precise schedule when we get near the end
9 of this phase -- we would contemplate getting it out of
10 the way -- that is, filing it in advance of the normal
11 due date for LILCO's filings, which I guess would be 30
12 days after the close of whatever phase we are going to
13 require the findings on.

14 So perhaps about two weeks into the close of
15 that phase we could get the procedural background in,
16 perhaps with the agreement of all of the parties, but at
17 least with the agreement of LILCO and, perhaps, the
18 Staff. And then about two weeks after that get any
19 disagreement that the other parties may want to file
20 with respect to the procedural background.

21 In other words, the County and SOC, you will
22 not have to prepare your whole section. You can just
23 comment on the other section, although I would hope that
24 you could reach agreement and that further comment
25 period might not even be necessary.

1 In addition, you should have been provided
2 with examples of three documents that the Board in
3 another case has found very useful. Two of them would
4 be documents that we would -- I will fall short of
5 saying we require. We would ask, and if there is a
6 problem that it cannot be done that we be apprised of it
7 later, that two of these documents be filed at the time
8 that the initial filing of procedural background is
9 filed by LIICO, and I guess I am looking primarily to
10 LIICO and/or the Staff to provide two of these documents.

11 One of them is listing that is headed "Written
12 Testimony Received into Evidence," and that would be as
13 to all written testimony. Not all the witnesses may
14 have testified, although hopefully the correlation
15 should be very close to 100 percent. But it would be
16 the list of all written testimony received by that phase
17 on which we are filing findings on in alphabetical order
18 of all the witnesses. That is not broken down by
19 parties and we would issue that as an appendix to the
20 decision also.

21 The reason we want it early is it is very
22 helpful to us in going through the record and presumably
23 it is something you would have to prepare anyway in your
24 preparation -- something close to it. If there is a
25 particular burden involved in this format, we will hear

1 about it. We are not imposing this without comment, but
2 if there is a problem we would appreciate hearing about
3 it.

4 An additional separate appendix which we would
5 also require be filed at that time is the list of
6 exhibits. This is just one page I provided as an
7 example, so you don't have the entire set. But the
8 exhibits are broken down by parties and if they are
9 Board exhibits by the Board. And within that category,
10 of course, they are in sequence with the description of
11 the exhibit, the transcript page at which it was
12 identified, and if admitted the transcript page at which
13 it was admitted. As an addition, we may bind in some
14 exhibits, so as to those it would be helpful after the
15 admitted page to indicate if it was bound in.

16 Again, if this presents a burden over and
17 above what you ordinarily would have put together, we
18 will hear about it, but it will help us to have this and
19 the other parties also.

20 The other document we provided as a format
21 also from another case is of a different nature. It is
22 not something that we would require be filed formally
23 and it is not something that would await the findings.
24 It is a listing of the sequence of testimony by subject
25 and under the subject the particular Contentions and

1 then a list of the witnesses, and also we would like an
2 indication of party for that witness, the date the
3 testimony first began -- we realize, of course, it would
4 continue over several days -- and also the transcript at
5 which the witness took the stand.

6 We have used this in a proceeding in which
7 there was a lot of testimony and I think this proceeding
8 fits that category also. As a running summary of the
9 hearing, this is something that we had updated when it
10 was convenient, approximately weekly. Sometimes in the
11 press of business it would slip to a two-week period.
12 But the Board would frankly do this on its own if we had
13 the secretarial services here. We don't.

14 I am asking all the parties jointly to work on
15 this and figure out which party can most efficiently
16 take the lead on it, depending on the secretarial
17 services available in the area and so on. This does not
18 have to be filed -- in fact, it should not be filed in
19 the case. It is just something to be provided on an
20 update basis to the Board and the parties at the hearing.

21 So I would like the parties to let the Board
22 know when we come back the last week in May who is going
23 to take the lead on that and whether or not there are
24 problems that we don't contemplate by suggesting this.

25 MR. REVERLEY: LILCO will take care of all

1 three aspects of the indexing. We normally do these
2 three, prepare these sorts of indices anyway and we will
3 be glad to do it and make it available to the other
4 parties and the Board.

5 JUDGE BRENNER: All right. We indicated the
6 time frame. Two of these would come after and one of
7 them would be an update. It becomes very useful when
8 some testimony a month from now is related to something
9 we heard at this point. We want to be able to pull it
10 out and so on.

11 At the request of my secretary, who had some
12 trouble finding documents in this case, we would ask
13 that in the future all documents have the party and the
14 date it is filed in the upper righthand corner of the
15 first page and also with respect to the first page of
16 enclosures and attachments. We would appreciate it, and
17 I have in mind particularly attachments to discovery
18 responses and responses to testimony to have a cover
19 page on it identifying the attachment and what it is an
20 attachment to.

21 The County had a nice cover page on the
22 attachments for the testimony that was bound in, but you
23 didn't indicate what testimony it was attached to and we
24 would appreciate that.

25 We would also appreciate on the subject of

1 minor matters of attachments that the attachments be
2 separated from the basic testimony. It took quite a
3 while to figure out where attachment 2 ended and
4 attachment 3 began and so on. They should be separated
5 and then attached with some larger clip, obviously.

6 In that same light, the cross examination
7 plans should start a new page with an indication of the
8 party filing the plan and what testimony is being filed
9 on as to each set of testimony. The Staff's was not
10 prepared that way and we had to cut and paste it and
11 separate it into different categories.

12 Another miscellaneous matter. The Board would
13 like three additional copies of LILCO's bound looseleaf
14 updated emergency plan. That is the type of volume that
15 matches the FSAR. We have received the updates, the
16 amendments, but they weren't, of course, assimilated
17 into the larger document. We have one copy of the
18 emergency plan, looseleaf version, back at the office
19 and on a quite perusal on my part I am not convinced it
20 has all the updatings in it.

21 But regardless of that, we would like three
22 additional copies. We would like two of the copies
23 mailed -- and there is no particular hurry; it can be
24 regular mail -- mailed to our offices in Bethesda to my
25 attention would be fine, and one copy that would be the

1 Board's copy for our use provided at the hearing -- not
2 this week, but as soon as practicable when we come back.

3 Two other minor matters and then we will turn
4 to the security area after that. Two corrections in the
5 transcript when we were last out here in mid-April. In
6 the limited appearance session of April 13 it listed
7 Judge Shon rather than Judge Morris on the cover page.
8 That is transcript page 530. Of course, that was an
9 error. Judge Morris was the judge in attendance.

10 In addition, in a limited appearance with
11 respect to Ms. Jean Tietke -- T-i-e-t-k-e -- page 588
12 and 586 of the transcript should be reversed, and if you
13 don't do that, at least, you will have a lot of
14 difficulty to figure out what is happening and that
15 simple reversal solves the problem.

16 Turning to the security area, the Board has
17 not received the anticipated responses of the Staff's
18 and LILCO's position on the admissibility of the new
19 Contention 5 by the County. We had expected to receive
20 that on the 30th in our offices and one reason we set
21 that up is we wanted to know what the situation was
22 before we came down here.

23 What we did not want to have to deal with is
24 confidential documents down here. Has that response
25 been filed or is just delayed in getting to us?

1 MR. EARLEY: Judge Brenner, we received the
2 County's revised security Contention, I believe it was,
3 last Friday and reviewed it and have discussed with the
4 County in very general terms the objections we have and
5 have provided them with a draft of our objections, and
6 from my conversations we believe we can work out those
7 objections and we'll get back to you.

8 MR. BORDENICK: Judge Brenner, I had given a
9 message to your secretary last week -- I don't recall
10 whether it was Thursday or Friday, offhand -- to the
11 effect that because of logistical problems the Applicant
12 and the Staff would not be giving you our position on
13 the Contention until, I believe it was, yesterday.

14 JUDGE BRENNER: I got that message but I
15 didn't receive anything yesterday.

16 MR. BORDENICK: That is correct. I approached
17 the attorney for the County yesterday and I think it was
18 just a question of so many things taking place yesterday
19 that we just inadvertently decided to put it over to
20 today. But I think we are fairly close, if we are not
21 at that point, of presenting an agreed situation to the
22 Board today.

23 JUDGE BRENNER: Well, let me put it this way.
24 If you are going to need a ruling from the Board, I want
25 the filings very early next week. We are not going to

1 be available after next week. We are going to be away
2 for the week after.

3 MR. BORDENICK: I think we could possibly do
4 it today.

5 JUDGE BRENNER: Well, I don't want to do it up
6 here anyway. It may involve some confidential filings
7 and it will be fine if we could get the documentation
8 provided back at the office next week for this same
9 procedure that generally appears to be working. If you
10 want to orally inform us that it has been resolved, if
11 that is the case --

12 MR. BORDENICK: That is essentially what I was
13 alluding to.

14 JUDGE BRENNER: All right. That will be all
15 right.

16 The Board would like one copy of the security
17 plan and also -- I want to phrase this generally -- the
18 other documents that would be put into evidence, given
19 the nature of the contentions. I am not talking about
20 every miscellaneous exhibit now, but the main documents,
21 such as the analysis upon which the additional
22 Contention is based on and anything of that nature.

23 That should be provided to our offices. That
24 would be good if advance notice could be given to my
25 secretary so that she can be available if I am absent.

1 She will know how to handle it and what safe to put it
2 in and so on.

3 What do you see -- what are the feet involved
4 in that request, do you know? Well, you don't know the
5 size of the safe drawer.

6 MR. EARLEY: Judge, I believe that it is
7 probably the size of three or four notebooks in total
8 volume -- the large black notebooks.

9 JUDGE BRENNER: There was a request we
10 received with respect to a security site visit. Now I
11 know there may be dispute as to the individuals involved
12 and it would depend on to whom access is granted in
13 general on a security area, but other than that problem,
14 I was surprised to see the motion filed before us
15 without any indication that there was agreement or
16 disagreement.

17 I guess I would ask the County.

18 MR. BROWN: It is our understanding we would
19 not file such a motion unless there were disagreements,
20 but we should perhaps make it explicit, but that was our
21 understanding -- that there was disagreement of fact and
22 that was filed. Now I think there may be agreement, so
23 it is not necessary for a ruling.

24 JUDGE BRENNER: In the future, it would help
25 us to have some indication of what the nature of the

1 disagreement is. Of course, we would turn to the party
2 disagreeing for the details to support that position,
3 but just an indication of where the disagreement lies.
4 But, based on what you just said, we completed this item
5 for now.

6 With respect -- the only other matter pending
7 before us on the security plan, and that is the dispute
8 that we heard about for the first time late yesterday
9 with respect to having an additional representative of
10 the County. We have thought about it and we are not
11 going to hear argument about it at this time for a
12 number of reasons.

13 We think it is liable to take a while and it
14 is going to be digressive from the issues before us at
15 this time. In addition, I am not convinced that some
16 resolution can't be reached among the parties and I am
17 going to require that that be attempted.

18 However, our guidance is that I want that
19 resolution as to Mr. Jones attempted in a context of
20 total resolution of the total finite number of persons
21 from the County who are going to seek access instead of
22 the seriatim requests. We are now, as I count, up to
23 three or four attorneys, depending on whether you want
24 Ms. Dempsey on, three experts that we had identified --
25 or, I guess, four or five attorneys, depending on

1 whether Ms. Dempsey is involved, if you count Mr. Miller
2 -- three experts that we previously had the affidavits
3 and agreements on, and you informed us yesterday of
4 three additional experts, so that is six. We now have a
5 total of nine or ten people, plus the two secretaries --
6 and I don't count them in there in this equation because
7 their role is different.

8 So the Board wants an attempt at further
9 resolution with respect to Mr. Jones, that resolution to
10 include the total last word, barring unexpected
11 surprises with good cause shown, as to all of the
12 persons for whom the County is going to seek access, and
13 we want a list of those persons and along with that list
14 a clarification of Ms. Dempsey's status with respect to
15 the prior order, since the last written record indicates
16 that she would no longer have access.

17 We would look forward to either a filing that
18 agreement has been reached or further filing that there
19 has been disagreement.

20 It occurs to the Board that of course we have
21 no way of knowing how we would decide on the merits with
22 respect to Mr. Jones in particular, and we can defer
23 arguments on that, but in general there is already an
24 extraordinarily large number of persons from the
25 Counties that have been granted access and that total

1 number have been proposed at once. I suspect that we
2 would have asked you to take your best shot and pick
3 some, not all, and absent a showing as to why you need
4 these.

5 MR. BROWN: Well, I think I'd like to raise a
6 point here.

7 JUDGE BRENNER: Well, I don't think there is
8 going to be any argument on this.

9 MR. BROWN: Well, there is an area of
10 misunderstanding I would like to correct.

11 JUDGE BRENNER: Well, let me finish this. If
12 there is a disagreement on it and, therefore, we would
13 have to rule on whether Mr. Jones will have access, we
14 want written filings on that and an affidavit by Mr.
15 Jones as to why he believes he needs access in order to
16 avoid hindering the County's case on this matter. And
17 then we would also need the filing by LILCO as to why
18 they object to Mr. Jones having access.

19 Another reason I don't want to deal with it
20 orally here is I believe at least one Appeals Board
21 decision, if not others, has guidance that may be
22 applicable to the point. I don't have the decision
23 here. I am not prepared to read it in a hurry and then
24 go through the other matters that we want to handle in
25 any event. So if there is disagreement and recorded

1 filings on it, I expect both sides to consult the
2 precedent of Diablo Canyon and anything else that might
3 be pertinent on the point.

4 That is all we have on this matter now.

5 MR. BROWN: Well, I have something because I
6 would like to clear up. It does not go to Mr. Jones.
7 It goes to an area in your perspective.

8 JUDGE BRENNER: Well, I haven't made any
9 ruling, so --

10 MR. BROWN: Well, I just want to make a record
11 to help the Board and I would hope they won't cut me off.

12 JUDGE BRENNER: How long will you be?

13 MR. BROWN: You may ask that question. I
14 presume it will take one or two minutes, but you may ask
15 a question and then it will take longer.

16 JUDGE BRENNER: Go ahead.

17 MR. BROWN: This is probably the first case,
18 certainly a litigated one, in which a county is a
19 party. The County is the responsible person that would
20 have to respond if there were an incident at the
21 Shoreham facility. Therefore, the County has two roles.

22 JUDGE BRENNER: Mr. Brown, I am going to cut
23 you off right now because you are arguing support.

24 MR. BROWN: I am not doing that. I would just
25 have to finish. I was given two minutes. I would like

1 to make my statement.

2 JUDGE BRENNER: No.

3 MR. BROWN: You cannot anticipate what I am
4 going to say.

5 JUDGE BRENNER: Mr. Brown, I have ruled. If
6 you don't reach agreement, we will hear your full
7 argument. I am not ruling at this time on the merits.
8 But if you reach agreement we don't have to get into
9 this.

10 All right. We have concluded all of our
11 preliminary matters. Now I would ask the witnesses to
12 take the stand at this time.

13 JUDGE BRENNER: Judge Morris has suggested,
14 since the witnesses are not in place we will take a
15 ten-minute break at this point.

16 (Whereupon, at 10:16 a.m., a brief recess was
17 taken.)

18 JUDGE BRENNER: Back on the record. When we
19 interrupted the cross examination there was a pending
20 question for which Mr. Hubbard was going to provide the
21 answer and for the sake of continuity I would ask Mr.
22 Ellis if he could repeat the question.

23 Whereupon,

24 RICHARD B. HUBBARD,

25 GREGORY C. MINOR,

1 MARC W. GOLDSMITH,

2 and

3 SUSAN J. HARWOOD,

4 the witnesses on the stand at the time of recess, having
5 been previously duly sworn, resumed the stand and were
6 further examined and testified as follows:

7 CROSS EXAMINATION - Resumed

8 BY MR. ELLIS:

9 Q Mr. Hubbard, are there any other portions of
10 your testimony apart from the portion you read aloud on
11 pages 9 through 11 which is taken from some report or
12 publications without attribution as a quote?

13 A (WITNESS HUBBARD) That is really a two-part
14 question. The part about without attribution,
15 everything in the testimony has been attributed.

16 And the second part of your question, there
17 are a number of references cited in my testimony and
18 some of those include actual quotations for the
19 background information in Section 3 which I authored
20 where sources are referenced, in general the words in
21 that testimony are paraphrased from the source.
22 However, there may be cases where sentences or phrases
23 from the cited references are directly repeated.

24 Q You were reading that answer, weren't you, Mr.
25 Hubbard?

1 A (WITNESS HUBBARD) Yes, I was. I prepared
2 that this morning because I knew that this was the
3 pending question.

4 Q The point I want to get at, Mr. Hubbard, is
5 that I don't want to be cross examining on language if I
6 don't know where the language came from, and if there is
7 an exact quote or an essentially verbatim quote, as
8 there was for pages 9 through 11, I would be grateful if
9 you would point it out for me now.

10 A (WITNESS HUBBARD) I will stand with the
11 previous answer.

12 Q All right. Then I understand there are no
13 verbatim or essentially verbatim quotes in your
14 testimony that are not indicated as quotes.

15 A (WITNESS HUBBARD) That is not true. I said
16 there may be cases where sentences or phrases from the
17 cited references are directly repeated.

18 JUDGE BRENNER: Well, Mr. Hubbard, I think the
19 question is, or at least the question I would like
20 answered at this point is where there are such
21 instances, that is, where you cannot tell from the
22 format of the testimony -- it is not in quotes or not
23 indented so that it appears to be quotes -- I am not
24 talking about one word, but a substantial phrase or a
25 number of sentences similar although not necessarily

1 equal in length to the example yesterday -- could you
2 identify any such instances?

3 WITNESS HUBBARD: I am not aware of any that
4 go on for a whole paragraph or paragraphs. There may be
5 a sentence or two that are together, particularly from
6 the Rogovin or Kemeny reports, but I looked last night
7 and I cannot identify any of those sorts. But if
8 somebody wanted to show me and say well, there is a
9 sentence that is very near like that of the phrase that
10 is in Kemeny or Rogovin, that may well be the case.

11 I did not have all the sources with me that
12 are referenced in the testimony. Most of them I had.

13 JUDGE BRENNER: Well, can you tell, looking
14 through at least the section you have been discussing,
15 on which you were the principal author, when you have
16 almost entire sentences or perhaps a number of
17 sentences, whether they are your words or whether they
18 are essentially verbatim from another source?

19 WITNESS HUBBARD: No, I cannot. The testimony
20 went through a number of drafts. We, in general we
21 quoted something beyond a sentence or something of that
22 sort, we showed it as a quote. But in every case where
23 we relied upon information from some other document we
24 cited that particular document.

25 JUDGE BRENNER: Let me be precise now. In my

1 question I am not talking about a citation of the
2 document. I understand your answer as to the example
3 which was discussed yesterday, that in your view you did
4 have a citation. I am not discussing that.

5 I am discussing whether, regardless of whether
6 or not there was a citation, whether beyond that it
7 essentially should have been, could have been quoted
8 material and is not presently so indicated in the
9 testimony, at least in the portion for which you were
10 the principal author.

11 As I understand what you have stated now, that
12 there may be -- you cannot tell, but you don't believe
13 there is any such instance that approaches the length of
14 the example yesterday.

15 WITNESS HUBBARD: I can say with a great deal
16 of certainty that there is none that is over a couple of
17 sentences long other than the example that we had
18 yesterday.

19 JUDGE BRENNER: All right.

20 WITNESS HUBBARD: There may be phrases or a
21 sentence or a sentence and a half that are in many ways
22 equivalent, for example, to what is in Kemeny or Rogovin
23 or some other Three Mile Island-related studies.

24 JUDGE BRENNER: At least where they are almost
25 sentences or slightly beyond sentences, can you identify

1 those instances?

2 WITNESS HUBBARD: Those are the instances
3 where I have references cited in the testimony. I am
4 not trying to be evasive. The only one that I am aware
5 of that was long in length could have been a direct
6 quote is the one that was pointed out by Mr. Ellis
7 yesterday.

8 JUDGE BRENNER: Mr. Ellis.

9 BY MR. ELLIS: (resuming)

10 Q Mr. Hubbard, yesterday you mentioned two PRA
11 analyses in which you had been involved -- one with the
12 Caorso Italian plant, and one with the Barsebaeck in
13 Sweden. Is that correct?

14 A (WITNESS HUBBARD) That is correct.

15 Q To clarify that matter, you were only involved
16 in a phase of the PRA, not the entire PRA. Is that
17 correct?

18 A (WITNESS HUBBARD) That is not correct.

19 Q You were involved in the entire PRA?

20 A (WITNESS HUBBARD) Yes, I was.

21 Q Did you actually do fault trees and event
22 trees for each of the two plants?

23 A (WITNESS HUBBARD) I personally did not. Mr.
24 Minor, who is here with me, did some of that as well as
25 Mr. Briedenbaugh. However, I did participate in

1 reviewing some of the fault trees and doing some of the
2 tours of the sites, so I participated in discussions
3 when we were reviewing the adequacy of the fault trees.

4 Q Was your work peer-reviewed?

5 A (WITNESS HUBBARD) Yes, it was. In Sweden
6 this was a parallel study. The Swedish government had
7 hired their own national laboratory to also conduct the
8 risk assessment, so following the completion of the risk
9 study in Sweden, we met for -- we exchanged reports. We
10 spent seven days in public meetings in Stockholm, having
11 meetings to discuss which assumptions more accurately
12 reflected the plan and on the eighth day we put on a
13 joint debate for the Swedish Parliament. The following
14 day we put on a joint presentation for members of
15 Parliament in Denmark in Copenhagen. So in the case of
16 the Swedish one it had an extensive peer review.

17 The Italian study, as I mentioned, was
18 presented in a forum presented by the regional
19 government in Rome, which would be equivalent to our
20 state governments, and that was critiqued by both CNEN,
21 which is the equivalent of the Italian nuclear
22 regulatory agency, and by the utility, ENEL.

23 So yes, in answer to your question.

24 Q Do I understand, then, that you or Mr.
25 Minor -- and either of you may answer this -- did event

1 trees or fault trees specific to Caorso?

2 A (WITNESS HUBBARD) As I mentioned yesterday,
3 for Caorso, we took the WASH-1400 fault trees for our
4 boiling water reactor and looked for common systems or
5 differences in systems, and where there seemed to be
6 major differences we modified the WASH-1400 fault trees.

7 For the Swedish study, a number of fault trees
8 were constructed.

9 A (WITNESS MINOR) I would like to add to that
10 briefly. In the Swedish study we had a subcontractor
11 that was also working with us in the fault tree area and
12 I worked with him extensively in the work that they were
13 doing in obtaining data from the Swedish reactor vendors
14 and the Swedish nuclear regulatory commission -- the
15 Nuclear Power Inspectorate, they call it -- in obtaining
16 the characteristics of the system to be sure that we had
17 the proper fault trees modeled for the plant.

18 We spent many days in Sweden with them in
19 obtaining this data and reviewing it for the fault trees.

20 Q Who was the subcontractor?

21 A (WITNESS MINOR) That was SAI -- Science
22 Applications Incorporated.

23 Q They are the same people who are doing the
24 Shoreham PRA, aren't they?

25 A (WITNESS MINOR) To the best of my knowledge

1 it is the same organization.

2 A (WITNESS HUBBARD) I would like to add
3 something to that. In doing PRAs almost everybody that
4 does one does, as we did, you start with WASH-1400 as
5 the base and then you move from that.

6 The degree on which you can depart from
7 WASH-1400 is primarily an economic decision that, for
8 example, the types of contracts we had were in the
9 \$100,000 to \$200,000 range and so for that sort you can
10 do just so much original fault trees. I notice, for
11 example, that Indian Point is now doing such a PRA and
12 maybe it is 6,000 pages long. So I would say that when
13 that is done it is a more complete PRA and then one can
14 do more event treeing and fault treeing specific to that
15 plant.

16 So for the studies that we did both in Italy
17 and in Sweden we were limited by the amount of time and
18 funds that were available, so that we did fault trees.
19 However, if we had had more time and more funds, we
20 would have done more fault treeing and more event
21 treeing. So my recommendation for such a study would
22 include a more plant-specific trees than we were able to
23 do in the time and funds we had available.

24 Q I take it, though, you did not tell the
25 Swedish or Italian governments that your PRA was

1 inadequate.

2 A (WITNESS HUBBARD) We did not say it was
3 inadequate. We said it was adequate for the purpose it
4 was intended. However, we did have the caveats in there
5 that said the limitations. I wanted the limitations to
6 be clear to you because our recommendation would be for
7 the Shoreham plant that such a PRA use plant-specific
8 fault trees and event trees.

9 Q I take it the purpose intended was to find
10 certain systems interactions.

11 A (WITNESS HUBBARD) No.

12 Q What was the purpose intended?

13 A (WITNESS HUBBARD) The purpose intended was to
14 do a risk study for that particular plant where you came
15 up with a probability of accidents and then looked at
16 the consequences of those particular accidents to define
17 the risks.

18 Q Is that generally the objective in any PRA?

19 A (WITNESS HUBBARD) Not necessarily.

20 Q Do you want to add something now, Mr.
21 Hubbard? Go ahead, Mr. Hubbard, you can add, or Mr.
22 Minor -- either one.

23 JUDGE BRENNER: We were struggling yesterday
24 with panels testifying. There is not an absolute
25 prohibition against a conference unless the question

1 insists on an initial answer from a particular witness
2 and the questioner will have to make that clear. But I
3 would ask counsel to instruct the panels that the
4 preferred means would be for the other panel member to
5 add something on the record when he or she wants to.

6 Now, of course, if it is just -- there is a
7 realm of judgment involved, but don't be shy, Mr. Minor,
8 if you want to add something on the record. You can do
9 it that way also. In fact, it would be the preferred
10 way.

11 WITNESS MINOR: By not taking the microphone I
12 wasn't being shy. I was really trying to discuss a
13 point with my partner.

14 JUDGE BRENNER: I want to emphasize I am not
15 prohibiting that.

16 WITNESS MINOR: Say again?

17 JUDGE BRENNER: I am not prohibiting that.

18 WITNESS MINOR: I understand. The point that
19 I would like to add to your question, Mr. Ellis, is that
20 a probabilistic risk assessment is a very general term
21 that defines a broad methodology and the exact scope you
22 apply to that on a particular plant will depend on your
23 goals and, as was mentioned, the time and funds
24 available in achieving the goals that are desired.

25 BY MR. ELLIS: (resuming)

1 Q Do you want to add anything further, Mr.
2 Hubbard?

3 A (WITNESS HUBBARD) Yes. Thinking of the goals
4 of PRAs, they can be quite narrow or quite broad. For
5 example, at the Diablo Canyon plant in California there
6 was a PRA done looking at the risks of a
7 seismically-induced accident, so that it took just one
8 initiator, that sort of an accident, and did a PRA for
9 that.

10 There have been other PRAs done on just
11 looking at one particular system like looking at the
12 feedwater system, auxiliary feedwater systems or
13 something of that sort. So you can go from as narrow as
14 looking at a system or one initiator up to looking at
15 all of the systems on a plant, and that would all be
16 called PRAs.

17 Q Were you limited -- I beg your pardon. Do you
18 have something further?

19 In your Italian study you indicated you were
20 limited by time and money. Did you limit it in terms of
21 initiating events or systems?

22 A (WITNESS HUBBARD) Yes, in initiating events
23 we did limit it. We did not look at the probabilities
24 of earthquakes, for example, in Italy. We also limited
25 it by excluding the issue of sabotage or plant security

1 at the request of the government agencies to not have
2 that discussed in a public meeting.

3 JUDGE BRENNER: Mr. Hubbard, did you just ask
4 a question at the end? Oh, I am sorry. I thought you
5 were asking if you could discuss it at this public
6 meeting.

7 WITNESS HUBBARD: No.

8 JUDGE BRENNER: And when you stated it was
9 limited at the request of the government, did that apply
10 to the limitation on the earthquakes also? It was at
11 their request that you did not include it?

12 WITNESS HUBBARD: That was not specifically at
13 the government's request. We did not include
14 earthquakes because of the time and effort to draw
15 conclusions in that area. But the area of plant
16 security it was specifically asked that we not discuss
17 that publicly or include it in the analysis.

18 BY MR. ELLIS: (resuming)

19 Q I may have misunderstood that. You did not
20 discuss -- did you take sabotage into account as an
21 initiating event?

22 A (WITNESS HUBBARD) No, we did not, and we did
23 not at the request of the government agencies.

24 Q And I understand you also did not take into
25 account seismic initiating events. Are there any others

1 apart from seismic and sabotage?

2 A (WITNESS HUBBARD) Human error was another
3 area where we did not go beyond WASH-1400. We did not
4 have access to all of the procedures that the operators
5 would use, the training that they had, and so we excluded
6 going into human error beyond what was done in WASH-1400
7 or looking at error rates in Italy as compared to the
8 United States -- things of that sort.

9 Q How about fire?

10 A (WITNESS HUBBARD) My recollection is that we
11 only took fire into account insofar as WASH-1400 did and
12 that in general our feeling was that WASH-1400 didn't
13 look at fire as an initiator as far as it could have
14 been.

15 JUDGE MORRIS: Excuse me, Mr. Ellis, could I
16 inject a question. Mr. Hubbard, are you familiar with
17 the PRA procedures guide being developed for NRC?

18 WITNESS HUBBARD: No, I am not intimately
19 familiar with that.

20 JUDGE MORRIS: I was going to ask a follow-up
21 question. In that guide they define four different
22 levels of PRA. Are you familiar with that concept?

23 WITNESS MINOR: I am familiar with the fact
24 that there is a PRA guide being developed and I recall
25 that there were levels of PRA, but I am not familiar

1 with the details of the different levels that are being
2 developed. It has not been issued, to my understanding.

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1 JUDGE MORRIS: Well, there have been two
2 drafts made public and a number of discussions, for
3 example at a recent ANS meeting. Level one has to do
4 with the PRA applied to systems only. Level two has
5 systems plus containment. And level three considers
6 offsite effects, and level four includes the previous
7 three plus, where considered -- I have forgotten the
8 exact terminology -- the offsite effects of flooding,
9 fire, sabotage, earthquakes and what-not.

10 So my question would have been to you, what
11 level did you perform for Barsebaeck and Caorso. Maybe
12 you can think about that and come back to me.

13 WITNESS HUBBARD: I would say, Dr. Morris,
14 that it would be equivalent to a level three, that they
15 were very interested in the consequences, particularly
16 in Italy. So for example, in Italy we ran the CRAC code
17 for the particular site conditions, with the population,
18 the meteorological conditions, the weather conditions,
19 and things of that sort.

20 But there was in both cases an equal amount,
21 if not more interest, in the consequence modeling as
22 compared to the probabilities of events, because they
23 were very interested in those in terms of emergency
24 response capability. So it had to do with some of the
25 intended uses of the assessments.

1 MR. ELLIS: Judge Morris, are you -- all
2 right.

3 BY MR. ELLIS: (Resuming)

4 Q On the three that you said it would be level
5 three, I take it that that doesn't mean that you
6 considered all systems, does it? Level one is systems.
7 Do you know whether that is all systems or not?

8 JUDGE MORRIS: We ought to perhaps modify our
9 previous answer. To the extent that the descriptions
10 were given to us here of what a one, two and three, four
11 level PRA is, we tried to categorize it as one of those
12 levels. It probably is somewhere between a two and a
13 three, perhaps.

14 We would have to look at the exact definitions
15 of the PRA's to be sure we are saying a three exactly
16 classifies that type of PRA that was done.

17 WITNESS HUBBARD: Excuse me. I understood
18 from Judge Morris that a one was what I had talked about
19 before. It might be a PRA on a particular system, such
20 as the auxiliary feedwater system. And we were looking
21 at, on both of the PRA's we did, all the systems in that
22 particular plant. So that would be beyond what I
23 understood Judge Morris described as a category one.

24 JUDGE BRENNER: Mr. Ellis, I don't know if
25 this helps. If it's going to become important to you or

1 anyone to get a description from these witnesses in the
2 context of these level categories, there's no foundation
3 here for any way to. They indicated a lack of
4 familiarity and just the description given here doesn't
5 justify a sufficient foundation for us to give
6 categorization any weight.

7 This is not in criticism, of course, of the
8 witnesses. It's an attempt to be helpful based on their
9 description.

10 BY MR. ELLIS: (Resuming)

11 Q So let me see if I can summarize fairly. Mr.
12 Hubbard, for the Caorso you took the WASH-1400, the
13 WASH-1400 study, and you visited the plant, conducted
14 walk-downs and used as much of the WASH-1400 as was
15 useable of their fault tree and event trees, and that
16 was the basis for the study at Caorso?

17 A (WITNESS HUBBARD): No.

18 Q All right. Would you correct me, please.
19 Summarize it in your own words.

20 A (WITNESS HUBBARD): You left out the
21 consequence and risk part altogether, that we did begin
22 with WASH-1400. We compared the systems at Caorso to
23 those that were used at Peach Bottom to make up the
24 WASH-1400 probability numbers. Where the systems
25 appeared to be different, we then modified the fault

1 trees to come up with the probabilities.

2 Then we took WASH-1400, used averages of
3 population and meteorological and things of that sort
4 that was not site specific. For example, the
5 consequence modeling in WASH-1400 one could say is
6 generic. We used site specific factors for
7 consequences, things such as population, meteorological
8 conditions, shielding factors and so forth. And we put
9 those two together to then end up with the risk
10 assessment for that particular site.

11 Q The radiological consequences, that is what
12 typically is referred to as CRAC code analysis?

13 A (WITNESS HUBBARD): I believe so, yes.

14 Q And at Caorso that was done by SAI, wasn't
15 it?

16 A (WITNESS HUBBARD): SAI was hired by us to do
17 that. We gave them the input data and they used a
18 computer program that they had modified. So they
19 inputted into the computer and gave us back the computer
20 results. But we wrote the -- we provided them the input
21 data and also wrote the report sections and analyzed the
22 data.

23 Q And you indicated you used the Peach Bottom
24 portion of WASH-1400. Do you know what reactor model
25 that is?

1 JUDGE BRENNER: I'm sorry. Let me ask a
2 clarification. I didn't understand -- you said they
3 used the Peach Bottom of WASH-1400. I understood that
4 you used Peach Bottom, not the WASH-1400 use of Peach
5 Bottom, and I'd like a clarification on that point and
6 then we'll go to Mr. Ellis'.

7 WITNESS HUBBARD: WASH-1400 for the BWR was
8 based on the Peach Bottom plant, for example; and for
9 the PWR at Surrey. So when we were doing the
10 extrapolation of WASH-1400 for probability,
11 extrapolation from WASH-1400 to Caorso, we started by
12 looking at the differences between Peach Bottom and
13 Caorso, the major system differences.

14 For example, the containment is different at
15 Caorso and Peach Bottom, the difference between a Mark I
16 and a Mark II. And where we saw major differences we
17 modified the probability assessment for those identified
18 differences.

19 Does that answer your question?

20 JUDGE BRENNER: Yes, it does.

21 And excuse my interruption, Mr. Ellis. It
22 leads to your question.

23 MR. ELLIS: I think he has answered mine as
24 well there and I can go on.

25 BY MR. ELLIS: (Resuming)

1 Q Do you know whether the Caorso is the same
2 model or Mark number as Shoreham?

3 A (WITNESS HUBBARD): I think that you would
4 have to define for me exactly what you mean by model
5 numbers.

6 Q Well, are you familiar with GE model numbers?
7 You worked for GE, didn't you?

8 A (WITNESS HUBBARD): Yes, I did.

9 Q Are you familiar with the way they categorize
10 their reactors?

11 MR. LANPHER: I object to the question. The
12 witness stated he didn't understand what he meant by
13 model number.

14 JUDGE BRENNER: Objection overruled. He's
15 following up.

16 BY MR. ELLIS: (Resuming)

17 Q Let me be more explicit. Do you know what the
18 reactor classification was at Caorso?

19 A (WITNESS HUBBARD): I do not. And I would add
20 to that, you know, I am familiar with BWR 1, 2, 3, 4, 5,
21 and 6. But my observation is that within a category
22 there were differences, so that while one might be
23 called generically BWR 4, within the BWR 4's there are
24 differences based on particular utilities' perceived
25 needs.

1 Q All right. But do you know whether Caorso was
2 a BWR 1, 2, 3, 4, 5 or 6?

3 A (WITNESS HUBBARD): I don't recall.

4 Q Do you know what Shoreham is?

5 A (WITNESS HUBBARD): I don't recall.

6 Q Do you know what the containment Mark number
7 is for Caorso?

8 A (WITNESS HUBBARD): I believe it is a Mark II
9 containment.

10 Q Do you know what the containment is for
11 Shoreham?

12 A (WITNESS HUBBARD): I believe it is a Mark II
13 containment also.

14 JUDGE BRENNER: Mr. Hubbard, this may be a
15 personal problem, but when I go through the record later
16 I have trouble in dealing with an answer which says "I
17 believe." You might be using it in a difference sense
18 than I use it, so I would like to know if you're not
19 sure and that's why you said "I believe" or if it is
20 just the way you choose to phrase things.

21 WITNESS HUBBARD: It's the way I chose to
22 phrase it. It is a Mark II containment at both plants.

23 BY MR. ELLIS: (Resuming)

24 Q What is the containment at Peach Bottom?

25 A (WITNESS HUBBARD): As I previously stated, it

1 is a Mark I containment.

2 Q So you were able to take a Mark I containment,
3 a PRA study from WASH-1400, and modify it for use at
4 Caorso, which is Mark II?

5 A (WITNESS MINOR): Just a second.

6 Q All right, by all means confer.

7 MR. ELLIS: May I ask a question off the
8 record?

9 (Discussion off the record.)

10 MR. LANPHER: Could Mr. Ellis repeat the
11 question, just paraphrase it, because with that exchange
12 I have just forgotten what it was, please?

13 MR. ELLIS: Why don't we see? Why don't we
14 have the question repeated, please.

15 (The reporter read the record as requested.)

16 WITNESS HUBBARD: Yes, that is correct. That
17 is what we did.

18 I need to add one further thing. We had
19 previously done a PRA for the Barsebaeck plant in
20 Sweden. The Barsebaeck plant also has a Mark II
21 containment. So doing the Swedish study, we spent an
22 extensive period of time evaluating the impact that Mark
23 I versus Mark II containments might have on releases, so
24 that the extrapolations that were made for Caorso was
25 that first we went from Peach Bottom, Barsabaeck, and

1 then we looked at Barsabaeck, which was very similar to
2 Caorso. So we extrapolated from Barsabaeck information
3 to Caorso. So it was actually a three-step process, not
4 a two-step process.

5 BY MR. ELLIS: (Resuming)

6 Q The Barsabaeck reactor is not a GE reactor, is
7 it?

8 A (WITNESS HUBBARD): That is correct. However,
9 the containment is a Mark II containment.

10 JUDGE BRENNER: I'm sorry, I was going to ask
11 that same question just for my own edification. And as
12 a follow-up, when you say, however the containment is a
13 Mark II containment, do you mean designed by GE or just
14 that it was designed by -- you indicated the Swedish
15 company designed it yesterday. Designed by them, styled
16 after a GE Mark II? Could you clarify?

17 WITNESS HUBBARD: The latter is correct. It
18 was designed by Asea-atom using the GE Mark II
19 methodology and so forth.

20 JUDGE BRENNER: So that does not necessarily
21 result in the same design as a GE Mark II.

22 WITNESS HUBBARD: That is correct. But in
23 important measures it is equivalent to Mark II.

24 JUDGE BRENNER: Thank you.

25 WITNESS HUBBARD: I mean, if you looked at the

1 drawings you would say, this is a Mark II, not a Mark I
2 or a Mark III.

3 BY MR. ELLIS: (Resuming)

4 Q Mr. Minor, have you ever been licensed by the
5 NRC to operate a nuclear power plant?

6 A (WITNESS MINOR): No, I have not.

7 Q Have you ever completed any simulator training
8 or any site-specific course on the operation of a
9 specific nuclear power plant?

10 A (WITNESS MINOR): No. But I have been
11 involved in simulator development of a GE, and I have
12 participated in startup of a plant at C-4, and there I
13 was involved more in the equipment preparation prior to
14 startup.

15 Q What is C-4?

16 A (WITNESS MINOR): It is an experimental
17 reactor in the Southwest.

18 Q It is not comparable, then, to a large
19 commercial reactor, is that right?

20 A (WITNESS MINOR): Not exactly comparable, no.

21 Q Have you ever completed or performed any
22 failure modes or effects analysis for a nuclear power
23 plant?

24 A (WITNESS MINOR): No, but I have done failure
25 modes and effects analysis on major systems and

1 subsystems of nuclear power plants.

2 Q Which are those power plants?

3 A (WITNESS MINOR): It would be applicable to
4 many of the plants that are now operating, General
5 Electric plants, and it would be components and systems
6 that are parts of those plants dating back to about
7 1965, '66, in that period, and plants which are going
8 into operation today would still be using the systems
9 that were analyzed by that concept many years ago.

10 Q This is while you were with GE?

11 A (WITNESS MINOR): That is correct.

12 Q So I take it that the failure modes and
13 effects analysis that you participated in while at GE
14 was used in connection with the design of plants that
15 are now going into operation?

16 A (WITNESS MINOR): The FMEA that I was speaking
17 of was in connection with design of components and
18 systems which would be installed in plants. Many of
19 those systems are now presently installed in plants.
20 And in addition, there were other major additions to
21 nuclear power plants which were being developed.

22 And I was manager of the Advanced Control and
23 Instrumentation Department at General Electric, and in
24 that function we were developing new reactor protection
25 systems and new control room concepts, and each of these

1 had to have failure modes effects analysis performed as
2 part of the design cycle to show that when they were
3 installed as constructed they themselves should not
4 create a major risk or unreliability of the plant.

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

6 (Discussion off the record.)

7 BY MR. ELLIS: (Resuming)

8 Q So these FMEA's that you participated in and
9 others that you described that you knew about were part
10 of the General Electric design methodology?

11 A (WITNESS MINOR): That is correct. And again,
12 I want to specify that that is at a component and
13 subsystem level that I was discussing.

14 Q Can you specify or enumerate the systems or
15 subsystems?

16 A (WITNESS MINOR): I was responsible for the
17 design and review of some of the initial instrumentation
18 that is used in neutron monitoring, which are inputs to
19 the reactor protection system. I was a major
20 coordinator for the design of the power range monitoring
21 system, the PRM's which are inputs to the reactor
22 protection system.

23 I was designer of the rod block monitor, which
24 is a subject discussed in our testimony. I was
25 responsible for the organization designing the new

1 reactor protection system to be used in future plants.
2 I was also responsible for the design of the advanced
3 control room concept which has the trademark name of
4 Nuclenet, which involves computer interfaces to major
5 systems and components and the interface to the
6 operators, to the reactor control boards, which are
7 substantially modified.

8 Each of these systems had to have a review of
9 the type we're talking about.

10 Q I think you also mentioned that you were aware
11 of others that you were not responsible for. Can you
12 name those?

13 A (WITNESS MINOR): I believe you asked which
14 ones I was responsible for and that is what I was
15 responding to.

16 Q If I did I apologize and I want to expand the
17 question.

18 A (WITNESS MINOR): I know that it is practice
19 to do an FMEA on components and systems that are
20 designed at General Electric. Certainly the components
21 and systems that were designed outside my responsibility
22 were subject to that requirement and I participated in
23 design reviews of some of those components and systems,
24 but I cannot speak for all of them.

25 (Pause.)

1 JUDGE BRENNER: Mr. Ellis, I cannot tell from
2 the plan. Are you going to follow up and get some
3 better definition of at least what Mr. Minor has in mind
4 when he talks about an FMEA that was performed when he
5 was at GE? Otherwise, if not, I'll ask some questions
6 on it.

7 MR. ELLIS: I am now, Judge.

8 BY MR. ELLIS: (Resuming)

9 Q Mr. Minor, would you tell the Board or tell
10 us, please, describe the FMEA's that you were involved
11 in and have knowledge of at GE?

12 JUDGE BRENNER: Let me just jump in for what I
13 need, and not to preclude you from what you feel you
14 need. My problem, Mr. Minor, is sometimes there are
15 broad terms, such as PRA, and until you take a look at
16 what was actually done, as was discussed here already,
17 just the catch-all title doesn't tell you or doesn't
18 tell me sufficiently what the content is.

19 I wonder if that same problem exists with
20 respect to the term "FMEA," failure mode effects
21 analysis. And I will let you respond to that, and if
22 the answer is yes, if you can give me some better
23 indication of what was encompassed in the FMEA's that
24 were performed, at least under your supervision when you
25 were at GE?

1 WITNESS MINOR: Yes. The answer is that there
2 are varying levels of failure mode effects analysis.
3 The simplest level starts at the component level, where
4 you are dealing with a specific device which is input to
5 a large system or subsystem. At the next level you
6 could deal with subsystems and systems and do a failure
7 modes effects analysis. And then finally,; you could do
8 a failure modes effects analysis for the entire plant.
9 and I'm sure you could find interim levels between there
10 where you could do parts of the plant and so forth.

11 The type of analysis I am considering in my
12 discussion and the ones that were performed at General
13 Electric under my direction and by me were the type
14 where a particular assembly of components, be they
15 electric or mechanical or what have you, was analyzed to
16 see if particular failures assumed within that assembly
17 of components would cause an adverse output.

18 That is, if you have a device which is an
19 input to a safety system and its normal output is at one
20 level and a safety trip would occur if it dropped to
21 another level, you vary failures of components within
22 that assembly to see which one would cause the output to
23 drop and cause a scram system or which one would prevent
24 the output from dropping and therefore prevent a scram,
25 which would be your undesirable failure.

1 So you're looking at the failures, you're
2 looking at the effects. You calculate the probabilities
3 of the failures occurring and the likelihood therefore
4 of the negative or adverse results occurring from that
5 particular device.

6 You then develop an approximate probability of
7 an unsafe failure from that subsystem or system.

8 JUDGE BRENNER: Other terms, while we're fresh
9 on the point of having a description, other terms that
10 have been used at least in the contentions and also in
11 some of the testimony are event tree and fault tree
12 analyses. How do they differ, if at all, from what you
13 just described under the FMEA analysis? And where
14 there's overlap, if you could indicate that for the
15 record.

16 WITNESS MINOR: The FMEA that I'm discussing
17 is more of a binary consideration. Something is assumed
18 to be failed or operative, and an output is assumed to
19 be in a desirable state, an undesirable state or an
20 unknown state. So you emphasize more of just a binary
21 state of an assembly of components.

22 From this you can achieve an approximate
23 probability of the failure of that set of components.
24 Now, these devices that I'm talking about, these
25 assemblies that I'm talking about, should be put in

1 context. Some of these are very, very extensive as far
2 as the number of components they're dealing with and
3 complexity. There may be thousands of components and
4 hundreds of transistors and integrated circuits and so
5 forth, and the failures that could occur would be very
6 complex.

7 So you might not look at every one of them.
8 It's not 100 percent. That is the first thing. They
9 are an approximation of the probability of failure of
10 that assembly.

11 These probabilities can be taken and used in a
12 PRA, a probabilistic risk assessment, by inserting them
13 at the different failure points in a fault tree, where a
14 fault tree will assume the failure of this component and
15 a failure of that component and the failure of another
16 to arrive at an undesirable outcome such as a core melt,
17 let's say.

18 This may be one input or one component
19 probability number that goes into that fault tree as a
20 probability.

21 JUDGE BRENNER: Thank you. As long as I
22 created this digression, while we're on the point,
23 sometimes, perhaps mostly by lawyers, the terms fault
24 tree and event tree are used interchangeably. Could you
25 explain the difference very basically between a fault

1 tree analysis and an event tree analysis?

2 WITNESS MINOR: You take a fault tree, you are
3 assuming an initiating event and you are looking at the
4 sequence of events which could follow that, where, one
5 initiating event. you may have two or three optional
6 sequences that you need to follow for safe operation of
7 the plant.

8 JUDGE MORRIS: Excuse me, Mr. Minor. You said
9 fault tree. Did you mean event tree?

10 WITNESS MINOR: No, I'm really talking fault
11 tree now. I'm talking about a series of faults that can
12 occur, starting with some initial failure, some initial
13 event that causes an initial failure. And then you go
14 through the subsequent failures that can occur, and each
15 of those will have a branch from that that will be the
16 next failure level or the next optional failure level,
17 let's say.

18 So you may have a loss of coolant, followed by
19 a failure of the power supply, followed by a failure of
20 one of the CCS, followed by a core melt. These are put
21 together as a probabilistic tree. Now, at each one of
22 those points -- you may not have a failure in the power
23 supply, you may not have a failure of the ECCS.

24 So you develop a probability, just a
25 probability tree with many junctions on it starting from

1 the initial event. You're talking about the initial
2 failure, you're talking about. The event tree can be
3 created on some cases by working backwards to that.

4 If the concern you have is that you're going
5 to have a core melt, one of the conditions that can lead
6 to a core melt, you probably have to have a loss of
7 coolant, you probably have to have a failure of the
8 ECCS, you probably have to have a failure of offsite
9 power and so forth. I'm just hypothesizing a sequence
10 here. This is not an exact sequence.

11 And what events can lead to a loss of
12 coolant? And you work backwards through there and look
13 at the things that can cause loss of coolant, and you
14 work backwards through the failure of offsite power and
15 look at the things that can cause failure of offsite
16 power. And you create an event tree which tells you the
17 things that can lead to a core melt. You can work
18 either direction.

19 MR. LANPHER: Judge Brenner, may I briefly
20 consult with my witnesses?

21 JUDGE BRENNER: Why?

22 MR. LANPHER: Well, I'll do it on the record.
23 I happen to know that there is broad expertise on this
24 subject across the table, and while the questions have
25 been directed at Messrs. Hubbard and Minor, I want it to

1 be clear that if Mr. Goldsmith or Ms. Harwood also have
2 things that they would like to contribute, especially in
3 these areas of PRA and event tree, fault tree -- I
4 happen to know Mr. Goldsmith has expertise there, too.
5 I just wanted it to be clear.

6 JUDGE BRENNER: It's better to do that on the
7 record.

8 Let me say that, since it is my question, if
9 you have anything to add on a particular question, other
10 members of the panel, that is fine. I don't want a
11 broad treatise at this point. I've got the description
12 I want. Now, if somebody else on the panel thinks that
13 description is wrong or needs clarification, this is the
14 appropriate time to do that.

15 I'll give the panel a moment to consider
16 whether they want to.

17 MR. ELLIS: I would like to add in for the
18 record that I don't think Mr. Goldsmith and Ms. Harwood
19 are listed in the footnote as being the ones responsible
20 for the area on PRA.

21 JUDGE BRENNER: I don't want to end up a
22 record where we have 80 percent attorneys talking and 20
23 percent witnesses talking. I'm afraid that proportion
24 is not the happy mix that I would prefer so far.

25 I asked the question, Mr. Ellis, so in my

1 discretion I am interested in their response. I do not
2 have in mind one way or the other, I do not have in mind
3 a strict division of the testimony. I wanted to get
4 some of that background on the record early on in the
5 cross-examination on this issue, because we're going to
6 keep coming back to it.

7 MR. LANPHER: Judge Brenner, I don't want to
8 prolong it, but these witnesses all did consult, and we
9 put that footnote one in at the request of the Board.
10 That is not a binding footnote. And to the extent that
11 Mr. Ellis thinks that the only persons that may have
12 views on certain areas are those persons listed in
13 footnote one, that is a misapprehension on his part.

14 JUDGE BRENNER: The Board didn't intend that
15 strict a separation, either, in asking for the
16 indication of who worked on particular sections. We may
17 get to what was written by whom in the course of the
18 panel. That is a separate matter.

19 If the panel has something to add to my
20 particular question, that is a correction or a
21 clarification to the answers provided by Mr. Minor, now
22 is the time. If not, we'll go back to Mr. Ellis.

23 WITNESS GOLDSMITH: We'll go back to Mr.
24 Ellis.

25 MR. ELLIS: Thank you.

1 BY MR. ELLIS: (Resuming)

2 Q Have you ever completed, Mr. Minor, or
3 performed any systems interactions studies for a
4 specific nuclear power plant?

5 A (WITNESS MINOR): Would you define what you
6 mean by a systems interactions study?

7 Q Well, Mr. Minor, you are the witness. What is
8 your understanding of the term? You use it in your
9 testimony, don't you?

10 A (WITNESS MINOR): Yes, we do, and I think the
11 testimony also states that there are several possible
12 ranges of this type of systems interactions studies. So
13 I want to make sure that I have the one you had in
14 mind.

15 (Pause.)

16 Q There's a question outstanding to you, Mr.
17 Minor.

18 A (WITNESS MINOR): I believe the question is
19 outstanding to you. I needed a little more definition
20 of which level of systems interaction you are referring
21 to, and then I'll be glad to try and answer that
22 question.

23 Q Why don't you tell me what the levels are, Mr.
24 Minor?

25 A (WITNESS MINOR): Okay. At the simplest

1 level, I think a failure mode effects analysis done on a
2 large enough level in terms of systems and subsystems
3 could be called a systems interaction analysis. Beyond
4 that, you can have a systems interaction analysis of a
5 specific area or a specific system to see what
6 parameters may affect it from outside its normal bounds,
7 let's say, what other parameters may interfere. Or you
8 can use the entire plant, divide it up into segments
9 into the entire reactor plant.

10 Q Okay. Have you done any of those with respect
11 to any specific nuclear plant?

12 A (WITNESS MINOR): To the extent that I
13 mentioned earlier that I have done failure mode effects
14 analysis on large systems and subsystems within the
15 nuclear power plants designed by General Electric, I
16 have done systems interaction studies of parts of
17 nuclear power plants in operation today. Also, one
18 could describe a PRA, probabilistic risk assessment, as
19 a type of systems interaction where you are looking for
20 failure sequences and you go through the event trees and
21 fault trees and assess the probability of different
22 failure sequences occurring.

23 If you do that, it has a limitation that you
24 are putting into your own concept of what a system
25 interaction may be for a particular component or

1 system. But it is in effect a systems interaction study
2 of a limited nature. That is why I needed to understand
3 your definition.

4 Q Any others other than the two you described,
5 the PRA's and the FMEA's?

6 A (WITNESS MINOR): No.

7 Q Have you ever participated or done
8 classification of systems for a specific nuclear power
9 plant?

10 A (WITNESS MINOR): No. But I would like to
11 explain that a little bit.

12 Q By all means.

13 A (WITNESS MINOR): I don't know any one person
14 that has done a classification for an entire nuclear
15 power plant. Classification is an evolution on most
16 nuclear power plants, where the previous plant is used
17 as a base and modifications are made to that. So I
18 assume historically there must have been someone that
19 started this process, but basically it has evolved from
20 plant to plant with markups of previous classification
21 lists and identification of Q list items.

22 I have done work in classification with regard
23 to systems that I have designed. I have participated in
24 NRC discussions of components that I have designed and
25 whether or not they should be classified. And I have

1 participated in several design reviews of other systems
2 being designed at General Electric which were in the
3 classification -- or that matter was the subject of a
4 design review discussion.

5 Q So the record is clear, Mr. Minor, by
6 "classification" you mean whether it should be
7 classified safety-related or non-safety-related?

8 A (WITNESS MINOR): I assume that is the type of
9 classification you were asking in your question.

10 Q You are correct. And that was the kind of
11 classification you had in mind when you answered?

12 A (WITNESS MINOR): That is correct.

13 (Pause.)

14 MR. ELLIS: With the Board's indulgence for a
15 moment?

16 (Pause.)

17 BY MR. ELLIS: (Resuming)

18 Q Ms. Harwood, I really should have gone to
19 ladies first, but I will go first to you before Mr.
20 Goldsmith on that. Ms. Harwood, have you ever been
21 licensed by the NRC to operate a nuclear power plant?

22 A (WITNESS HARWOOD): Could you repeat the
23 question, please?

24 Q Yes, ma'am. Have you been licensed by the NRC
25 to operate a nuclear power plant?

1 A (WITNESS HARWOOD): No, I haven't.

2 Q Have you ever participated in or developed
3 emergency operating procedures for a nuclear power
4 plant?

5 A (WITNESS HARWOOD): No, I haven't.

6 Q A I correct that you are the principal author
7 of the section involving emergency operating
8 procedures?

9 A (WITNESS HARWOOD): I wrote the first draft of
10 that section in conglomeration with Mr. Goldsmith, and
11 if that is your definition of primary author I was the
12 primary author, with Mr. Goldsmith's selected input.

13 (Discussion off the record.)

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

15 WITNESS HARWOOD: Could I possibly ask to
16 start my answer over again, please?

17 MR. ELLIS: By all means. Would you like to
18 have the reporter read what you said?

19 WITNESS HARWOOD: That'll be fine.

20 (The reporter read the record as requested.)

21 BY MR. ELLIS: (Resuming)

22 Q Ms. Harwood, maybe I can simplify things for
23 you. Do you have the testimony, the 7.B testimony, in
24 front of you?

25 WITNESS HARWOOD: Yes, I do.

1 Q Would you look at footnote number 1.

2 A (WITNESS HARWOOD): Yes, I see that.

3 Q That is where I take the term "primary
4 author," from the testimony itself.

5 A (WITNESS HARWOOD): Perhaps I can explain. I
6 wrote the first draft of section 5(a) with selected
7 input from Mr. Goldsmith as secondary author. However,
8 as also noted in that footnote, Mr. Minor had overall
9 coordination of the entire testimony and there was
10 editorial comments that were made after the draft was
11 submitted by Mr. Goldsmith and myself.

12 Q The section on the emergency operating
13 procedures is the only section you had primary
14 authorship responsibility for; is that correct?

15 A (WITNESS HARWOOD): That is correct.

16 Q I think you already indicated you were not
17 licensed to operate and that you had not participated or
18 prepared any emergency operating procedures. Have you
19 ever completed any simulator training or site specific
20 training course on the operation of a specific nuclear
21 power plant?

22 A (WITNESS HARWOOD): I have not completed any
23 simulator training courses. However, I did participate
24 in a General Electric BWR classroom instruction course
25 that was held in my former place of employment, with

1 General Electric training engineers conducting that
2 course.

3 Q Was the former place of employment -- would
4 you tell us where that was?

5 A (WITNESS HARWOOD): Yes. That was at the
6 Boston Edison Company.

7 Q Ms. Harwood, did you also review all of the
8 7.B testimony as well, or were you involved only in 5.B
9 -- 5.A, I'm sorry?

10 A (WITNESS HARWOOD): Mr. Ellis, I have reviewed
11 this testimony to the point where I am fairly cognizant
12 of what the testimony says. I do not take credit for
13 having provided input into any of the other sections as
14 written.

15 Q Well, there was a correction made on the
16 record yesterday that indicated that you were no longer
17 responsible for 5.B. Was that just a typographical
18 error?

19 A (WITNESS HARWOOD): Yes, that was.

20 Q Prior to your involvement with section 5.B in
21 this testimony, have you ever been involved in analysis
22 and critiques of emergency operating procedures for a
23 specific nuclear power plant?

24 A (WITNESS HARWOOD): First of all, I believe
25 you meant to say section 5.A in your question?

1 Q Yes, I did. Thank you.

2 As amended, can you answer my question?

3 A (WITNESS HARWOOD): Can you please repeat the
4 question?

5 Q Have you ever been involved in analysis and
6 critiques of emergency operating procedures for a
7 specific nuclear power plant, other than your
8 involvement with section 5.A?

9 A (WITNESS HARWOOD): No, I have not been
10 involved in the review of emergency operating
11 procedures.

12 Q Mr. Goldsmith, have you ever been licensed by
13 the NRC to operate a nuclear power plant?

14 MR. LANPHER: Excuse me. They were
15 consulting.

16 WITNESS GOLDSMITH: I'm sorry, Mr. Ellis.
17 Could we have a minute?

18 JUDGE BRENNER: All right, you may have a
19 minute and then I'll talk to Mr. Lanpher on the record.

20 I don't want counsel to interrupt in terms of
21 their consulting. But this would be a good time to
22 advise panels in the future, and counsel should advise
23 them, so you won't have to do what you did, Mr.
24 Lanpher. A panel can ask for a moment to consult. The
25 reason I say that, sometimes it is just a passing

1 discussion and there is no need to halt the
2 proceedings. Sometimes there is a need to halt.

3 The questioner can tell and the panel can best
4 inform the questioner.

5 MR. LANPHER: Judge Brenner, I agree
6 completely. The problem, Mr. Ellis was looking down and
7 the two witnesses were looking at each other, and I
8 thought that we had a problem.

9 JUDGE BRENNER: Well, I say it without strong
10 criticism of what you did, but we'll try to work it a
11 little differently for the future.

12 JUDGE BRENNER: Is the panel ready now?

13 WITNESS GOLDSMITH: I'm sorry. The panel is
14 ready.

15 BY MR. ELLIS: (Resuming)

16 Q Do you want me to repeat my question?

17 A (WITNESS GOLDSMITH): No. The answer to your
18 question is no.

19 Q Will the record be clear -- let me just re-ask
20 it. Have you ever been licensed by the NRC to operate a
21 nuclear power plant?

22 A (WITNESS GOLDSMITH): No.

23 Q Have you ever completed any simulator training
24 or any site specific training course on the operation of
25 a specific nuclear power plant?

1 A (WITNESS GOLDSMITH): No.

2 Q Have you ever completed or performed any
3 probabilistic risk assessment for a nuclear power
4 plant?

5 A (WITNESS GOLDSMITH): No.

6 Q Have you ever completed or performed any
7 failure modes and effects analysis for any nuclear power
8 plant?

9 A (WITNESS GOLDSMITH): No.

10 Q Have you ever completed or performed -- strike
11 that.

12 Have you ever completed or performed a systems
13 interaction study for a specific nuclear power plant?

14 A (WITNESS GOLDSMITH): No.

15 Q Have you ever participated in classifying
16 systems for a nuclear power plant?

17 A (WITNESS GOLDSMITH): Yes, sir.

18 Q Which one?

19 A (WITNESS GOLDSMITH): I have been involved in
20 classification for the balance of plant side on a 770
21 watt high-temperature, gas-cooled reactor for the
22 Delmarva plant, which is not built or operating, and for
23 a GE BWR 6 Mark III containment standardized plant known
24 as the GESAR, for the Somerset, New York, power plant
25 which has also never been constructed.

1 Q Have you ever participated in classifying
2 systems for an existing nuclear power plant? Do you
3 have a little trouble with my word "existing"? Let me
4 rephrase the question. I'll break it down.

5 Have you ever participated in classifying
6 systems for an operating nuclear power plant?

7 A (WITNESS GOLDSMITH): No.

8 Q Have you participated in classifying systems
9 for a nuclear power plant that has a construction permit
10 and is under construction?

11 A (WITNESS GOLDSMITH): Can I just take a minute
12 on that?

13 Q Yes, by all means.

14 (Pause.)

15 JUDGE BRENNER: Mr. Goldsmith, we're ready.
16 You may proceed.

17 WITNESS GOLDSMITH: I'm sorry. I was waiting
18 for Mr. Ellis.

19 I'm not sure, Mr. Ellis, in the sense that I
20 participated in some work on the Washington Public Power
21 Service System's WPPSS Unit No. 1 at Hanford, and I'm
22 not sure if it looks like or is configured -- or even
23 has its CP as it was at the time I worked on it.

24 MR. ELLIS: Judge Brenner, this might be the
25 appropriate time.

1 JUDGE BRENNER: All right, we will recess for
2 lunch and come back at 1:00 o'clock. Eventually we'll
3 attempt an hour, but we want to discuss something today
4 so we'll make it an hour and 15 minutes, and be back
5 here at 1:00

6 (Whereupon, at 11:46 a.m., the hearing was
7 recessed, to reconvene at 1:00 p.m. on the same day.)

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1 AFTERNOON SESSION

2 (1:00 p.m.)

3 JUDGE BRENNER: Mr. Ellis, you may continue
4 with your cross-examination at this point.
5 Whereupon,

6 RICHARD B. HUBBARD

7 GREGORY C. MINOR

8 MARC W. GOLDSMITH

9 SUSAN J. HARWOOD,

10 the witnesses on the stand at the time of recess,
11 resumed the stand and, having previously been duly sworn
12 by the Chairman, were examined and testified further as
13 follows:

14 CROSS-EXAMINATION -- RESUMED

15 BY MR. ELLIS:

16 Q Mr. Hubbard, are the documents you've listed
17 as your publications in your curriculum, are they public
18 documents?

19 A (WITNESS HUBBARD): Would it be helpful to go
20 to my list of publication documents and just go through
21 them one at a time?

22 Q I just want to know whether they are
23 available, publicly available.

24 A (WITNESS HUBBARD): The general answer would
25 be yes.

1 Q Would the same be generally true for you, Mr.
2 Minor?

3 (Pause.)

4 A (WITNESS MINOR): Yes, it would be true.

5 Q Mr. Goldsmith, would the same be true for your
6 publications?

7 A (WITNESS GOLDSMITH): Not necessarily so.
8 Some of the documents -- some of the documents belong to
9 the clients and I am not sure that they would
10 necessarily be available. That would be the client's
11 decision.

12 As an example, the report for Westinghouse
13 International Projects Company belongs to Westinghouse,
14 and I am not sure that that would be a publicly
15 available document.

16 Q How about the two that relate to Shoreham?

17 A (WITNESS GOLDSMITH): I don't know. That
18 would be the county's decision on those two documents.
19 I really don't know whether they have made those
20 publicly available or not. Again, any document that EIP
21 does for a client belongs to the client, and in some
22 cases we have permission to release the document totally
23 without restraint, and I have really never asked about
24 the two Shoreham documents and I don't know what the
25 county's policy is.

1 MR. ELLIS: For the Board's information, the
2 two documents that we have been referring to are on page
3 5 of Mr. Goldsmith's curriculum, and they are identified
4 as "Progress Report 1979, Summary of Technical
5 Assistance for the County of Suffolk Relating to the
6 Shoreham Nuclear Power Plant," and the second one is
7 entitled "Technical Analysis and Evaluation of Safety
8 Issues Concerning the Shoreham Nuclear Power Plant,
9 1980, a Progress Report to the County of Suffolk, New
10 York."

11 I will just take that up with Mr. Lanpher
12 later.

13 MR. LANPHER: I apologize, Mr. Ellis. I
14 didn't hear your statement. So if it was a question to
15 me --

16 MR. ELLIS: No problem.

17 BY MR. ELLIS: (Resuming)

18 Q Mr. Hubbard, in your contention 7.B testimony,
19 you do not contend, do you, that systems interactions
20 were not taken into account in the design and
21 construction of Shoreham, do you?

22 A (WITNESS HUBBARD): As stated in the
23 testimony, we believe that system interactions were
24 taken into account in the Shoreham design to some
25 limited extent. But there has not been a systematic

1 evaluation of systems interaction as it relates to the
2 Shoreham design.

3 Q Will you tell me, please, the limited extent
4 that you referred to that systems interaction were taken
5 into account in relation to Shoreham?

6 A (WITNESS HUBBARD): Yes, sir. I believe that
7 Shoreham has done, for example, turbine missile studies,
8 and those are described in the FSAR. There has been
9 fire analysis done and that is in the FSAR. I was also
10 informed during the deposition of the Stone & Webster
11 personnel that they had done limited failure modes and
12 effects analysis, that is they had done it for the Stone
13 & Webster systems but not for the General Electric
14 systems.

15 I am also familiar that there have been some
16 pipe break walk-downs performed in the 1973 and 1977
17 period as modifications were made. Then here are some
18 recent activities. There is SER open item number 46,
19 which is an evaluation of loss of class 1E and non-1E
20 buses. And I guess there was a response to that in
21 December of '81.

22 There are still SER open items on number 47 on
23 control system failures and an open item number 48 on
24 high energy pipe break effects. And then there is an
25 SER item 59 on handling of heavy loads near the spent

1 fuel pools.

2 So what we have said in the testimony and what
3 I have been trying to summarize, when the NRC has had a
4 specific question there have been some specific studies
5 done, but there has not been a systematic evaluation of
6 the plant.

7 Q All right, Mr. Hubbard. You mentioned the
8 turbine missile, fire analysis, limited FMEA analysis,
9 pipe break and walk-downs; SER 46, loss of 1E and
10 non-1E; SER 46, control systems; SER 48, high energy
11 pipe breaks; and SER 59, heavy load handling.

12 Those are all the systems interaction studies
13 you're familiar with relating to Shoreham?

14 A (WITNESS HUBBARD): Yes, sir. And I guess I
15 would add one other, possibly, that should have been the
16 first on my list. It would be the evaluation in chapter
17 15 of the FSAR with the single failure criteria.

18 Q Are you familiar with a reactor building cable
19 separation analysis report?

20 A (WITNESS HUBBARD): Yes, I am.

21 Q All right. And that is a systems interaction
22 study too, isn't it?

23 A You can go ahead and confer.

24 (Panel of witnesses conferring.)

25 WITNESS HUBBARD: I recently submitted

1 testimony with Mr. Minor on that part of contention 31,
2 and in that particular testimony we stated that that was
3 more of a fire hazards study than a true system
4 interaction study. I don't remember the exact words, so
5 I would say, yes, it did go into interactions to a
6 limited degree.

7 (Pause.)

8 BY MR. ELLIS: (Resuming)

9 Q Are you familiar with a study entitled "An
10 Analysis of the Functional Common Mode Failures in GE
11 BWR Protection and Control Instrumentation"?

12 A (WITNESS MINOR): Could you clarify that by
13 giving the date of the document you are referring to?

14 Q 1970.

15 A (WITNESS MINOR): I have a recollection of an
16 analysis made of the protection system in about that
17 time period, but I'm not directly familiar with the
18 document you are referring to by that title.

19 Q So neither of you can tell us today whether
20 that is a systems interaction study?

21 A (WITNESS MINOR): I can't.

22 A (WITNESS HUBBARD): I would add that those
23 were not documents that were relied upon during
24 depositions, when we were specifically asked the
25 question you were just asking. We had discovery

1 requests in for documents of that sort that were relied
2 on. Just for your point of information, that was not
3 one of the documents that was cited as being relied
4 upon.

5 Q But to answer my question, you cannot tell me
6 whether it was systems interaction, can you, Mr.

7 Hubbard? Mr. Minor answered my question.

8 Do you want me to tell you the title of the
9 report again?

10 A (WITNESS HUBBARD): I am not familiar with the
11 report. But I think it is important also to note that
12 during the depositions, when we were specifically asked
13 what studies had been done and what documents we relied
14 upon, to the best of my knowledge that was not one of
15 them.

16 MR. LANPHER: Judge Brenner, perhaps Mr. Ellis
17 could supply these gentlemen with a copy of the report.
18 It's 12 years old already. I mean, he's asked the
19 question. If it is important, he ought to let them see
20 the document. Maybe they are familiar with it. A
21 document that old, there are a lot of reports floating
22 around --

23 JUDGE BRENNER: It is up to him. We have got
24 the answer by Mr. Minor that he couldn't tell from what
25 he heard so far. That doesn't mean that he doesn't

1 know about it or may not have a better recollection when
2 he sees that. We recognize that and that is what
3 redirect is all about, if you want to do it also. He
4 doesn't have to. But you cannot control all of this
5 cross-examination.

6 If he wants to propose a finding that the
7 witness did not know about the study, the weight that we
8 would give such a finding based on what we have so far,
9 as distinguished from the witness having looked at it,
10 might be two different things.

11 BY MR. ELLIS: (Resuming)

12 Q Mr. Hubbard, are you familiar with a GE study
13 relating to anticipated transient without scram?

14 A (WITNESS HUBBARD): You'll have to be much
15 more specific, Mr. Ellis. There have been numerous GE
16 studies on what has been called the ATWS event.

17 JUDGE BRENNER: Also, in general, Mr. Ellis, I
18 think it would be necessary for the record, these
19 descriptions -- I was going to interject that, Mr. Minor
20 beat me to it before on the other.

21 BY MR. ELLIS: (Resuming)

22 Q The title of the study, Mr. Hubbard, is "BWR
23 Scram System Reliability Analysis, Part Two, December
24 1976."

25 JUDGE BRENNER: Mr. Ellis, it has a GE number

1 NADE-21514-2.

2 WITNESS HUBBARD: That's the proprietary
3 version.

4 JUDGE BRENNER: Well, wait a minute. You're
5 out of order here. Sit down, Mr. Hubbard.

6 MR. ELLIS: That's correct, it is proprietary
7 on its cover.

8 JUDGE BRENNER: Mr. Hubbard, as a witness you
9 have to answer the questions. If part of your answer is
10 you can't tell without see it, that might well be your
11 answer.

12 WITNESS HUBBARD: All right.

13 BY MR. ELLIS: (Resuming)

14 Q Can you tell by looking at the cover --

15 JUDGE BRENNER: He didn't get a chance to see
16 the cover.

17 MR. LANPHER: I don't believe the entire
18 document has been identified properly. Since it is a
19 proprietary document, I think in giving the title that
20 would be relevant information also.

21 MR. ELLIS: I don't plan to introduce the
22 document. I just want him to look at the cover and tell
23 me whether from looking at the cover he can tell me
24 whether he's familiar with it.

25 JUDGE BRENNER: I agree with Mr. Lanpher that

1 there are proprietary and not proprietary versions of
2 documents. Why don't you indicate whether the document
3 about which you are asking if the witness is familiar,
4 is it a proprietary or non-proprietary document, or if
5 your question is generalized to any version, if there is
6 a non-proprietary version.

7 BY MR. ELLIS: (Resuming)

8 Q Mr. Hubbard, are you familiar with a study
9 entitled "BWR Scram System Reliability Analysis, Part
10 Two, 1976," which is proprietary? I will show you the
11 cover and see if you can tell me on the basis of just
12 the cover whether you are familiar with it.

13 Mr. Minor can look, too, if he would care to.

14 (Witnesses reviewing document.)

15 A (WITNESS HUBBARD): I am not familiar with
16 that particular document. I was -- well, if there are
17 numbers in the document on probabilities, I was at the
18 risk assessment review group in front of Dr. Al Lewis
19 when GE made their presentation on what they thought the
20 probability of an ATWS event was. That was in about
21 1977, about a year after that.

22 But that particular document I'm not that
23 familiar with.

24 JUDGE BRENNER: Mr. Minor, could you indicate
25 whether you are familiar with the document, or if you

1 don't know that could be an answer also.

2 WITNESS MINOR: I am not familiar with that
3 document, but I believe I have seen it, I believe I have
4 seen it referenced and some of its numerical values
5 referenced in other documents.

6 BY MR. ELLIS: (Resuming)

7 Q I take it, since neither of you have seen it
8 or are familiar, you can't tell me whether it is a
9 systems interaction study or not?

10 A (WITNESS HUBBARD): That is correct.

11 A (WITNESS MINOR): I believe we could say we
12 can't tell a book by its cover. No, I can't.

13 Q Are you familiar with a study called
14 "Compliance of Protection Systems to Industry Criteria,
15 General Electric BWR Nuclear Steam Supply System," dated
16 1970, NADO-10139? Would you like to see it?

17 A (WITNESS HUBBARD): May we see the document,
18 please?

19 (Witnesses reviewing document.)

20 JUDGE BRENNER: Mr. Ellis, while the witnesses
21 are looking at it, I recognize you're not going in the
22 order of your plan, but which part of your plan would I
23 put this under?

24 MR. ELLIS: Look at the penultimate or maybe
25 the third from the last.

1 JUDGE RENNER: All right. How many more of
2 these documents do you have?

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1 MR. ELLIS: I think I've got your hint. I
2 don't want to --

3 JUDGE BRENNER: You may have misapprehended my
4 hint. I didn't want to prevent you from doing it if you
5 wanted to, but there may be a more efficient way of
6 doing it -- that is, listing the documents and then
7 letting them look at it that covers all of them at once,
8 and letting them indicate which, if any of them, they
9 are familiar with.

10 JUDGE BRENNER: Are the witnesses going to
11 need a lot more time to decide whether they are familiar
12 with it or not?

13 WITNESS MINOR: We would like a few more
14 minutes to look at this document.

15 JUDGE BRENNER: All right.

16 (Pause.)

17 BY MR. ELLIS: (resuming)

18 Q My question to you gentlemen is are you
19 familiar with that study?

20 A (WITNESS MINOR) I am familiar with the people
21 that created this study, with the fact that the study
22 was being created. In fact, I believe it is the one we
23 recalled when you referred to a study earlier in this
24 time period. I am not familiar with the detailed
25 contents of it at this time. It was done for a generic

1 product line at that time that was in existence, and I
2 am not sure at all of the relevance to Shoreham at this
3 time without reviewing it.

4 Q The generic product line is a Mark II, isn't
5 it, or a BWR-4, isn't it?

6 A (WITNESS MINOR) No. The generic product line
7 was what they called an A product line at that time. It
8 was a totally different designation. Product line
9 designation is not very significant. I would have to
10 emphasize that.

11 Q Wasn't that in effect a BWR-4?

12 A (WITNESS MINOR) We are going to get into a
13 semantic problem to try and define that. To define a
14 BWR-1, 2, 3, 4, 5, 6, in the old product lines A, B, and
15 C and so forth, and try and make comparisons between
16 them you would have to get far more specific about
17 exactly what systems are included, what type of
18 containments and what variations go on the plant. I
19 cannot tell you exactly which product lines correspond
20 to which BWR rating.

21 A (WITNESS HUBBARD) I would like to add to that
22 answer.

23 Q Well, first can you tell me whether you are
24 familiar with this study?

25 A (WITNESS HUBBARD) I am not familiar with the

1 document. I am familiar with the people that made this
2 document at that time period.

3 But in answer to your question about BWR-4, I
4 want to emphasize again, you know, that I understand
5 Shoreham is a BWR-4. However, I want to make it very
6 clear --

7 Q Excuse me, Mr. Hubbard. That was not my
8 question. The witness is trying to make a speech to
9 prepare testimony before lunch and that is not the
10 purpose of this.

11 MR. LANPHER: Mr. Chairman?

12 JUDGE BRENNER: One at a time. I don't want
13 counsel addressing one another. I got a little lax on
14 that yesterday and today in jumping in on each other. I
15 will allow Mr. Hubbard to continue his follow-up,
16 because I believe it was a follow-up to the question of
17 do you know what type of BWR it was and I deem this for
18 further explanation, so I will allow it to follow up to
19 the line you were pursuing with Mr. Minor.

20 But I want it directed toward that point, as I
21 just indicated.

22 MR. LANPHER: Judge Brenner, I object to Mr.
23 Ellis' characterization of these people preparing
24 speeches over lunch. We don't need that kind of thing
25 in the record either.

1 JUDGE BRENNER: You have made your comment,
2 but I will indicate it wasn't necessary since I have
3 already ruled to that effect.

4 WITNESS HUBBARD: I was trying to make it very
5 clear this morning that in the family of BWR-4 reactors
6 there are a number of differences from reactor to
7 reactor -- what they have backfitted, what some of the
8 materials might be, and the degrees of compliance. So I
9 personally have tried to stay away from calling things
10 BWR-4s, 5s, or 6s in the generic sense, like in the
11 BWR-6.

12 Some of them have power generation control
13 complexes which are the prefabricated control rooms;
14 some of them don't. Some of them have control rooms
15 with small devices like cockpits; some have very large
16 devices. The plants are quite different, so to say was
17 this just a BWR-4, when you look at plants like LaSalle,
18 Zimmer, Shoreham and Caorso there are a number of
19 differences in detail between ones that might all be in
20 the same family, and I wanted to be sure that that was
21 understood, Mr. Ellis, when we talk about the family of
22 BWR-4s.

23 WITNESS MINOR: May I comment on the document
24 one more time?

25 MR. ELLIS: Excuse me just a minute. I would

1 like to move to strike that answer as being unresponsive
2 to the question.

3 JUDGE BRENNER: I think it was, as I
4 anticipated, a follow-up and an appropriate
5 clarification to get the witness' point of view on a
6 discussion of labeling of BWRs.

7 Now, Mr. Minor, I am going to get lost in the
8 flow here. You want to follow up with the other
9 question with respect to the document? You have a
10 clarification of your previous answer?

11 WITNESS MINOR: I have a clarification of the
12 question regarding whether there is a document referring
13 to BWR-4.

14 JUDGE BRENNER: It was a question just
15 recently asked. I don't know how I will answer.

16 WITNESS MINOR: In the introduction to this
17 report it says the report will be based on a 1967
18 product line A-size standard plant and it goes on to
19 talk about where equipment designs for other size
20 standard plants differ in a significant way from these
21 base plants. These variations will be included in the
22 discussion.

23 So we are talking about a document which fits
24 a general standard design in a time period for General
25 Electric, with variations. What I can't be sure is that

1 really is the BWR-4 of the type that is implemented at
2 Shoreham.

3 JUDGE BRENNER: Mr. Minor, let me make sure
4 that I didn't get lost in the interchange on the
5 previous questions.

6 Given your explanation as to the range and
7 variance within a given number, for example a BWR-4, in
8 your answer that you couldn't state anything further
9 with respect to the relationship of what is discussed in
10 that document and Shoreham, and you may have given us an
11 answer but, if so, I missed it.

12 Could you go so far as to tell whether the
13 material in that document relates to the range of BWR-4s
14 as distinguished from some other totally different
15 design number such as a 3 or a 5? Or is that not clear
16 also?

17 WITNESS MINOR: The BWR-4 designation came on
18 the scene in roughly the same time period as the 1967
19 product line and the A size standard plant or the B size
20 standard plant or the C size standard plant were being
21 designed in that time period also.

22 So we're talking about three classification,
23 all of which were in existence at approximately that
24 same time frame, so it is possible this document could
25 apply to Shoreham, but I cannot be sure.

1 JUDGE BRENNER: Mr. Ellis?

2 BY MR. ELLIS: (resuming)

3 Q Mr. Hubbard, in your list of consideration of
4 some systems interaction -- system interaction studies,
5 I don't think you mentioned the Phase I of the PRA.
6 That should be added to the list.

7 A (WITNESS HUBBARD) No, I did not include that
8 on the list because during depositions the LILCO
9 personnel said they were not going to rely on it in
10 terms of design or operation of the plant. So I didn't
11 give any weight to it.

12 Q Have you had an opportunity to look at the
13 PRA-1 for Shoreham in any event?

14 A (WITNESS HUBBARD) I have not reviewed it
15 critically because I understood Judge Brenner had asked
16 that we not critique the PRA as part of our testimony.
17 So while I really wanted to critique it, I felt that
18 that was not appropriate, and so I do not have such a
19 critique prepared at this time.

20 Q Did you look at it enough to know it was a
21 systems interaction study?

22 A (WITNESS HUBBARD) We did include in our
23 testimony one paragraph where it mentioned that certain
24 events were excluded. Those are ones we went over this
25 morning -- seismic, fire and sabotage, those sorts of

1 events -- and that was included in our testimony.

2 Q Those are the same events you excluded from
3 the Caorso PRA.

4 A (WITNESS HUBBARD) Yes, sir, for the reasons
5 we gave.

6 Q But my question to you is, does the PRA for
7 Shoreham fall into the category of a systems interaction
8 study?

9 A (WITNESS HUBBARD) I have no opinion on that
10 at this time because I understood that we had been asked
11 not to review it for that reason, so I don't know.

12 Q Would a PRA generally, as you all define a
13 PRA --

14 JUDGE BRENNER: Excuse me, Mr. Ellis. I think
15 Mr. Minor wanted to follow up on that.

16 BY MR. ELLIS: (resuming)

17 Q I am sorry. Go ahead, Mr. Minor.

18 A (WITNESS MINOR) I chose to include a
19 reference to the PRA in the testimony, section 8(b),
20 from the point of view of emphasizing that there were
21 the exclusions as identified in the PRA. I think we
22 have testified earlier that a PRA is, to some extent, a
23 systems interaction study in that certain systems
24 interactions are hypothesized and their probability
25 evaluated and the risk evaluated as a result of those

1 sequences.

2 However, what we are also identifying in the
3 section 8(b) comment on the PRA is that this is not a
4 complete systems interaction of the nature that we are
5 discussing, of the testimony.

6 Q Nor was your Caorso study, is that correct?

7 A (WITNESS HUBBARD) Mr. Ellis, we discussed
8 that this morning and we acknowledged that it was not
9 included in the Shoreham during the Caorso PRA, looking
10 at fires, earthquakes and plant security. However, our
11 recommendation would be that that should be included in
12 a PRA to look at proper classification.

13 So if that is the major purpose of a PRA, to
14 look at your classification and identify systems
15 interactions, then we think it should be included. The
16 one that we did for Caorso had other purposes, including
17 looking at consequences.

18 The point I want to emphasize again, that we
19 gave little weight to the Shoreham PRA because, one, we
20 were told we couldn't critique it and, two, we were told
21 that you were not planning to use it as part of your
22 design process.

23 JUDGE BRENNER: I wasn't going to interject,
24 but I guess I better since it's been mentioned three
25 times now. I guess you better tell me, Mr. Hubbard, why

1 you think the Board ordered that you not review the
2 Shoreham PRA to determine whether or not it is a systems
3 interaction study. I have no such recollection, so I am
4 not trying to trap you. That's why I am asking you.

5 WITNESS HUBBARD: I do not have the page in
6 the transcript, but I was told by my attorney that we
7 were not -- that it had been specifically said when it
8 was acknowledged that we would receive the PRA that the
9 7.B testimony was not to be a critique of the adequacy
10 of the SAI PRA and the fact that it was given to us was
11 not to mean that that was a invitation for us to
12 critique it.

13 So that was the understanding we had of how it
14 was offered to us. And also, during the depositions we
15 asked some specific questions about the PRA. The person
16 who was there, as I recall, couldn't answer three out of
17 the four questions.

18 JUDGE BRENNER: That's not going to help.
19 There is some hearsay that gets to be beyond the pale,
20 and that's it. But you answered my first point from
21 your point of view. I don't know if we agree with your
22 characterization of what we did, but that is another
23 matter.

24 WITNESS MINOR: Judge Brenner, may I comment
25 on the same question you asked? I believe, as I heard

1 your question, you asked where we were required not to
2 review the PRA from a systems interaction point of
3 view. And that is the limited view I have taken of the
4 PRA, is to see if it really did go into a more thorough
5 evaluation of systems interaction than a normal PRA
6 would do.

7 JUDGE BRENNER: So you did look at it for that
8 purpose?

9 WITNESS MINOR: Just for the purpose of seeing
10 if it did include a more extensive systems interaction
11 study than a normal PRA.

12 JUDGE BRENNER: Now part of Contention 7.b, in
13 fact the starting point, is the uniform systematic study
14 of systems, if you will, and not just limited to systems
15 interaction and then systems interaction in the other
16 matters become part of it.

17 Did you look at the PRA to determine
18 whether -- well, to determine an opinion as to whether
19 or not it was a different form of study of the systems,
20 not just limited to system interaction, which is one of
21 the sub-items? I forget the words you used in the
22 background of the contention, but a more methodological
23 approach of the type advocated, in fact, beyond the
24 Contention in some of the sections of your testimony.

25 WITNESS MINOR: Judge Brenner, I believe the

1 answer to your question would be no, we have not gone
2 into the type of review you just described in terms of
3 determining the extent to which the PRA covers a broader
4 coverage of systems or deep coverage of system compared
5 to other PRAs, if I take that to be the net of your
6 comments.

7 JUDGE BRENNER: Maybe I didn't state it
8 correctly. I didn't mean it with regard to other PRAs.
9 Let me take a step back and state it more as a lawyer,
10 perhaps.

11 Looking at Contention 7.B, did you look at the
12 Shoreham PRA to determine whether or not that PRA was
13 pertinent to the matters you thought should be addressed
14 better by an analysis of the plant than the analyses
15 performed by LILCO and for LILCO absent a PRA? So I am
16 not comparing the PRA to other PRAs.

17 WITNESS HUBBARD: We were provided the PRA the
18 night before the deposition and we did look it over and
19 then, when we asked in the deposition if LILCO was going
20 to rely on it for either design or operation and the
21 answer was no, then we did not pursue it beyond that
22 again, with maybe my incorrect understanding of what we
23 had to do.

24 I think I could say that it is the type of
25 document and uses a type of methodology that we thought

1 was appropriate for a system interaction analysis.

2 WITNESS GOLDSMITH: Judge Brenner, I would
3 like to expand slightly on that from a slightly
4 different perspective than Mr. Hubbard.

5 In a more direct answer to your question we
6 looked at the PRA in the limited time available in that
7 look. My personal opinion is it is a more systematic
8 analysis than appears in Chapter 15 for a design basis,
9 so with that caveat, I would say it is more systematic
10 than some of the methodologies that appear, again with
11 the caveat that appear to be used.

12 JUDGE BRENNER: The other caveat is based on
13 your opportunity to look at it in the time frame?

14 WITNESS GOLDSMITH: That is correct.

15 JUDGE BRENNER: Just for the record, let me
16 identify what I think is the document we have been
17 discussing and I hope we will agree is the correct
18 document. It is entitled "Probabilistic Risk
19 Assessment, Shoreham Nuclear Power Station, Long Island
20 Lighting Company, Preliminary Draft," consisting of, I
21 guess it is, three volumes. Let's just stay with the
22 title, whatever the number of volumes.

23 The cover page indicates it is by Science
24 Applications, Inc., San Jose, California, March 1982,
25 and I would ask the witnesses if that is the same

1 document they had in mind.

2 WITNESS MINOR: Yes. That is the same
3 document I had in mind in my answers. I believe the
4 others will have to speak for themselves.

5 WITNESS HUBBARD: Yes, that is the same
6 document.

7 WITNESS GOLDSMITH: Yes, that's the same
8 document.

9 WITNESS MINOR: Judge Brenner, you can tell
10 each of us reviewed that document to a separate degree.
11 My review was limited to the general scope of the
12 document.

13 JUDGE BRENNER: Yes, I understood the
14 distinction. That is the reason we allowed each witness
15 to give their view of what they looked at.

16 One reason I wanted to identify the document
17 is, of course, that is the last document the Board has
18 with the label as I indicated, and if there is something
19 newer, I don't know about it.

20 MR. ELLIS: That is the document, Judge.
21 Shall I proceed?

22 JUDGE BRENNER: Yes.

23 BY MR. ELLIS: (resuming)

24 Q Mr. Hubbard, you have indicated a couple of
25 times now to the Board that you were told in the

1 deposition that LILCO was not going to rely on it for
2 design or operation.

3 Let me show you, if I may, and perhaps counsel
4 can assist me, pages 161 through 163 of the deposition
5 of LILCO personnel beginning at 161, page 161, line 14.
6 Do you have that in front of you?

7 A (WITNESS HUBBARD) No.

8 Q I think Mr. Goldsmith is about to hand you the
9 deposition. Look at page 161, please.

10 (Witness Hubbard reviewing document.)

11 Q Do you see line 14 on page 161? Do you see
12 that, sir? Would you read aloud from there indicating
13 where the questions begin and the answers begin?

14 JUDGE BRENNER: Is this going to be a lengthy
15 reading? I don't have the document in front of me.

16 WITNESS HUBBARD: Excuse me, Mr. Ellis. Would
17 you tell me what lines?

18 JUDGE BRENNER: Wait a minute. Answer my
19 question.

20 MR. ELLIS: Your Honor, let me give the Board
21 our deposition to follow.

22 BY MR. ELLIS: (resuming)

23 Q Line 14, page 161. The question began: How
24 does LILCO envision using the PRA, and I would like Mr.
25 Hubbard to read the answer, please.

1 A (WITNESS HUBBARD) Line 14: "Question: How
2 does LILCO envision using this PRA when it is completed?

3 "Answer: As I mentioned to you before, we
4 will be using it to -- well, we will first ensure that
5 the scope that we initially defined in our
6 specifications has been addressed and that those
7 comparisons that were asked to be presented will be
8 presented by the consultants, will then take this
9 information, along with the comments, conclusions of the
10 peer review group and circulate this information within
11 the LILCO management organization.

12 "I guess we envision sort of a three-path
13 dissemination of this information. One would be the
14 processing of this report within the nuclear engineering
15 department organization -- my organization. We would
16 review the results, evaluate recommendations and suggest
17 to management, you know, first of all whether or not the
18 results of the report were -- comment on the results of
19 the report, evaluate its conclusions and and consider
20 making any future recommendations as to what might be
21 done with the report or refinements to the report.

22 "Another vehicle would be that we envision
23 giving this report directly to the NRB.

24 "Mr. Reedway: Tell what the NRB is.

25 "Answer: The Nuclear Review Board, which has

1 overall responsibility for the safety of the plant from
2 a management point of view. They will address it in
3 their forum and consider independently what further
4 action may be required as a result of their reviewing
5 the report.

6 "The third path is the path through our Vice
7 President of Engineering. I'm sure you are aware of the
8 fact that we have established a peer review group and
9 some noted experts in the field who are critiquing and
10 evaluating the document as it is being presented. That
11 peer review group reports to the Vice President of
12 Engineering and in that respect is an independent chain
13 of management within a company.

14 "He is in a separate chain from the Vice
15 President/Nuclear and in his capacity he also happens to
16 be in charge of the QA organization. He will also
17 prepare his independent comments and recommendations to
18 management on the results of the conclusions of the
19 report."

20 Q How does that refresh your recollection on
21 what use LILCO was going to make of the PRA?

22 WITNESS HUBBARD: Judge Brenner, I would like
23 to take a moment to go earlier in the deposition, so
24 could I have a moment, please?

25 JUDGE BRENNER: Yes. While you are doing

1 that, on a point of procedure here I guess this is where
2 we get into some problems. I don't know what further
3 use you are going to make of this. It's not in
4 evidence. The Board has never been provided copies of
5 any of the depositions taken by anybody, at least
6 recently, in this proceeding.

7 I don't mind. Normally in court procedure if
8 it's not going to be moved into evidence later that's
9 not any problem, although arguably one portion of 27.43
10 requires that depositions be served, but I am not
11 insisting on that. We are totally unfamiliar with this
12 deposition. I have no idea whether it is in context or
13 out of context.

14 And while we will pursue it at this point, the
15 extent to which we will use it later may depend upon
16 later testimony, possibly by LILCO itself, and that type
17 of thing.

18 MR. ELLIS: I didn't intend to introduce the
19 whole thing or anything of that sort. It is just that
20 on several occasions Mr. Hubbard indicated that we
21 didn't intend to rely on it and perhaps there is
22 something in the deposition that he will find that
23 indicates that, but I happen to recall vividly this
24 particular statement and he may indicate that there are
25 other statements that appear to be in conflict, but I

1 remembered this specific one because I remember the
2 procedure for implementing it and I just wondered, since
3 he had mentioned it a number of times, to be sure that
4 no misimpression was left.

5 JUDGE BRENNER: I understand why you asked the
6 question you did. I am wondering whether we should
7 identify this portion of the deposition at least and
8 mark it as an exhibit for identification.

9 MR. ELLIS: Yes, sir.

10 JUDGE BRENNER: And get the witness on the
11 deposition and so on. Now I am not moving it into
12 evidence for the truth of the evidence asserted. As I
13 understand it, it is being used solely to ask Mr.
14 Hubbard whether, given that remark, he would alter his
15 prior answer, having his recollection refreshed.

16 I do not know. We cannot cross examine the
17 deponent because he is not on the stand as to what this
18 means or the truth of it or any of that.

19 MR. ELLIS: Well, I think if it is admitted it
20 is admitted for the fact as said.

21 JUDGE BRENNER: You said it better than I did.

22 MR. LANPHER: Judge Brenner, the reason the
23 Board is not -- we were intending to provide the Board
24 with a copy of this deposition after we got the
25 signature pages back, which we have not gotten back, and

1 we haven't pressed LILCO for the signature pages. I
2 think everyone has been busy. We are intending,
3 probably, to be using this in greater detail when the
4 LILCO 7.B panel is on the stand.

5 JUDGE BRENNER: All right. You can serve them
6 or not serve them in advance. You can look at the
7 regulation and decide whether that puts a requirement on
8 you or not. I'm not going to require it independently.
9 I will put you on notice. I don't plan to read through
10 all of the depositions that we received. If you are
11 going to use a portion of it, we had better get advance
12 notice of it at the time the testimony is filed so that
13 we could read that as well as the testimony.

14 In terms of the procedure right now, Mr.
15 Hubbard, if you recall another section but cannot find
16 it now, you can so state and you can attempt to
17 paraphrase what you think you recall and look for it at
18 another time and come back to us either on redirect or
19 any time you've got it ready, or you can totally defer
20 your answer now without even attempting to paraphrase
21 what you think you recall, with the understanding that
22 if that is the case you want an opportunity to look
23 through it for the other statement that you think you
24 would recall, because I'm not going to sit here while
25 you take the time that might be necessary to go through

1 it.

2 WITNESS HUBBARD: I'd like to take the time to
3 do that so I could answer it on redirect as required.

4 MR. ELLIS: That is no problem. We just
5 simply wanted the impression cleared at this time.

6 May we have those pages, 161 to 163, marked
7 and then we will have copies made for everyone?

8 JUDGE BRENNER: All right. Let's just mark it
9 for identification and leave it at that, so I guess it
10 will be LILCO Exhibit 1 for identification. In giving
11 identification earlier, Mr. Ellis, did you indicate the
12 name of the witness and the date of the deposition?

13 MR. ELLIS: No, I did not. The name of the
14 witness is Robert Kascsak and the date of the deposition
15 is March 31, 1982.

16 JUDGE BRENNER: Is it K-a-s-a-c-k?

17 MR. ELLIS: K-a-s-c-s-a-k -- K-a-s-c-s-a-k.

18 (The document referred to
19 was marked LILCO Exhibit
20 Number 1 for
21 identification.)

22 BY MR. ELLIS: (resuming)

23 Q Mr. Hubbard, I know you are planning on
24 looking at that -

25 JUDGE MORRIS: Excuse me, Mr. Ellis, could I

1 have the date again?

2 MR. ELLIS: March 31, 1982.

3 JUDGE MORRIS: Thank you.

4 JUDGE BRENNER: All right, let's finish this
5 procedure. It will be an exhibit and I want the three
6 copies for the official record. In addition, let us
7 bind it in at this point for future convenience.

8 (The LILCO Exhibit Number 1 for
9 indentification follows:)

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1 BY MR. ELLIS: (resuming)

2 Q Mr. Hubbard, I know you plan to look at the
3 deposition for the testimony. You will find it. I am
4 sure we will get to that and put it in. Does the
5 testimony that you read refresh your recollection about
6 the use that LILCO intends to put the PRA into?

7 A (WITNESS HUBBARD) Yes, it does.

8 Q And does your recollection now comport with
9 what you read?

10 A (WITNESS HUBBARD) My recollection really
11 hasn't changed. There were many reviews that said they
12 were going to go on at LILCO at some time, so it was
13 more of a review of the PRA and not the direct statement
14 that this was something that had to be done before fuel
15 load and modifications made to the plant.

16 It was more talk well, yes, we're going to
17 have various management reviews of the PRA and things of
18 that sort, but not this was a fundamental necessity for
19 looking at the adequacy of the design. In fact, you
20 know, LILCO said that they did not plan to docket this
21 PRA with the NRC, so it is not an official licensing
22 document.

23 Q But that's different, isn't it, Mr. Hubbard,
24 as you have said several times, that LILCO did not
25 intend to rely or use the document for design or

1 operation? The part you read indicates they do, don't
2 they?

3 A (WITNESS HUBBARD) The part I read indicates
4 they intend to review it, but there is still not a
5 commitment that they will implement anything in a timely
6 manner.

7 Q Mr. Hubbard, with respect to classification of
8 systems, are you familiar with any industry standards or
9 methodology for classifying systems?

10 A (WITNESS HUBBARD) Yes.

11 Q What are they?

12 A (WITNESS HUBBARD) Generally the method of
13 classifying is to classify into safety-related or
14 non-safety-related. That is historically how it has
15 been done.

16 I have been involved with the IEEE -- that is,
17 the Institute of Electrical and Electronics
18 Engineering -- Standards Committee trying to come up
19 with a graded QA standard, for example, to look at
20 graded degrees of importance to safety. So there is
21 also a couple of Three Mile Island-related programs
22 going on in that area.

23 So the idea of having some sort of graded
24 method of classifying structures, systems and components
25 in terms of the degree of safety has been an ongoing

1 effort. I have been involved in discussions of that for
2 I guess ten years or so.

3 Q My question was whether you were familiar with
4 any industry standards or methodology. I think you said
5 you were familiar that historically it is done in terms
6 of safety-related and non-safety-related. Are you
7 familiar with any specific industry standards or
8 methodology apart from that?

9 A (WITNESS HUBBARD) I have been involved in
10 reviewing drafts of an IEEE standard, PA-127 -- and let
11 me get the title of that.

12 There is an IEEE guide standard, PA-827. It
13 is an IEEE trial use guide, a method for determining
14 requirements for instrumentation control on electrical
15 systems and equipment important to safety. And in the
16 foreward, the first sentence says that the IEEE has
17 developed this guide to provide guidance to the design,
18 procurement and use of instrumentation control on
19 electrical systems and equipment that are important to
20 safety.

21 So the purpose of this was to come up with a
22 graduated system of grading systems in terms of their
23 importance to safety.

24 Q What is the date of that?

25 A (WITNESS HUBBARD) This was the fourth draft

1 as of January 1981. My understanding is this draft was
2 not approved and it is back being redrafted.

3 Q Are you familiar with any other standard
4 methodology for classifying systems?

5 (Pause.)

6 Do you want to confer?

7 A (WITNESS HUBBARD) I am familiar with ones
8 like Reg Guide 1.26 and 1.29, and IEEE standards 279 --

9 Q Apart from the regulatory guides -- we will
10 get to those in the course of this examination -- are
11 you familiar with any other industry standards or
12 methodology relating to classification of systems other
13 than IEEE PA-827 that you identified?

14 A (WITNESS HUBBARD) I was also involved in the
15 writing of IEEE 467 on quality assurance for Class I
16 electrical equipment, which goes into quality standards
17 for items that are important to safety and there are
18 other IEEE standards that are referenced in those.

19 Q Is that all that you are familiar with? Do
20 you want to confer? Go ahead, Mr. Goldsmith, confer.

21 (Panel of witnesses conferring.)

22 A (WITNESS HUBBARD) I have been talking about
23 electrical areas. There is also the ASME and the ANSI
24 various national standards having to do with
25 classification.

1 Q Yes. Well, my question was not restricted to
2 electrical.

3 A (WITNESS HUBBARD) Yeah.

4 Q Now with that knowledge let me reask my
5 question.

6 Apart from the IEEE PA-827 that you described,
7 are you familiar with any industry standards or
8 methodologies used to classify systems?

9 A (WITNESS HUBBARD) When I was at General
10 Electric I was responsible for the ASME code stamp for
11 both the N and the NPT stamp that GE had for section 3
12 devices.

13 Q Does that have anything to do with
14 classification of systems between safety and non-safety?

15 A (WITNESS HUBBARD) It has to do with pressure
16 boundary equipment, so it would be the classification of
17 things that are pressure boundary, and then, like NPT is
18 an appurtenance to a vessel, so you classify like a
19 containment electrical penetration is covered by an NPT,
20 not an N stamp like you would have on a vessel.

21 So yes, that does have to do with
22 subclassifications within the ASME code.

23 Q But isn't that done after the component or
24 system is classified?

25 A (WITNESS HUBBARD) I wouldn't agree with that,

1 Mr. Ellis, that you would look at the function, like
2 containment electrical penetration. It is part of the
3 containment, so, therefore, it would be classified as
4 something that would be under the NPT stamp.

5 Q I see. So you looked at the function at GE
6 when you were classifying that.

7 A (WITNESS HUBBARD) That would be one thing
8 that would be looked at -- a function like pressure
9 boundary or being attached to the containment or
10 something of that sort -- yes, sir.

11 JUDGE BRENNER: Excuse me, Mr. Ellis. Partly
12 for my clarification and partially for clarification of
13 the record, Mr. Hubbard, you had better tell us what an
14 NPT stamp is and also for the record tell us what an N
15 stamp is and you also alluded to section 3. I am not
16 sure if you meant of the Code or something else.

17 You could clarify those three things.

18 WITNESS HUBBARD: I was alluding to section 3
19 of the ASME Boiler Code. An N stamp is called a code
20 authorization symbol and it is the letter "N", and for
21 certain types of devices you stamp them with the letter
22 N.

23 There is also a stamp that has the letters
24 "NPT" and that is for appurtenances, such as containment
25 electrical penetrations, and those you stamp with an NPT

1 stamp.

2 JUDGE BRENNER: And these respective stamps
3 are applied only after determination that the components
4 meet the relevant portions of the ASME Code, is that
5 correct?

6 WITNESS HUBBARD: That is correct, Judge
7 Brenner.

8 JUDGE BRENNER: And who makes that
9 representation? You say you handled it for General
10 Electric. Is it GE that makes the determination for
11 their own components or someone else?

12 WITNESS HUBBARD: In GE's case we had a stamp
13 Code inspector from the State of California and it was a
14 joint decision, really, by the Code inspector and by the
15 General Electric Company. But the stamping took place
16 after authorization by the authorized Code inspector. In
17 our case, in GE's case when I was there, this was so in
18 the State of California and in other cases there was an
19 authorized inspector from an insurance company.

20 But it is a sign that you have fulfilled the
21 Code responsibilities.

22 JUDGE BRENNER: Thank you. I am sorry for the
23 interruption, Mr. Ellis.

24 BY MR. ELLIS: (resuming)

25 Q So that I am clear, Mr. Hubbard, you, when you

1 were at GE, and GE would generally look at the functions
2 of the components or systems in order to determine
3 whether or not they should be given a particular ASME or
4 NPT rating, is that correct?

5 A You may confer.

6 (PANEL OF WITNESSES CONFERRING.)

7 A (WITNESS HUBBARD) In terms of my duties as
8 manager of quality assurance, that would be correct.

9 Q So that is the methodology or that is a
10 methodology that you used when you were at GE for
11 classifying systems?

12 A (WITNESS HUBBARD) Yes.

13 Q All right. Are there any other industry
14 standards or methodologies that you are familiar with
15 relating to classification systems?

16 (PANEL OF WITNESSES CONFERRING.)

17 A (WITNESS HUBBARD) Those are all the ones that
18 we remember.

19 Q If I mention ANS 22, does that refresh your
20 recollection on another one?

21 A (WITNESS GOLDSMITH) Mr. Ellis, I think that
22 used to be ANS 3.2 or 3.4 and I couldn't remember the
23 exact number, but it would ring a bell with me.

24 Q And it does with you, too, Mr. Hubbard?

25 A (WITNESS HUBBARD) That is the one we were

1 trying to remember the number of and we couldn't.

2 Q Are you familiar with that methodology that is
3 encompassed in ANS 22?

4 A (WITNESS GOLDSMITH) At the present time, no.
5 Five years ago I would say I was intimately familiar.
6 Seven years ago I was intimately familiar with the
7 safety classification methodology.

8 Q For the record, Mr. Hubbard or Mr. Goldsmith,
9 ANS is American Nuclear Standards, is that correct?

10 A (WITNESS GOLDSMITH) No. It is American
11 Nuclear Society.

12 Q Society. And is it, so far as you can recall,
13 Mr. Hubbard or Mr. Goldsmith, a methodology for
14 classifying safety-related systems?

15 A (WITNESS GOLDSMITH) Yes, it is.

16 MR. LANPHER: Judge Brenner, could I make an
17 inquiry of the Board? Are we going to take a break this
18 afternoon at some point along the way. They have been
19 up for a long while. I do not know where there is a
20 convenient point for Mr. Ellis.

21 JUDGE BRENNER: Normally what I like to do in
22 the afternoon is, since we are going to run until
23 approximately 5:00 or maybe even a little later, take a
24 break about the midpoint that is closer to 3:00 than we
25 are right now.

1 MR. LANPHER: That's a pretty long stretch for
2 the witnesses. Is it possible to have two short breaks?

3 JUDGE BRENNER: That is possible.

4 MR. LANPHER: Would you consider it?

5 JUDGE BRENNER: Do you want to break now?

6 MR. LANPHER: Yes.

7 JUDGE BRENNER: All right, let's take a
8 ten-minute -- well, let me ask Mr. Ellis if he would like
9 to ask a few more questions to tie up this part, if he
10 has no objection.

11 MR. ELLIS: I have no objection to a break.

12 JUDGE BRENNER: We'll take a break.

13 (Whereupon, at 2:13 p.m., a brief recess was
14 taken.)

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1 JUDGE BRENNER: We are back on the record
2 after the recess. You may proceed, Mr. Ellis.

3 BY MR. ELLIS:

4 Q Thank you, Judge.

5 Mr. Hubbard, does it also refer to the
6 classification other than safety related systems? Or
7 Mr. Goldsmith.

8 A (WITNESS GOLDSMITH) It has been a while, Mr.
9 Ellis, and I don't remember the exact details of that,
10 but if my recollection serves me, it did talk about some
11 balance of plant systems.

12 Q Doesn't it also, that is, ANS 22, talk about
13 nuclear steam supply non-safety?

14 A (WITNESS GOLDSMITH) Mr. Ellis, it would help
15 me out significantly if you had a copy and I could take
16 a look at your copy and refresh my memory as to the
17 document.

18 Q On the basis of your memory now, I take it you
19 cannot tell me.

20 A (WITNESS GOLDSMITH) On the basis of my
21 memory, I can't.

22 Q For the record, can either you or Mr. Hubbard
23 tell the Board how these standards, ANS 22, are
24 developed?

25 A (WITNESS GOLDSMITH) I didn't specifically

1 participate in ANS 22, and Mr. Hubbard previously
2 testified that he is, if I remember correctly, a member
3 of the standards committee, so I think that would be the
4 best way to do that. It has been a while since I have
5 done that.

6 A (WITNESS HUBBARD) Mr. Ellis, I am on the IEEE
7 standards committee, and I assume that ANS is run in
8 much the same manner, that for the IEEE a task is
9 assigned, and that is a formal worksheet that has a
10 scope and a purpose, and once that is approved by the
11 organization that sponsors the particular national
12 standard, be it ANS, ASME, IEEE, or ISA, and Mr. Minor
13 is on the ISA standards committee, but first, you have a
14 scope document that is approved. Then there is a
15 general meeting to decide what types of people one needs
16 to have on the committee to write that sort of a
17 standard, by that, what types of skills would be
18 required and then you attempt to obtain members usually
19 from the industry, the regulators, the people that are
20 directly involved with the usage of that type of
21 document, and then a committee is put together. They
22 prepare -- they meet and prepare drafts of this standard.
23 Then, within the standards organization, there
24 is a review and approval cycle where people vote on it,
25 and following the voting and the resolution of any

1 comments, the standard is published. Usually a standard
2 like an ANS or an IEEE is first published under that
3 parent organization. Then after a few years if it seems
4 to have general usage in the industry, it may then be
5 balloted again by the American National Standards
6 Institute, which might be a little higher in the
7 structure. Then it would become an ANSI standard, but
8 still listed under the ANSI IEEE.

9 So, that is in general the path that is taken
10 in the development and approval of an ANS or an IEEE
11 standard. Mr. Minor might want to add something on ISA.

12 A (WITNESS MINOR) I would say that that is
13 generally the same procedure that is followed in the
14 ISA. There is an attempt to make an industry consensus
15 by trying to get representation from various fields. It
16 is often difficult to get the full representation of the
17 industry.

18 Q You mentioned, Mr. Hubbard, that when it
19 becomes final industrywide, it becomes an ANSI standard?

20 A (WITNESS HUBBARD) No, that is not correct,
21 Mr. Ellis. Normally, a standard is first put out by the
22 parent organization, be it ANS, IEEE, ISA, and it is put
23 out, for example, as IEEE standard such with some
24 number. If it turns out that it is used by the industry
25 for a number of years, maybe a couple of years, it seems

1 to have general acceptability. Then sometimes it is
2 then also balloted by the American National Standards
3 Institute, and it becomes an ANSI standard as well as,
4 for example, an IEEE standard, and my understanding is,
5 in the hierarchy of standards, it has a little more
6 weight if it is an ANSI standard in terms of general
7 acceptance than it might if it comes from the ANS or
8 IEEE. It shows it has matured to another step.

9 Q Do you know, Mr. Hubbard, whether ANS 22 has
10 an ANSI number or it has become an ANSI standard, any of
11 its successors?

12 A (WITNESS HUBBARD) I do not, and I don't even
13 know what revision you are talking about of the standard.

14 Q ANS, I think you indicated, was American
15 Nuclear Society. Are you a member?

16 A (WITNESS HUBBARD) I am not, but some of the
17 members of our firm are, so we get correspondence from
18 them and things of that sort.

19 Q How about Mr. Minor, Mr. Goldsmith, and Ms.
20 Harwood? Are you all members of the American Nuclear
21 Society?

22 A (WITNESS MINOR) I am not.

23 A (WITNESS GOLDSMITH) I am both a full member
24 and past local chairman for the local society. I have
25 run for national office twice.

1 A (WITNESS HARWOOD) I was a student member
2 while at university, and I am not a member at the
3 current time.

4 Q With respect to ANS 22, Mr. Goldsmith, since
5 you are a member, do you know whether that became an
6 ANSI standard?

7 A (WITNESS GOLDSMITH) I don't know, Mr. Ellis.

8 Q Do you, Mr. Goldsmith or Mr. Hubbard, know
9 whether ANS 22 was widely used in the industry?

10 A (WITNESS HUBBARD) I really cannot answer
11 that. I did look to see if it was used on Shoreham, and
12 I could find no place in the FSAR where it was relied
13 on, and we asked Mr. Dawe and Mr. Robare questions about
14 documents they had relied on. I am not aware that this
15 is a document that they mentioned.

16 JUDGE BRENNER: Mr. Hubbard, I didn't ask you
17 when you asked Mr. who?

18 WITNESS HUBBARD: Mr. Robare, R-o-b-a-r-e, and
19 D-a-w-e.

20 WITNESS GOLDSMITH: I would just like to say
21 that at the time I was using that BWR classification
22 standard which I am not sure what it was known as, my
23 recollection doesn't serve me that it was ANS 22 at that
24 time. United Engineers, where I was working, was using
25 that standard at that time, and again, if my

1 recollection serves me correctly, TVA was using the
2 standard to look at in the Clarksville unit, and we were
3 obviously talking with General Electric about the use of
4 that stanard at that time.

5 (Pause)

6 JUDGE BRENNER: Do you want an opportunity to
7 confer, Mr. Ellis?

8 MR. ELLIS: No, thank you, sir.

9 BY MR. ELLIS: (Resuming)

10 Q Mr. Goldsmith, in connection with the
11 classification of systems, is it acceptable methodology
12 to use past experience in connection with classification
13 of systems on nuclear plants?

14 A (WITNESS GOLDSMITH) In my personal opinion,
15 that is one methodology. I think several methodologies
16 are used to assure appropriate classification.

17 JUDGE BRENNER: Off the record.

18 (Whereupon, a discussion was held off the
19 record.)

20 BY MR. ELLIS: (Resuming)

21 Q Mr. Minor, I didn't ask you, but I need to
22 know whether you know how widely used the ANS standard
23 was for classifying systems in a power plant.

24 A (WITNESS MINOR) I can't.

25 MR. LANPHER: I object. I don't know which

1 standard.

2 MR. ELLIS: I will rephrase that.

3 BY MR. ELLIS: (Resuming)

4 Q Do you know how widely used ANS 22 was for
5 classifying systems at nuclear power plants?

6 A (WITNESS MINOR) I cannot testify as to how
7 widely it was used. No, I don't know.

8 Q Do you know whether it was used in any
9 specific instances?

10 A (WITNESS MINOR) I am familiar with the
11 existence of the document in the past, but I do not know
12 how it was used specifically.

13 Q Now, Mr. Hubbard, are you familiar with Reg.
14 Guide 1.26?

15 A (WITNESS HUBBARD) Yes.

16 Q I take it everyone on the panel is familiar
17 with Reg. Guide 1.26.

18 A (WITNESS GOLDSMITH) Yes.

19 A (WITNESS MINOR) Yes.

20 Q Mr. Goldsmith, is that an appropriate
21 methodology for classification of systems for a PWR?

22 A (WITNESS GOLDSMITH) Regulatory Guide 1.26 is
23 a suggested or is regulatory guidance put out by the
24 Nuclear Regulatory Commission saying what is acceptable
25 to them or what methods are acceptable to them in doing

1 classification. I could not testify as to whether that
2 regulatory guidance in all cases is a complete or an
3 appropriate method of classification. It is not an
4 all-inclusive guide, and it reflects current staff
5 practice, and again, if my recollection serves me
6 correctly, it has changed three or four times over the
7 last ten years.

8 A (WITNESS MINOR) I would like to add a comment
9 to that, if I may. Reg. Guide 1.26 is not what I would
10 call an adequate methodology for classification. I
11 believe that was your question. Because it relates only
12 really to fluid systems.

13 Q All right. With respect to fluid systems, is
14 it adequate?

15 MR. LANPHER: I object to the form. Could we
16 identify the revision that is being referred to? As Mr.
17 Goldsmith pointed out, I think there are three or four
18 different revisions.

19 JUDGE BRENNER: I think that might be helpful,
20 if the questioner wants to rely on a particular revision.

21 MR. ELLIS: I think I would like to know
22 whether any revisions are unacceptable.

23 JUDGE BRENNER: That is also acceptable.

24 MR. LANPHER: Could the whole question be
25 repeated, please?

1 JUDGE BRENNER: The question is with respect
2 to just fluid systems, is any version of Reg. Guide 1.26
3 adequate for classification, safety classification of
4 the system, in Mr. Minor's view.

5 WITNESS MINOR: As the question is posed by
6 Judge Brenner, I believe the answer would have to be,
7 yes, it is adequate, but it is not necessarily
8 sufficient in itself as a classification technique for
9 all systems.

10 MR. ELLIS: Thank you.

11 BY MR. ELLIS: (Resuming)

12 Q Now, with respect to Reg. Guide 1.29, are you
13 all also familiar with that?

14 A (WITNESS GOLDSMITH) Yes, we are.

15 A (WITNESS MINOR) Yes.

16 Q Is that in any of its incarnations or
17 revisions an appropriate methodology for seismic design
18 classification?

19 A (WITNESS HUBBARD) 1.29 provides one method of
20 doing seismic design classification. However, as you
21 can see from the definition in the regulatory position,
22 the definition of what is encompassed there is what Mr.
23 Denton called safety related components, so it does not
24 really address the broader issue of what is important to
25 safety, but more addresses the subset of that, of what

1 is safety related. That is also equally true for Reg.
2 Guide 1.26, that while in the introduction it talks
3 about important to safety. As soon as you get into the
4 wording within it, it talks about safety related, but it
5 is very clear in 1.29 because of the definition.

6 JUDGE BRENNER: Mr. Ellis, excuse me. For my
7 clarification, I was with you on the cross examination
8 plan with respect to Reg. Guide 1.26, but I lost you
9 once we got into 1.29.

10 MR. ELLIS: I don't know whether it is in
11 there or not.

12 JUDGE BRENNER: Well, in terms of category, is
13 it the same category as Item 12?

14 MR. ELLIS: Yes, sir. Well, 15. It might be
15 more appropriate for 15. No, that is going to be --
16 that is a more specific point that we will come to. I
17 guess 13 might be better.

18 JUDGE BRENNER: All right. This points up one
19 thing. It was very helpful to have the items numbered
20 as LILCO did, because once in a while we are going to
21 have this dialogue, so as not to reveal a plan, we can
22 refer to an item number, and the parties might consider
23 that. In the future, if you are going to cross examine
24 on a Reg. Guide or document, one of the big advantages
25 of the plan to us is to be able to take a look at that

1 document in advance when we know it is coming. You may
2 proceed.

3 MR. ELLIS: I think I understand fully about
4 cross examination plans for the next time.

5 JUDGE BRENNER: Let me emphasize ad nauseum,
6 if you will, Mr. Ellis, that you were just the first out
7 of the box, and it could have been anybody.

8 MR. LANPHER: Except the county.

9 JUDGE BRENNER: You didn't number your items.
10 (General laughter.)

11 MR. LANPHER: I did, too.

12 JUDGE BRENNER: All right. Please proceed.

13 BY MR. ELLIS: (Resuming)

14 Q So the record is clear, Mr. Hubbard or Mr.
15 Goldsmith, I will ask you both, is Reg. Guide 1.29 an
16 appropriate methodology for classifying seismic design
17 classifications?

18 A (WITNESS HUBBARD) I will reiterate my
19 previous answer. I believe it is one acceptable method
20 to use for safety related, that subset of important to
21 safety, and as we have stated in our testimony, we
22 believe that this should be complemented with other
23 approaches. This is what we would call the design basis
24 accident, the single failure approach.

25 (Pause.)

1 Q All right. Mr. Hubbard, I believe you are
2 responsible for Section 3 of the testimony. Several
3 times you have referred to important to safety as a
4 large category with safety related as a
5 sub-subcategory. Is it your contention that Appendix B
6 to Part 50 of the regulations, quality assurance
7 standards, should apply to important to safety items?

8 A (WITNESS HUBBARD) Appendix B uses the words
9 "safety related" while general design criteria 1 of
10 Appendix A uses a broader term, "important to safety".
11 So I believe that the 18 criteria of Appendix B should
12 be applied to that narrow group called safety related,
13 and for the broader group of things called important to
14 safety, then some part, if not all parts of the 18
15 criteria should apply, depending on a number of factors,
16 including function, like is it used in an emergency
17 operating procedure, things of that sort. Some of the
18 ones we have outlined here.

19 Q In other words, as I understand your testimony
20 for those items which are safety related you would
21 contend they are entitled or should be given Appendix B
22 QA treatment. Is that correct?

23 A (WITNESS HUBBARD) Yes, sir.

24 Q And those items that are safety related would
25 be those set forth in Reg. Guides 1.26 and 1.29?

1 A (WITNESS HUBBARD) There would be ones in
2 addition, Mr. Ellis, to the ones in 1.26 and 1.29. As
3 you recall, 1.26 was only fluid systems, so that doesn't
4 cover things like the electrical equipment, cables, a
5 number of other areas. So with the caveat that 1.26 and
6 1.29 don't describe everything, they are safety related.

7 Then, I would agree that the things that are
8 properly called safety related should have the full
9 quality assurance program as called out in the 18
10 criteria of Appendix B.

11 A (WITNESS MINOR) Mr. Ellis, if I may add to
12 that comment, I believe your question was with regard to
13 Reg. Guide 1.29 and 1.26. Do they require 10 CFR Part
14 50 Appendix B be applied to safety related functions? I
15 would agree that there are safety related functions as
16 identified through those Reg. Guides would require 10
17 CFR 50 Part B, but that leaves the impression that those
18 are the only ones that might need that, and as
19 identified in the memo by Mr. Denton of the NRR,
20 important to safety classification -- excuse me. The
21 regulatory guide 1.29 provides an LWR generic functional
22 listing of safety related structures, systems, and
23 components needed to provide or perform required safety
24 functions, and then it goes on. It says additional
25 information is needed to generate the complete listing

1 of systems -- excuse me, of safety related structures,
2 systems, and components for any specific facility, so
3 Reg. Guide 1.29 is not sufficient in itself. I believe
4 that goes to what I was saying earlier. The passage I
5 was reading is from the Denton memo, Page 1, the next to
6 the last paragraph, under the definition of terms.

7 Q Mr. Hubbard, you indicated that the electrical
8 systems would not be covered by Reg. Guide 1.26 and
9 1.29. Is that correct? I believe they are covered in
10 1.29, aren't they? For the convenience of the Board, I
11 have copies of the Reg. Guides if that would be
12 convenient.

13 A (WITNESS HUBBARD) Class 1 electrical systems,
14 I mentioned in --

15 Q Subparagraph R?

16 A (WITNESS HUBBARD) Perhaps, and the areas are
17 -- it depends on what revision you are looking at, but
18 yes, in Reg. Guide 1.29 there is a mention of electrical
19 equipment.

20 JUDGE BRENNER: Mr. Ellis, if I could follow
21 up on your comment, I have a copy in front of me, at
22 least of 1.26. What do you plan to do with the Reg.
23 Guides, I guess, is my question, in terms of the
24 evidentiary record. And if you are going to do
25 something, let's maybe think of doing it now rather than

1 later.

2 MR. LANPHER: Judge Brenner, while he is
3 contemplating your question, I believe the witnesses --
4 Mr. Hubbard misidentified the page that he was referring
5 to before when he said Page 1 of the Denton memorandum.
6 Mr. Minor, it is really Page 3 of that memorandum. It
7 is the attachment headed Definition of Terms, which is
8 exhibit 1 to the prefiled testimony, just so the record
9 is clear.

10 JUDGE BRENNER: Page 1 of the attachment,
11 which is Page 3 of the total document.

12 MR. LANPHER: Yes.

13 WITNESS MINOR: My copy has no page number on
14 it.

15 JUDGE BRENNER: Between the three of us, we
16 now have a total of two copies of Reg. Guide 1.26. I
17 didn't want to stop things at this point, but you
18 indicated you were giving us a copy for our convenience,
19 which we appreciate. That gives me the possible thought
20 that we are going to be needing it, and if we are going
21 to need it alot, let's get it into the record.

22 MR. ELLIS: Is this off the record?

23 JUDGE BRENNER: I can go off if you want, but
24 I would rather stay on.

25 MR. ELLIS: I think we will be using it, but I

1 hadn't planned on making it an exhibit. I thought the
2 Board would take judicial notice of the Reg. Guides.

3 JUDGE BRENNER: Why do it that way? Let's
4 talk about putting it in. I don't know for what purpose
5 you would be asking us to take judicial notice for it.

6 MR. LANPHER: Judge Brenner, I think the later
7 filings and this kind of thing, it is just a lot easier
8 to do it by referring to specific exhibits. Whether you
9 want to bind them into the record or not is up to you,
10 but I would rather see documents that are referred to
11 marked as exhibits so we all know what we are dealing
12 with.

13 MR. ELLIS: I don't have any problem with
14 making them exhibits.

15 JUDGE BRENNER: As I indicated yesterday, it
16 is kind of a pragmatic approach, and I am not at this
17 point sure how much use you will make of it, that is,
18 distinguished from the Federal Register notice which we
19 could have made an exhibit number bound in, but I felt
20 that was very easily retrievable by that standard
21 reference. Let's put it in for convenience.

22 MR. ELLIS: Yes, we'll put it in for
23 convenience. We will get copies made and put them in.

24 JUDGE BRENNER: All right. Can we mark them
25 Hu'bard, Mr. Ellis? Can we mark them as exhibits at

1 this time, and we will bind them in also, but let's give
2 them numbers. Unless there is objection, what I am
3 prepared to do is admit them into evidence on the basis
4 that these are the types of documents that experts rely
5 on in the field for conclusion and approaches and so on.
6 The nature for which these witnesses have used it, I
7 think, is clear from the testimony, and will become
8 clearer from the examination. The documents will then
9 be in evidence for the use of any other witnesses in the
10 future.

11 MR. LANPHER: We have no objection to them
12 coming into evidence. We think in fact particularly
13 since we have given the 7B testimony which our witnesses
14 have proffered that it will be certainly useful. I
15 would hope that it is Revision 1 to Reg. Guide 1.26 that
16 you are intending to put in, because I think that is
17 what is relied upon in the FSAR section, which is dealt
18 with in the witness's testimony. So that would be the
19 most useful revision.

20 MR. RAWSON: Mr. Chairman, the staff has no
21 objection.

22 JUDGE BRENNER: I have got something, Revision
23 3 for 1976. Let's hold off on marking them at this
24 time. I would like the parties to get together during
25 the break finding out which revisions they want in for

1 what purpose. If there are two revisions that need be
2 bound in because the FSAR relies on one, but there is a
3 more current version, we can talk about that also. We
4 will have to let the parties among themselves straighten
5 this out. We will move them into evidence. I do not
6 care whose exhibit it is. It could be the staff or
7 LILCO's or anybody's. Well, work that out, too, and
8 then come back to us.

9 BY MR. ELLIS: (Resuming)

10 Q Did you want to add something, Mr. Hubbard?

11 A (WITNESS HUBBARD) No, I was interested in the
12 revision number, because there are revisions listed in
13 Table 3B of the FSAR for Reg. Guides 1.26 and 1.29. It
14 would be helpful to me if we had any more questions as
15 to how the copy of the revision you are relying on in
16 the FSAR, and it became clear that the one you just
17 handed out is a different revision than the one that is
18 listed in the FSAR.

19 JUDGE BRENNER: Mr. Ellis, one possibility
20 since I feel that I interrupted your flow in this
21 matter, and I apologize, would be, if you want, your
22 preference, we could switch topics with some further
23 questions, but we will take another break, and during
24 that break you can work out the copies and the revisions
25 that you would be using and the ones that the witnesses

1 would like in front of them and then come back to cross
2 examination, involving either just the Reg. Guides or in
3 fact that whole subject in the cross plan, but if you
4 want to take your time now to stay with this topic, I
5 will allow that, too.

6 MR. ELLIS: Thank you, Judge. I will just go
7 ahead.

8 BY MR. ELLIS: (Resuming)

9 Q Now, as I understand your contention, Mr.
10 Hubbard, it is that there is a large group of
11 structures, systems, and components that are important
12 to safety, and a subset of that group are safety
13 related, and it is that subset which is entitled to
14 Appendix B quality assurance standards. Is that right?

15 A (WITNESS HUBBARD) No.

16 Q In what respects is it not correct?

17 A (WITNESS HUBBARD) As I previously stated, the
18 ones who are in the category of safety related should
19 have the full Appendix B. The ones that are in the
20 broader category of important to safety should have the
21 appropriate ones of the 18 criteria which in some cases
22 might be all of the 18 criteria.

23 Q So what I said was correct with the exception
24 of the fact that the remainder of the structures,
25 systems, and components other than safety related that

1 are important to safety in your scheme would get
2 something less than the full Appendix B, but some
3 portions of Appendix B.

4 A (WITNESS HUBBARD) No. They would get some
5 portion of the 18 criteria up to including all 18
6 criteria. I could conceive there would be some that are
7 important to safety that it might be appropriate to use
8 all 18 criteria.

9 Q Are you familiar with the NRC and industry
10 practice at the current time in connection with the
11 classification and the application of QA standards?

12 MR. LANPHER: I object to the question and the
13 answer, it is multiple. He is asking both
14 classification and application of QA standards. I don't
15 understand the question.

16 JUDGE BRENNER: I will overrule that
17 objection, because I think that can be answered, and we
18 will get the answer to this. I thought you were going
19 to object to it that it was too general.

20 MR. LANPHER: I would hope you could make it
21 by taking part of that out.

22 JUDGE BRENNER: Let the witness answer to the
23 extent that the witness can. I think the cross examiner
24 is allowed a reasonable latitude. We are starting out
25 with a general scheme, and the witness is capable of

1 explaining that, which the witness can answer, and then
2 the cross examiner can follow up. Does the witness
3 recall the question?

4 WITNESS HUBBARD: No.

5 MR. ELLIS: Read the question.

6 (Whereupon, the Reporter read back the pending
7 question.)

8 JUDGE BRENNER: Mr. Hubbard, are you preparing
9 to answer?

10 WITNESS HUBBARD: The classification, for
11 example, of instrument, I will take one part, instrument
12 control and electrical equipment, that is TMI Item 2F5,
13 and in the April status report, they give the status of
14 the issue and referring to the industry view at this
15 time, that first of all the purposes of the standard is
16 to prepare a standard in conjunction with the IEEE that
17 will allow classifying instrumentation and control and
18 electrical systems based on the level of importance to
19 safety, and they discuss here -- this is in the TMI
20 tracking system, the fifth report, dated April of this
21 year, that an underlying problem evident at work today
22 is that while the working group recognizes this effort
23 as charting of new methods based on more enlightened
24 thinking, there is great reluctance on the part of many
25 members to depart from tradition or to challenge old

1 ways of doing business.

2 So, my answer to your question would be, I
3 think it is recognized within the industry that there
4 needs to be a graded QA system, that there needs to be
5 something beyond just the 18 criteria for safety related
6 items, but there has been a great reluctance to really
7 address that graded QA system.

8 BY MR. ELLIS: (Resuming)

9 Q Mr. Hubbard, let me try again to get a direct
10 answer to my question. Is what you are contending about
11 system classification and quality assurance what you
12 understand now to be the industry and NRC practice?

13 (Pause.)

14 Q Mr. Hubbard, I don't understand why that
15 question doesn't call for a simple yes or no answer.

16 A (WITNESS HUBBARD) I understand that the
17 existing industry practice is to in general only address
18 safety related items in the quality program, and not to
19 have appropriately addressed the broader category of
20 items important to safety. Now, that is being modified
21 in a number of plants. I am familiar that there have
22 been looks at some plants to have expanded QA list.

23 Q Is it your understanding that the items that
24 are not safety related do not get any QA?

25 A (WITNESS HUBBARD) Mr. Ellis, you will have to

1 be more specific whether you mean generally or
2 specifically to Shoreham.

3 Q Let's try first generally.

4 MR. LANPHER: I object to the question. It is
5 far too broad.

6 MR. ELLIS: Well, he has already --

7 JUDGE BRENNER: Well, excuse me. Let's not
8 have counsel back and forth. I think in general, as I
9 tried to make clear once or twice before, when the
10 objection is too general, that is a kind of an unusual
11 legal objection, although I have heard it around NRC
12 proceedings as opposed to court proceedings. My view
13 is, in the exception of a question that really goes way
14 over the line in that regard, the witness is capable of
15 stating whether or not he or she is incapable of
16 grappling with the question because of its generality,
17 and sometimes a general question gets a general answer,
18 and it is up to the cross examiner to follow up. I think
19 that question falls in that category.

20 WITNESS HUBBARD: I believe that in general
21 any industry, based on my work in the standards
22 committee, and in the licensing hearings I have been and
23 am involved in, there has been movement after the Three
24 Mile Island accident to broaden the classifications and
25 broaden the number of items which the QA program

1 addressed generically. I am not aware that such a
2 broadening has occurred on the Shoreham plant.

3 BY MR. ELLIS: (Resuming)

4 Q Mr. Hubbard, again, let me ask you, do you
5 know or is it your impression that items that are not
6 safety related at Shoreham get no QA? Is that your
7 impression?

8 MR. LANPHER: I object. By no QA, that is
9 vague, does he mean that not one of the 18 criteria
10 applied fully or do some of the criteria apply
11 somewhat? I don't understand the question.

12 JUDGE BRENNER: Well, Mr. Lanpher, my previous
13 comment would apply to that question, too, and since we
14 are on it, I guess I will voice my agreement that the
15 point you just alluded to is certainly vague in the
16 question, but if the witness can handle that -- there
17 are two things I don't want. I don't want a lot of
18 interruptions that are not out and out proper legal
19 objections. In addition, I am not particularly fond of
20 counsel educating the witness through objections as
21 distinguished from waiting for your turn on redirect,
22 and with that guidance in mind, I think the witness can
23 answer that particular question. If the witness has
24 trouble with the term "gets no QA" it wouldn't surprise
25 me and the witness can indicate that. So I guess you

1 got what you wanted on this one based on this dialogue.

2 MR. LANPHER: Judge Brenner, I honestly was
3 not trying to coach the witness. I refrained a lot, but
4 we had a long talk about industry standards and
5 methodology earlier. I didn't object, but I really
6 think the record is a shambles there, and it is going to
7 have to be covered again on redirect, because I don't
8 think there was understanding of the questions, and that
9 is why I interject it here, because I think we have got
10 a very vague question, and it is not conducive to the
11 development of a sound evidentiary record.

12 JUDGE BRENNER: But a cross examiner is
13 entitled to quite a bit of latitude within some limits,
14 and normally redirect is the appropriate place to handle
15 that, and using the example of the one question we have
16 been discussing, I think as a rule that is one that the
17 witness can take care of in the answer. We are not
18 dealing with an automobile accident here with lay
19 witnesses off the street. We have got technical
20 witnesses in the field, and they can discuss their
21 understanding of questions in the course of the answer
22 where that exists as a problem and how they would form
23 their answer. Do you recall the question, Mr. Hubbard?

24 WITNESS HUBBARD: Could we have it repeated,
25 please?

1 JUDGE BRENNER: Mr. Ellis, can you repeat it?

2 BY MR. ELLIS: (Resuming)

3 Q Mr. Hubbard, on a couple of occasions you have
4 indicated that safety related structure, systems, and
5 components get Appendix B to 10 CFR 50, and then you
6 implied that the non-safety related items get no quality
7 assurance. Is that your understanding?

8 A (WITNESS HUBBARD) That is not my
9 understanding. The definition, for example, in LILCO
10 quality assurance category 2, reading from the table, is
11 that category 2, this equipment meets the QA
12 requirements defined in the purchase specification.
13 Now, the problem is that without looking at every
14 purchase specification, I don't know what that means.
15 That could mean that there are none. That is my -- for
16 example, at Diablo Canyon for service related
17 contractors where I am familiar generically, there were
18 no QA requirements in the purchase specification for the
19 seismic service contract orders. For some material
20 suppliers, there were some QA requirements. So I
21 honestly don't know what that commitment means.

22 JUDGE BRENNER: Excuse me, Mr. Hubbard. You
23 said you were reading that from a table. Could you
24 identify the table and the source?

25 WITNESS HUBBARD: This is from Exhibit 2 of

1 our testimony, and it is on Page 19 of 24.

2 JUDGE BRENNER: Why don't you give the FSAR
3 table number?

4 WITNESS HUBBARD: It is FSAR Table 3.2.1-1,
5 Footnote Number 4.

6 JUDGE BRENNER: Thank you.

7 BY MR. ELLIS: (Resuming)

8 Q Mr. Hubbard, you indicated earlier that when
9 you were at GE you used ASME 3, you stamped -- with ASME
10 3. Is that a nuclear standard?

11 A (WITNESS HUBBARD) Yes.

12 Q And that would be a standard you would
13 normally apply to safety related items that fell under
14 that standard?

15 A (WITNESS HUBBARD) That ASME standard, Section
16 3, applied to the narrow category of certain pressure
17 boundary instruments such as the pressure vessel and
18 parts of the containment, some pumps and things of that
19 sort. So it didn't cover a number of other things
20 outside of the containment that are not part of the
21 pressure boundary or electrical items.

22 Q It covers pipes, pumps, valves, tanks, and
23 pressure vessels, doesn't it, Mr. Hubbard?

24 A (WITNESS HUBBARD) Mr. Ellis, that is in
25 general true, and if you will turn again to Table

1 3.2.1-1, on the far righthand side, there is a column
2 called Principal Code, and the items that are covered by
3 the ASME code, for example, are listed. Your example,
4 ASME 3. The items, the principal code is ASME 3. That
5 is noted in that column.

6 Q When you were at GE, did you use any
7 particular standard in determining whether to give
8 things the ASME 3 treatment?

9 A (WITNESS HUBBARD) While I was at GE, and in
10 particular I will refer to the period when I was manager
11 of quality assurance and responsible for the code stamp,
12 the biggest problem with ASME was not to decide which
13 items it should apply to, because by the function it was
14 pretty clear which were code items, but the biggest
15 problem was which version of the code would apply, what
16 year.

17 Q So, function was the criteria you used in
18 order to determine whether it received that quality
19 assurance category.

20 A (WITNESS HUBBARD) For example, within ASME
21 there were classes 1, 2, 3, and things of that sort, so
22 those would be the things based on their function that
23 would be defined in the design specification that would
24 be used for the initial design documents. So it would
25 be ASME and then go into what particular class within

1 and what version in terms of code year and code cases.

2 Q Mr. Hubbard, can you cite me to any regulation
3 or Reg. Guide that currently exists that defines how
4 much of Appendix B is applicable to what structures,
5 systems, and components that are important to safety but
6 not safety related?

7 (Pause.)

8 A (WITNESS HUBBARD) Mr. Ellis, in criteria 1 of
9 Appendix A, the language says that structures, systems,
10 and components important to safety shall be designed,
11 fabricated, erected, and tested to quality standards
12 commensurate with the importance of the safety functions
13 to be performed, and so it gets back to you would have
14 to look at what is the function of the item. For
15 example, that is one reason why we look at the emergency
16 operating procedures. These are devices that might be
17 relied upon by an operator during certain operational
18 modes, so therefore based on its function, it might be
19 -- we believe that one would then have to see what
20 quality standards would be commensurate with that
21 particular function.

22 Q Criteria number 1 doesn't mention Appendix B,
23 does it?

24 A (WITNESS HUBBARD) No, it does not. However,
25 also referenced in our testimony is publication from the

1 regulatory agenda which gave a federal register notice
2 that there was an NRC activity under way to tie Appendix
3 A criteria 1 to Appendix B.

4 Q You are referring to a rulemaking that is
5 anticipated for the future, aren't you, Mr. Hubbard?

6 A (WITNESS HUBBARD) Yes, Mr. Ellis. However,
7 the rulemaking did say as originally intended, so
8 subsequent to that we have or I personally have reviewed
9 documents that I have received in response to a Freedom
10 of Information Act request, and some of those documents
11 go into the history.

12 Q And they indicate, don't they, that that has
13 not been the NRC practice or the industry practice, that
14 is, to equate Appendix B to Appendix A, structures,
15 systems, and components?

16 A (WITNESS HUBBARD) They identify that that has
17 been a problem, that they have not obtained what was
18 originally intended.

19 MR. ELLIS: Judge, could you indulge me for a
20 moment?

21 JUDGE BRENNER: How much time do you think you
22 might need? I am wondering whether we should stay in
23 place or --

24 MR. ELLIS: Maybe if we could take a short
25 break, it might be helpful, the last break of the day.

1 JUDGE BRENNER: All right. Let's try to keep
2 it to ten minutes this time. It is 3:25. We will be
3 back at 3:35.

4 (Whereupon, a brief recess was taken.)

5 JUDGE BRENNER: We are prepared to resume at
6 this time. Let's stay off the record.

7 (Whereupon, a discussion was held off the
8 record.)

9 JUDGE BRENNER: Mr. Ellis.

10 BY MR. ELLIS: (Resuming)

11 Q Mr. Hubbard, when I asked you about the
12 historical practice of the NRC and the industry in
13 connection with what you are contending, you indicated
14 that you reviewed some Freedom of Information Act
15 arguments. I want to show you a memorandum dated
16 October 15th, 1980, from a Mr. Dorian to a Mr.
17 Richardson, and ask you if this is one of the documents
18 you reviewed.

19 (Pause.)

20 A (WITNESS HUBBARD) Mr. Ellis, the number is
21 not clear up in the righthand corner. It is 3 dash
22 something. Could you tell me what the number is?

23 Q No, I can't.

24 JUDGE BRENNER: Mr. Ellis, maybe I missed
25 something. I was reading something in the paper that

1 was handed to me. I missed your preliminary comment
2 with respect to this document.

3 MR. ELLIS: Yes, sir. Prior to the break, in
4 response to my question to Mr. Hubbard concerning
5 whether the NRC and industry practice was different or
6 similar to their contention, he referred to Freedom of
7 Information Act documents, and I am handing him this
8 document and asking him whether this is one of the
9 documents he was referring to as having received in the
10 Freedom of Information Act request.

11 JUDGE BRENNER: Did you identify the document
12 on the record? If you did, I missed it.

13 MR. ELLIS: Yes, I did. I identified it as a
14 memorandum dated October 15th, 1980, from Mr. Dorian to
15 Mr. Richardson. I will mark it when the witness
16 acknowledges familiarity.

17 MR. LANPHER: Judge Brenner, off the record a
18 second.

19 (Whereupon, a discussion was held off the
20 record.)

21 BY MR. ELLIS: (Resuming)

22 Q Mr. Hubbard, it might help you, it is midway
23 through the first package of stuff.

24 A (WITNESS HUBBARD) That's right. I identify
25 it as Document 3-2 now. I didn't know whether it was in

1 the first set we received or the second, and I thought
2 it was in the second initially. So, yes, this is one of
3 the documents that has been received and reviewed.

4 Q Was there a 3-1 that you all received? Yes, I
5 have it. Never mind that question, Mr. Hubbard.

6 May I have this one marked for identification,
7 Judge?

8 JUDGE BRENNER: This will be licensee's
9 Exhibit 2. We didn't reserve that number particularly
10 for the Reg. Guides. Hopefully we will get an
11 opportunity today to handle that problem, and we will
12 get an opportunity to set up sequential numbers, and if
13 not we can handle the Reg. Guides tomorrow. We will try
14 to get to it, but otherwise we can do it tomorrow. This
15 will be for identification, LILCO's Exhibit 2.

16 (The document referred to
17 was marked for
18 identificatin as LILCO
19 Exhibit Number 2.)

20 JUDGE BRENNER: You indicated it was a
21 memorandum for Steven D. Richardson from Thomas F.
22 Dorian, D-o-r-i-a-n. Let's indicate further, again,
23 because I wasn't sure whether you included this in your
24 identification. It is on the letterhead of the United
25 States Nuclear Regulatory Commission, and consists of

1 two pages. After Mr. Richardson's name there is a
2 designation, CSD, which is a branch within the NRC. I
3 infer, subject to being disabused of that inference,
4 that Mr. Richardson is an NRC employee. It is from
5 Thomas F. Dorian, who is identified as an attorney in
6 the Regulations Division of the Office of the Executive
7 Legal Director. In the absence of objection, it is
8 marked for identification.

9 MR. LANPHER: Judge Brenner, we don't have any
10 objection, but the document refers to things attached to
11 it, and I don't know how the document came into the
12 request package itself, because it is sitting across the
13 room, but it should be noted that it is just two pages
14 that have been marked, and the memorandum in fact
15 contained more documents at some time.

16 JUDGE BRENNER: I don't know where we are
17 going to go with this.

18 MR. ELLIS: I don't think it will be
19 necessary, Judge. Mr. Hubbard --

20 JUDGE BRENNER: We will see.

21 BY MR. ELLIS: (Resuming)

22 Q Having reviewed what has been marked for
23 identification as Exhibit Number 2, is that the basis
24 for your statement that you understand that historically
25 the practice has not been to equate Appendix A to

1 Appendix B. Is that right?

2 A (WITNESS HUBBARD) This is not the document I
3 relied on.

4 Q But that is your understanding, that
5 historically the Appendix B quality assurance has not
6 been required for all of the items in Appendix A of 10
7 CFR Part 50?

8 A (WITNESS HUBBARD) Judge Brenner, I didn't
9 fully hear that question. It seemed like there were
10 multiple parts. Could I get that read back, please?

11 JUDGE BRENNER: Yes.

12 (Whereupon, the Reporter read back the pending
13 question.)

14 WITNESS HUBBARD: Well, Appendix A is broader
15 than just GDC 1. So then if I go to the second part
16 then, and I think this letter does acknowledge that
17 there has been inconsistent application between Appendix
18 B and that in the application of what was intended by
19 GDC 1 of Appendix A.

20 BY MR. ELLIS: (Resuming)

21 Q Doesn't it indicate that historically, at
22 least, the staff has applied Appendices A and B to
23 different groupings of structures, systems, and
24 components?

25 JUDGE BRENNER: Let me interject and see if I

1 can shorten this up. I am concerned about where we are
2 going with this. Mr. Hubbard referred to it in effect
3 for the truth of the matter asserted, at least for an
4 inference he drew from it, and now your follow-up
5 question did so also, Mr. Ellis. I am going to take
6 notice of the fact that this is a memorandum from an
7 attorney in the Legal Division there, and it is not
8 going to carry any weight with us as to the truth of the
9 matters asserted therein. Both of you, the witness and
10 the questioner, appear to be using it for matters even
11 beyond that, that is, inferences to be drawn from the
12 substance in it as to what might or might not have been
13 done. As is common for lawyers as I read it, this is a
14 legal -- a review for legal sufficiency of a document
15 that was submitted to that attorney, and these are his
16 comments based on that review, and it is solely this one
17 attorney's legal opinion, as far as I am concerned,
18 which goes nowhere in terms of the weight of this record.

19 MR. LANPHER: Judge Brenner, I don't believe
20 the witness said this was the basis of his earlier
21 opinion.

22 JUDGE BRENNER: No, he didn't, and I didn't
23 mean to imply that, but in a further response he said it
24 appears to him from reading this. We are wasting time,
25 is what I am saying.

1 MR. ELLIS: Let me get at it very directly. I
2 thought I had tried to before. I really think if the
3 witness would answer the question directly, I think we
4 would get it.

5 BY MR. ELLIS: (Resuming)

6 Q Mr. Hubbard --

7 JUDGE BRENNER: I guess I disagree with your
8 criticism.

9 MR. ELLIS: I apologize, and I withdraw that.

10 BY MR. ELLIS: (Resuming)

11 Q Mr. Hubbard, as I understand your contention,
12 it is that items that are important to safety is a group
13 of which safety related is a subset. Safety related
14 equipment gets 10 CFR Part 50 Part B, and the remainder
15 of the structures, systems, and components in the
16 important to safety category get some degree of Appendix
17 B up to and including full Appendix B. Is that your
18 full contention of what the classification scheme ought
19 to be?

20 A (WITNESS HUBBARD) Yes, Mr. Ellis. It is my
21 understanding of not only what it ought to be but what
22 it is.

23 Q All right. Now, what is your regulatory basis
24 for saying that is what it is? I believe you answered
25 before GDC 1. Is that right?

1 A (WITNESS HUBBARD) Yes, sir. It is my reading
2 of GDC 1 that says you will have a QA program for items
3 important to safety, and then it goes on to say what
4 that means in terms of records and things of that sort.
5 I didn't read the whole GDC 1, but I think that speaks
6 for itself.

7 JUDGE BRENNER: Mr. Ellis, excuse me. Are you
8 going to refer to this memorandum any more, LILCO's
9 Exhibit 2? I am asking only for a procedural matter. I
10 do want to bind it in at some point, even though it is
11 just in for identification. So that the comments that I
12 made about it can be compared to it and it is easily
13 retrievable.

14 MR. ELLIS: I don't think I will have to. Let
15 me ask the witness another question.

16 JUDGE BRENNER: Well, my sole purpose of
17 inquiry is, if you are not going to, I will put it in at
18 this point.

19 MR. ELLIS: I don't know until I hear his
20 answer to another question or two.

21 BY MR. ELLIS: (Resuming)

22 Q Mr. Hubbard, so the record is clear, is it
23 also your understanding that the scheme that you contend
24 should be applied as not the way the NRC and the
25 industry now classify systems and apply quality

1 assurance standards?

2 MR. LANPHER: I object to that question as
3 multiple. It is two different things, classify and
4 apply QA, and I think it is very confusing.

5 JUDGE BRENNER: I missed the question. If you
6 want me to rule on the objection, Mr. Ellis, I will have
7 to have it read back. If you want to rephrase it
8 without prejudice to whether the objection has validity
9 or not, you can do that.

10 MR. ELLIS: I will rephrase the question.

11 BY MR. ELLIS: (Resuming)

12 Q Mr. Hubbard, is it your understanding that the
13 NRC and the industry now follow the scheme that you
14 contend should be followed with respect to the
15 application of quality assurance standards to systems,
16 structures, and components?

17 A (WITNESS HUBBARD) No.

18 Q That is, they don't follow what you advocate?

19 A (WITNESS HUBBARD) Not the NRC and the entire
20 nuclear industry as you framed your question. I cannot
21 say they all do what I advocated.

22 Q So the record is clear and so I understand, I
23 think your testimony is, the NRC doesn't, and that the
24 industry doesn't to a large extent so far as you know.
25 Is that correct?

1 MR. LANPHER: I object to the question. When
2 you say NRC, you mean NRC staff?

3 MR. ELLIS: I am sorry. I should be -- I am
4 sure the witness understood that as well. You
5 understood that, didn't you, Mr. Hubbard?

6 JUDGE BRENNER: Well, it doesn't matter. He
7 got a clarification.

8 WITNESS HUBBARD: You used the word or somehow
9 implied the word "all". And so when I answered on what
10 they are currently doing, based on my review of the FCIA
11 documents, it is not clear to me what they are presently
12 doing in all cases. If you start out with what would be
13 required for a construction permit, that might be
14 different than what would be required for an operating
15 license, which might be different from an operating
16 plant. What I have seen is that there is, after the
17 Three Mile Island accident, there was an acknowledgement
18 that the QA program was not being implemented as it was
19 originally intended, and since that time, then there has
20 been an evolution to try to figure out how it should be
21 implemented, as was originally intended.

22 BY MR. ELLIS: (Resuming)

23 Q I think you made those remarks before. Let me
24 put it to you even more simply. The quality assurance
25 scheme that you say that you contend is not what is now

1 as you understand it followed by the NRC staff, is that
2 correct?

3 A (WITNESS HUBBARD) I hesitate to testify as to
4 what the NRC staff is currently requiring.

5 Q I am asking for your understanding.

6 A My understanding is that they are considering
7 increasing the items that are on the list of important
8 to safety, and that at some reactors they have already
9 required that, for example, the Q list be expanded, not
10 at all reactors.

11 JUDGE BRENNER: We are going to have the
12 Reporter backup even though my statement at this point
13 will be at this point in the transcript, and bind this
14 memorandum in right after the transcript page at which
15 it was marked for identification. The transcript will
16 clearly indicate, of course, that this is solely an
17 exhibit for identification. I am reminding the parties
18 since our review of the transcript when they see these
19 bound in might lead one to believe that it is in as
20 evidence. That is not the case. The preamble to
21 exhibits will have to be looked at for all purposes. We
22 are binding it in solely as a convenience. We also will
23 have the three copies with the official exhibit file in
24 this case for identification only as LILCO's Exhibit 2.
25 BY MR. ELLIS: (Resuming)

1 Q Mr. Hubbard, with respect to Reg. Guides 1.26
2 and 1.29 in the industry standards, if Shoreham followed
3 Reg. Guide 1.26, 1.29, and the ANS standard 22, and
4 accumulated industry experience at the time it was
5 designed and constructed, is it your contention that
6 that is a lack of methodology in system classification?

7 MR. LANPHER: I object to the question. I
8 don't understand what accumulated industry experience at
9 the time means.

10 JUDGE BRENNER: I understood that part of the
11 question.

12 MR. LANPHER: It is also multiple, but what in
13 the world does that mean, Judge Brenner, in terms of
14 inadequate methodology?

15 JUDGE BRENNER: Let's let the witness see if
16 he or she can answer.

17 WITNESS HUBBARD: I cannot answer that
18 question.

19 JUDGE BRENNER: You have a well-trained
20 witness, Mr. Lanpher.

21 MR. LANPHER: I've got the best.

22 JUDGE BRENNER: That is what I want to avoid,
23 those kind of objections. Let's see if the witness
24 normally can indicate whether the question is too
25 convoluted to answer or too general to grapple with.

1 MR. LANPHER: Judge Brenner, that question --
2 I have no idea what this accumulated industry experience
3 was supposed to represent, and I think I am entitled to
4 make that kind of an objection on the record, when I
5 can't understand for vagueness.

6 JUDGE BRENNER: In administrative proceedings
7 it is sometimes helpful to get that kind of objection so
8 it will be clarified right there, as opposed to
9 redirect, but it is not a legal objection. It only
10 becomes a problem when the witness cannot grapple with
11 it, and in general I would like the witness to take the
12 first crack at a question that may be general, and one
13 important reason for it is the cross examiner is
14 entitled to some latitude and can follow up. Having
15 said that, Mr. Ellis, the question had a sufficient
16 number of subparts, where I can see that there may have
17 been some difficulty in following it. Perhaps if you
18 could rephrase it or break it down, we could get back
19 into the subject with the witness.

20 BY MR. ELLIS: (Resuming)

21 Q Mr. Hubbard, as I recalled your testimony on
22 the Reg. Guides it was that they were acceptable
23 methodologies as far as they went, but in your opinion
24 they did not go far enough. Is that correct?

25 A (WITNESS HUBBARD) I would not characterize

1 the testimony that way.

2 Q Well, let me go back to my original question.

3 If the Shoreham Nuclear Power Station followed Reg.

4 Guides 1.26, 1.29, and Industry Standard ANS 22, in

5 connection with the classification of systems, do you

6 contend that that is a lack of methodology in

7 classifying systems?

8 A (WITNESS HUBBARD) That is a question that we

9 would have to get more specific on, like what revision

10 of 1.26 do you have in mind, what revision of 1.29 do

11 you have in mind, and what revision of the ANS do you

12 have in mind? Is this a hypothetical? Are we

13 hypothesizing that Shoreham --

14 Q Yes, I asked you to accept that as true.

15 A (WITNESS HUBBARD) So it is a hypothetical --

16 Q If the revisions matter that much to you, take

17 Revision 1 from Reg. Guide 1.26 and Revision 1 from Reg.

18 Guide 1.29.

19 A (WITNESS HUBBARD) And what revision for the

20 ANS standard?

21 Q Assume any revision that you wish in that

22 connection.

23 A (WITNESS HUBBARD) Well, since I don't have a

24 clear vision of the ANS specification or standard, I

25 will only respond insofar as Reg. Guide 1.26 and 1.29,

1 Rev. 1 of those, and I think Rev. 1 of those outlines
2 the items that could be included for the narrow class
3 called safety related. The standards do not address
4 important to safety. There also might end up being some
5 devices that I feel are safety related that are not
6 encompassed by 1.26 or by the current interpretations of
7 1.26 and 1.29.

8 Q So as I understand your answer, it is that
9 following Reg. Guide 1.26 or 1.29 is acceptable but not
10 enough as a methodology?

11 A (WITNESS HUBBARD) As a methodology, that is a
12 good place to start, but it should be supplemented with
13 other ways, as we have outlined in our testimony, such
14 as with PRA's, looking at emergency operating
15 procedures, doing walkdowns, and looking at operating
16 experience, and there are a number of things that we
17 have outlined in our testimony, so that it is one way to
18 get started, but it is not sufficient.

19 (Pause.)

20 Q On Page 5 of your prepared testimony, Mr.
21 Hubbard, you have a title of Section 3B is a power
22 reactor accident analyses traditionally are based on the
23 single failure criterion. Do you see that, sir?

24 A (WITNESS HUBBARD) Yes.

25 Q It is a little more than traditional. Isn't

1 it regulatory?

2 A (WITNESS HUBBARD) The single failure criteria
3 is defined in the definitions of general design criteria
4 of Appendix A, yes.

5 Q But my point is, the single failure criterion
6 is a regulatory requirement, isn't it?

7 A (WITNESS HUBBARD) Yes, sir.

8 Q Have you ever performed a single failure
9 criterion analysis for a specific nuclear power plant?

10 A (WITNESS HUBBARD) I have not, but my cohorts
11 here might want to address that.

12 Q Let's see if they accept your invitation.

13 A (WITNESS MINOR) The analysis you spoke to was
14 a single failure analysis for an entire nuclear power
15 plant, and I personally have not done that for an entire
16 plant, but as we discussed earlier, single failure
17 analyses in connection with failure modes analyses were
18 part of the design practice used at General Electric
19 when we were designing subparts of reactors.

20 A (WITNESS GOLDSMITH) I participated in some
21 team efforts in looking at single failures in systems.
22 I have participated in team efforts that have looked at
23 single failures in certain parts of power plants.

24 A (WITNESS HARWOOD) No, I would not say that I
25 have done any analysis specifically regarding a single

1 failure criterion.

2 Q Mr. Hubbard, I believe in your prepared
3 testimony for Section 3B you criticized the single
4 failure criterion because you say it fails to take
5 account of multiple failures. Is that correct?

6 Strike the question, Mr. Hubbard.

7 Mr. Hubbard, have you reviewed the LOCA
8 analysis for the single failure criteria for Shoreham?

9 A (WITNESS HUBBARD) Could you identify that,
10 please?

11 Q Are you familiar with the LOCA analysis for
12 Shoreham?

13 A (WITNESS HUBBARD) Is that a particular
14 document or some section of the FSAR you are referring
15 to?

16 Q Do you know whether there is a LOCA analysis
17 in the FSAR?

18 A (WITNESS HUBBARD) Yes, in Chapter 15.

19 Q All right. Are you familiar with it?

20 Are you, Mr. Goldsmith?

21 A (WITNESS GOLDSMITH) We reviewed the Chapter
22 15 analysis, yes.

23 Q Are you familiar, Mr. Goldsmith, with the
24 single failure criterion applied to LOCA's?

25 A (WITNESS GOLDSMITH) That is a very broad

1 question, Mr. Ellis. You need to give me a little bit
2 more definition. Are you talking about initiating
3 events? Are you talking about single failures in
4 electrical systems and fluid systems? The application
5 of those?

6 Q Mr. Goldsmith, or Mr. Hubbard, in the LOCA
7 analysis there is first of all a pipe break assumed,
8 isn't there?

9 A (WITNESS GOLDSMITH) That is correct.

10 Q And before I do this -- well, I will go
11 ahead. The next thing that is assumed, is it not, is
12 that the safety related systems, structures, and
13 components that are affected by the failure are also
14 assumed to occur, that is, affected by the pipe break.
15 Isn't that correct?

16 A (WITNESS GOLDSMITH) I am not sure. I always
17 think of LOCA as occurring simultaneously with a loss of
18 off-site power.

19 Q Well, I am coming to off-site power losses,
20 too. So first you have a LOCA and an off-site power.
21 That is two failures. Is that correct?

22 A (WITNESS GOLDSMITH) I am not sure that the
23 LOCA counts as a failure. That is a non-mechanistic
24 break, as determined by -- I'm not sure if I should say
25 regulations or regulatory guidance.

1 Q Well, just in terms of engineering, it is a
2 failure, isn't it, of pipe breaks?

3 A (WITNESS GOLDSMITH) Yes. Pipe breaking is a
4 failure.

5 Q So pipe break is one failure. Loss of
6 off-site power, which you have indicated is also assumed
7 in connection with LOCA analysis, isn't it also true
8 that you assume that the consequential failures from the
9 LOCA also occur for the pipe break if there are any?

10 A (WITNESS GOLDSMITH) Yes. If we are talking
11 about things that are in the direct impingement of pipe
12 break, yes.

13 Q In addition to all that, when you apply the
14 single failure criterion, you then take, do you not, the
15 worst single failure in your safety systems in order to
16 determine whether your plant can still meet all of the
17 safety criterion in the regulations?

18 A (WITNESS GOLDSMITH) In the analysis you have
19 to determine which is the worst single failure.

20 Q Right, so that is yet another failure that is
21 assumed in the analysis. Is that right?

22 A (WITNESS GOLDSMITH) Yes, that is a failure.

23 Q Do you know what the worst single failure
24 assumed is after you have the LOCA, the off-site power,
25 and the consequences of the pipe break?

1 A (WITNESS MINOR) I believe the assumptions in
2 the LOCA analysis include the assumption that one of
3 your ECCS systems is not available during the mitigation
4 of that event, and this to some extent is to offset the
5 fact that your tech spec allowance allows your ECCS to
6 be unavailable for certain periods of time.

7 Q So, Mr. Minor, you are under the impression
8 that it is one of the ECCS systems that constitutes the
9 additional failure, single failure.

10 A (WITNESS MINOR) I believe that is assumed in
11 the analysis, yes.

12 Q We have there, do we not, Mr. Goldsmith, an
13 analysis that involves multiple failures. You have the
14 LOCA, the pipe break. You have the consequences of the
15 pipe break. You have the off-site power. You have the
16 additional single failure in the safety systems, and
17 still demonstrate that the plant can meet the safety
18 criteria in the regulations. That is multiple failures,
19 isn't it?

20 A (WITNESS GOLDSMITH) The answer to the
21 question about multiple failures is yes, they are
22 multiple failures.

23 JUDGE BRENNER: Are you satisfied with that as
24 an answer to your question, Mr. Ellis?

25 MR. ELLIS: Yes, sir.

1 JUDGE BRENNER: I'd like to follow up
2 briefly.

3 The question, Mr. Goldsmith, included the
4 questioner's assumption that the postulation of those
5 with those postulated multiple failures that the plant
6 could still meet the safety requirements, your answer,
7 as I heard it, stated you agreed they were multiple
8 failures.

9 Did you agree also with the further portion of
10 the question and with those multiple failures, that the
11 regulations would still be met?

12 WITNESS GOLDSMITH: My understanding of the
13 purpose of the Chapter 15 analysis of the LOCA is to
14 assure that with those failures that the regulations
15 will in fact be met, the requirements will be met with
16 those particular failures. So the answer would be yes,
17 Judge Brenner.

18 JUDGE BRENNER: Thank you.

19 BY MR. ELLIS: (Resuming)

20 Q Mr. Hubbard, at the top of page 6 of your
21 prepared testimony, you indicate that the single failure
22 criterion requires that a nuclear power plant structure,
23 system or component important to safety be capable of
24 performing its safety function, and then you go through
25 a definition of A, B, and C.

1 Do you see that, sir?

2 A (WITNESS HUBBARD) Yes.

3 Q All right, if that sentence implies or permits
4 the inference that the single failure criterion is
5 required to apply to an individual component, I take it
6 you don't intend that inference, do you?

7 Single failure criterion doesn't apply to a
8 component by itself, does it?

9 A (WITNESS HUBBARD) No.

10 Q Mr. Hubbard, on page 7 of your prepared
11 testimony you set forth four steps for performing a
12 single failure criterion analysis. As I think you
13 indicated, you have not performed such an analysis.
14 Where did you get A, B, C, and D from?

15 A (WITNESS HUBBARD) These were obtained through
16 discussions with my co-authors of the testimony.

17 Q Does this come from any particular
18 publication?

19 Doesn't this come verbatim from your Swedish
20 report, Mr. Hubbard?

21 A (WITNESS HUBBARD) Yes, it does come from the
22 Swedish report.

23 Q In fact, doesn't the material beginning on
24 approximately page 5 and going through approximately
25 page 8 come essentially from your Swedish report, the

1 top four lines of page 8?

2 A (WITNESS HUBBARD) Yes, I believe it does.

3 Q All right. You might look a little harder
4 tonight and tell me if there are any more.

5 Where did it come from in the Swedish report?
6 What is your basis for it?

7 A (WITNESS HUBBARD) In the Swedish report this
8 came from our own writing and also a review of the
9 testimony of Robert Pollard at the Three Mile Island,
10 TMI 1 case.

11 Q You said you discussed it also with your
12 co-authors. Are you including Mr. Goldsmith in that?

13 A (WITNESS GOLDSMITH) I think he was referring
14 to Mr. Minor there. I did not participate in that
15 part.

16 Q All right.

17 So that I am clear, Mr. Hubbard, the Steps A,
18 B, C, and D and the remarks before that you said were
19 based on discussions with Mr. Minor and from testimony
20 of a Mr. Pollard, is that correct?

21 A (WITNESS HUBBARD) Mr. Pollard sent us his
22 proposed testimony for the Three Mile Island case to
23 review. We reviewed that and commented on it. That is
24 the first time I saw it. When we were preparing our
25 Swedish study on system interaction and single failure

1 criterion, we had the need for some background
2 information, and I looked at that and after commenting
3 that that provides a good description, I talked it over
4 with the co-authors, and we decided to use that at that
5 point.

6 Then, in preparing this testimony, we looked
7 at this again, I discussed it with Mr. Minor, if this
8 was an adequate description, and we decided to use it
9 here.

10 Q Steps A, B, C and D are not taken from the
11 regulation, are the.

12 MR. LANPHER: Can I get a clarification? Is
13 there a particular regulation or the regulations in
14 general?

15 I mean to be addressing Judge Brenner.

16 JUDGE BRENNER: I'm sorry, Mr. Lanpher, I was
17 diverted.

18 MR. LANPHER: I believe the question is
19 whether Steps A, B, C and D come from the regulation,
20 and my objection is I don't know what regulation he is
21 referring to or whether he means the regulations.

22 JUDGE BRENNER: It meant the regulations to
23 me. I'll ask the witness to assume that. It means all
24 the NRC regulations, and if the cross examiner then
25 wants to follow up with anything in particular, he can.

1 MR. ELLIS: Well, let me, I'll just take care
2 of the whole problem.

3 WITNESS HUBBARD: I don't understand it is in
4 the regulations. There is a Reg. Guide, I think it is
5 153, that would bear some resemblance to this.

6 BY MR. ELLIS: (Resuming)

7 Q But you're not saying, Mr. Hubbard, that these
8 four steps that you have outlined in here verbatim from
9 your Swedish report are set forth in Reg. Guide 153.

10 A (WITNESS HUBBARD) I reviewed Reg. Guide 153
11 one time, but I have not reviewed that as part of
12 preparing this testimony, no.

13 Q Mr. Goldsmith, you indicated you were not
14 involved in this part of the testimony, but I think you
15 also indicated that you had been involved in some single
16 failure analysis.

17 Confirm for me, if you will, please, that A,
18 B, C, and D are or are not the steps that you followed
19 in your single failure criterion analysis.

20 A (WITNESS GOLDSMITH) I cannot testify that we
21 followed A, B, C, D in exactly that order and in the
22 context that seems to be very close to the general
23 methodology that we would have been involved with.

24 Q Mr. Goldsmith, would you tell me again,
25 please, what your experience was applying the single

1 failure criterion analysis?

2 A (WITNESS GOLDSMITH) It goes back quite a
3 ways. When I was involved in analyzing plant systems
4 and systems that might connect to a safety related
5 system for an HTGR relative to the Delmarva plant, and
6 that goes back just about ten years, so recollection
7 there is a long time ago, as well as some work in the
8 same regard later on, looking at systems that might
9 interact with GSAR or the GENSSS again from the balance
10 of plant supplier's viewpoint.

11 Q In doing that, though, do you specifically
12 recall that you did Steps A and B as they are set forth
13 in your testimony?

14 MR. LANPHER: Object. Asked and answered, I
15 believe.

16 JUDGE BRENNER: No, overruled. The cross
17 examiner can probe in in further detail. It was asked
18 similarly but a little more broadly before as to all the
19 steps, and the cross examiner can attempt to draw the
20 witness's answer to a particular part of it.

21 WITNESS GOLDSMITH: I cant' be positive about
22 A and B. I'm sure that at that particular time we did
23 not use the term "important to safety," but I cannot
24 testify at this point in time whether we followed A and
25 B as specifically stated here.

1 WITNESS MINOR: Excuse me. I would like to
2 add to the discussion at this particular point since I
3 was a co-author of this section.

4 The single failure analysis here is a rather
5 stylized one in that it is probably not the exact
6 process that is employed in single failure analysis in
7 all conditions. For instance, at General Electric we
8 used to hypothesize what we used to call the golden axe
9 where the golden axe could fall into this cabinet of
10 equipment and short out the worst case combination of
11 everything in that particular cabinet. Well, that may
12 be included in this combination of events or it may
13 not.

14 People will find ways of approaching this.
15 Well, what we are trying to identify here are logical
16 steps that would include the environmental effects, the
17 common cause effects that come out of the events
18 initiating this problem, and the single failure which is
19 hypothesized.

20 JUDGE BRENNER: I'd like to follow up, if you
21 will excuse me, Mr. Ellis, on that answer.

22 Mr. Minor, I don't readily understand what you
23 mean by your description that this is a stylized
24 description.

25 Can you help me with your use of that term,

1 and if not, I'll attempt to ask a more specific
2 question?

3 WITNESS MINOR: Well, that was perhaps not a
4 best choice of terms. Let me say that this is a
5 detailed approach which, if one wished to make sure that
6 he included all necessary aspects of single failure he
7 could follow this. There are other ways which would
8 perhaps accomplish the same goal which would use a
9 slightly different sequence of events or slightly
10 different assumptions such as the one I identified that
11 we used to use in the old days.

12 JUDGE BRENNER: If you followed the sequence
13 as set forth in the testimony, starting at page 7, would
14 that be an acceptable means of analysis which determined
15 that the single failure criterion was met?

16 WITNESS MINOR: It is my position that it
17 would be and that it considers the worst case in the
18 environment that might occur at the time the single
19 failure is hypothesized.

20 JUDGE BRENNER: All right, asking the question
21 from the other point now, are there steps included in
22 here that are unnecessary additions to the sequence,
23 that is, that you can exclude and still perform an
24 acceptable analysis to determine if a single failure
25 criterion is met?

1 WITNESS MINOR: I cannot say that in all cases
2 there are pieces here that could be excluded. I am sure
3 that for some situations you would find some of these
4 steps that could be bypassed because of the particular
5 system you are analyzing, the particular environment
6 that it is in, or the nature of all of the surrounding
7 equipment and its classification. The problem that we
8 get into is that a single failure analysis in the
9 simplest terms where you just assumed a single failure
10 and looked at the consequences is almost meaningless.
11 It has to be in the realistic environment that the
12 equipment operating in it has to be under the accident
13 conditions that you must assume could be present in the
14 environment where the equipment is located and then see
15 if the equipment can still perform its function.

16 JUDGE BRENNER: All right. When I was using
17 single failure, I was using the term as defined in the
18 GDC, and those are the same definitions that are cited
19 in your testimony. That is what I had in mind rather
20 than necessarily one failure.

21 In giving your answers, did you understand
22 that use?

23 WITNESS MINOR: Well, I thought perhaps you
24 were isolating it more to a single failure. The single
25 failure definitions we have included include those in

1 fact which may result from a single failure such as
2 common mode effects.

3 My answer would still be the same though.

4 JUDGE BRENNER: All right.

5 I'm sorry for the interruption, Mr. Ellis. I
6 personally wanted some clarification.

7 BY MR. ELLIS: (Resuming)

8 Q Mr. Minor, you have indicated that if A
9 through D were followed, that would be satisfactory. A
10 through D -- strike that.

11 On page 9 of the prepared testimony, you
12 indicate that single failure criterion by definition
13 ignores the risks resulting from multiple failure
14 accidents.

15 Do you see that?

16 A (WITNESS MINOR) Yes, I do.

17 Q And your contention is the single failure
18 criterion is inadequate for that reason?

19 A (WITNESS MINOR) I think we have to be careful
20 when we talk about multiple failure accidents because
21 there are different types of multiple failures. There
22 are dependent and independent multiple failures. The
23 single failure criterion in its definition would include
24 certain multiple failures such as common mode failures,
25 common cause failures and those types of failures. But

1 independent multiple failures are the type which are not
2 normally included, completely in the single failure
3 analysis done on nuclear power plants. These are the
4 ones that I'm identifying here.

5 Q And insofar as these are not accounted for by
6 the single failure criterion, you contend that that
7 criterion in the regulations was inadequate, is that
8 correct?

9 A (WITNESS MINOR) Would you restate that,
10 please?

11 Q All I'm trying to get you to do is affirm the
12 statement on page 9 of your testimony that appears right
13 below the quote.

14 A (WITNESS MINOR) I didn't hear the prelude to
15 your conclusion. Maybe my cohort could answer that.

16 Q Well, let me restate it.

17 JUDGE BRENNER: Well, excuse me. I heard two
18 different questions now. The answer may or may not be
19 the same to each, but I'm not sure. So if you want to
20 start again, then we should strike both questions and
21 then you pick the ones you want to ask first, and then
22 if you want to ask the other one, you can ask it after.

23 BY MR. ELLIS: (Resuming)

24 Q Mr. Hubbard, your contention is the single
25 failure criterion is inadequate because it fails to take

1 account of multiple failure accidents, isn't that
2 right?

3 A (WITNESS HUBBARD) Yes, Mr. Ellis, with the
4 caveat, the by definition is important because the
5 definition of single failure criteria as shown on page 6
6 of our testimony in the definition, it says multiple
7 failures resulting from a single occurrence are
8 considered to be a single failure. So those would be
9 what I would call dependent failures, are already
10 included by definition in a single failure criteria. So
11 when the ACRS on page 9 was saying that the single
12 failure criteria was inadequate, it should look at
13 multiple failures, I interpreted that as meaning it
14 would have to be multiple independent failures. So
15 therefore, the following sentence says that the single
16 failure criteria, by its definition, as shown on page 6,
17 does not cover the results from independent multiple
18 failure accidents.

19 Q All right, and as you have set forth a way to
20 do it which you contend is appropriate, steps A through
21 D, those steps take into account independent multiple
22 failures, don't they.

23 A (WITNESS MINOR) Within limitations, that is
24 true, only to the extent that the other failures assumed
25 in the steps A through D include the failure of

1 non-safety related systems that you can't really count
2 on to be available during that period, and it establishes
3 the environment in which the single failure must occur,
4 or could occur, excuse me.

5 Q Well, paragraph sub (B) assumes independent
6 failures, doesn't it?

7 A (WITNESS MINOR) Again, to the extent of
8 establishing the environment, that is true. These are
9 non-safety related construction system components that
10 you assume have somehow failed or somehow established an
11 environment which should be assumed to be the worst
12 environment that might exist as a result of that
13 failure.

14 Q Well, Mr. Minor or Hubbard, if the -- well,
15 strike that.

16 Mr. Minor and Mr. Hubbard, so that the record
17 is clear, Step B does take into account the multiple
18 failures that concern you, is that correct?

19 JUDGE BRENNER: Mr. Ellis, I'm sorry, it's my
20 fault. I missed the question. If you could either
21 repeat it, or I will have the reporter.

22 MR. ELLIS: I will repeat it, Judge.

23 BY MR. ELLIS: (Resuming)

24 Q Mr. Minor, Step B in your A through D of the
25 prepared testimony on pages 7 and 8 take into account

1 the multiple failures, do they not?

2 A (WITNESS MINOR) These would be included in
3 the multiple dependent failures that are included in the
4 definition of a single failure. There may be other
5 multiple failures that you would have to consider in
6 order to have a full systems interaction analysis, let's
7 say, rather than just a single failure analysis.

8 Q So I interpreted Paragraph C as being
9 dependent failures.

10 Was I incorrect in that connection?

11 A (WITNESS MINOR) I believe that is correct.

12 Q And B, then, unless B is just redundant, and
13 it seems to state clearly that that is independent
14 failures.

15 Am I incorrect in that connection?

16 A (WITNESS MINOR) Yes, you are incorrect. The
17 point that is being made in the first item, Item A, is
18 that items which are not qualified or classified cannot
19 be counted on to perform true in an accident or event of
20 the nature that is hypothesized to occur. You have to
21 assume the worst case environment is in existence at the
22 time of single failure.

23 Q Let me put it to you this way, Mr. Minor. If
24 you were to perform Steps A, B, C, and D, would your
25 objection to the single failure criterion be removed?

1 A (WITNESS MINOR) No, to the extent that part
2 of my concern with the single failure criterion is that
3 it by itself is not adequate to find all of the
4 independent multiple failures which may exist in a
5 nuclear power plant, and that is why we are talking
6 about supplementing these practices which are used,
7 which include the single failure criteria, the type of
8 LOCA analysis we are talking about, with the review of
9 the plant from the systems interaction point of view,
10 including walkdowns, including the PRAs, including the
11 dependency analysis.

12 Q So you think that the safety analysis clearly
13 should go beyond the single failure criterion that is
14 now in the regulations.

15 A (WITNESS MINOR) That is probably a legal
16 conclusion, but I'll give you my personal opinion. My
17 technical opinion and personal opinion is that yes,
18 there needs to be additional steps taken to ensure that
19 the full range of accidents and possible independent
20 failures and multiple failures that are independent have
21 been considered, and that by doing that you have all the
22 proper equipment to classify as safety related and
23 properly qualified.

24 Q Mr. Minor, going back to paragraph sub (B),
25 the failures that you assume there are not consequential

1 failures, as a result of any that occur, as they? They
2 are independent, aren't they?

3 You can go ahead and confer.

4 (Witnesses conferring.)

5 JUDGE BRENNER: Mr. Ellis, while the witnesses
6 are conferring, we will continue with the testimony
7 until about 5:00 o'clock. We won't adjourn. We want to
8 take up one or two matters after the witnesses are
9 excused for the day. But after you reach 5:00, if you
10 find an appropriate stopping point, at your pleasure. I
11 will ask you at that time, so you might want to think
12 about it, whether you can estimate how much longer you
13 will be.

14 I want to emphasize it is only for my
15 knowledge and not any further implications.

16 (Pause)

17 JUDGE BRENNER: I will advise the witnesses
18 that we are waiting for them, so when the panel is
19 ready, you should be forthright in telling us.

20 (Pause)

21 (The pending question was read by the
22 reporter.)

23 WITNESS MINOR: No.

24 JUDGE BRENNER: No. Fill in for me, please,
25 because of the form of the question, no, they are not

1 independent failures?

2 WITNESS MINOR: Correct. The failures that
3 are defined in Paragraph B are essentially the result of
4 the common cause effects of the accident assumed and the
5 failure of the non-safety structures identified in Part
6 A.

7 BY MR. ELLIS: (Resuming)

8 Q My problem, Mr. Minor, is C clearly covers the
9 consequential failures, isn't that correct?

10 MR. LANPHER: Judge Brenner, I'm going to
11 interpose an objection. We have been over this a couple
12 of times. He doesn't like the answers he is getting,
13 but these questions really have been asked.

14 MR. ELLIS: May I respond to that?

15 JUDGE BRENNER: No, let me respond to it.

16 You have got one problem with your objection,
17 and I'll tell you what it is. You are correct, the
18 question was asked and answered. I was going to follow
19 up myself in a few moments, in effect reasking the
20 question a little differently and arguably redundantly.
21 The reason is I am confused by some of the language in C
22 in light of the answer the witness gave.

23 Let me follow up now that I've alluded to it.

24 Mr. Minor, I'm going to follow up on Mr.

25 Ellis' question even though you didnt' get a chance to

1 answer it. Probing that same Paragraph C, my
2 recollection is that at least one of the witnesses, I
3 believe it was you, did state before that the failures
4 assumed in Paragraph C area all consequential, which I
5 equate with dependent failures.

6 Do you recall whether that was your answer?
7 That is not necessary, but just as a basis to continue?

8 WITNESS MINOR: If I did say that, I believe I
9 misspoke. Paragraph B are failures which result from
10 the hypothesized accidents.

11 JUDGE BRENNER: I'm talking about Paragraph
12 C.

13 WITNESS MINOR: I am understand that. That is
14 why I am clarifying. If I said C before, I believe I
15 misspoke. C essentially defines the accident condition
16 that is one of the initiating causes.

17 JUDGE BRENNER: The problem I have with the
18 language in C -- and maybe you can help me here -- I can
19 understand all failures which can be caused by the
20 accident would be dependent failures. I have trouble
21 with the term "assume all failures which can cause the
22 accident." It occurs to me and to my nontechnical mind
23 that that term could encompass multiple independent
24 failures, and if I am right, that at least the literal
25 words could mean that, then I don't understand how that

1 just describes one assumed initiator.

2 Can you help me out?

3 WITNESS MINOR: I think we are eventually
4 going to get to the blackboard here, but let's
5 hypothesize an accident. This accident calls for the
6 functioning of the emergency system. Before we analyze
7 the single failure of that emergency system we have to
8 establish the environment under which that system will
9 be trying to operate after the accident. These A, B,
10 and C items are trying to define what structures of a
11 non-safety nature you must assume failed and after you
12 assume that failure, will affect the operation of the
13 safety system you want to operate.

14 Then, in D you assume the single failure.

15 Does that clarify it?

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1 JUDGE BRENNER: Yes, that helps me. Let me
2 try one follow-up to make sure that what I think is the
3 case is the case.

4 Since (c) as you just explained it is meant to
5 define the environment given the accident and since you
6 are not sure what mechanistically will cause the
7 accident, then you ought to pursue, in order to define
8 the environment, you therefore have to assume all
9 failures that can cause the accident. Now is that
10 correct so far?

11 WITNESS MINOR: Yes.

12 JUDGE BRENNER: All right. If that is the
13 case, it is not very useful to discuss it in terms of
14 dependent or independent failures in the same sense that
15 we might want to talk about it in the context of
16 paragraph (d), for example.

17 WITNESS MINOR: It is at least difficult, if
18 not undesirable.

19 JUDGE BRENNER: All right. I think you have
20 identified my problem. You have helped me a lot. Thank
21 you.

22 Mr. Ellis, continue.

23 MR. ELLIS: Let me have just a moment, please,
24 Judge.

25 (Pause.)

1 BY MR. ELLIS: (resuming)

2 Q Mr. Minor, does (a) through (c) mean that you
3 look at what is lost as a result of the accident? Is
4 that the way to boil it down?

5 A (WITNESS MINOR) That is a good way to put
6 it -- the accident. These are the assumptions of
7 failures that are of non-safety structure systems and
8 components and that are of a common mode dependent
9 nature on the accident, dependent on the accident.

10 Q So there are no independent failures, then,
11 assumed in (a) through (d), except the single failure on
12 (d).

13 A (WITNESS MINOR) That is correct.

14 JUDGE BRENNER: I am confused again. Let's
15 try to be more precise with the question and the
16 answer. The question this time, Mr. Minor, was -- at
17 least the first one -- does (a) through (c) assume all
18 failures that can be caused by the accident. As I
19 understood the discussion you and I had previous to
20 that, that is more limiting than (c). There are
21 failures in (c) which are assumed which are not caused
22 by the accident. They are the failures that in fact
23 could cause the accident also, notwithstanding the fact
24 that they might not be dependent on one another.

25 They are assumed because mechanistically if

1 you wanted to define the environment that the safety
2 systems will have to function in after the accident you
3 don't know what the initiating event would have been.

4 WITNESS MINOR: Again, with the blackboard
5 example again hypothesized, assume that we had an
6 earthquake which caused a problem, the failure of a
7 structure.

8 JUDGE BRENNER: Let me interrupt at this
9 point. I will go into it fully, into what you are about
10 to do, but it would help me fully if you could answer a
11 little more indirectly first as to whether my
12 description made sense.

13 WITNESS MINOR: Judge Brenner, perhaps the
14 problem that is occurring is in the use of the terms the
15 "can cause" or "can be caused" by the accident. Is that
16 part of the problem?

17 JUDGE BRENNER: I am not troubled by "can be
18 caused". I am not troubled by. I am attempting to
19 understand what is meant by all failures which can cause
20 the accident, and I thought I understood it before. It
21 means what it literally says. And you explained that
22 the reason for that was so as to define the environment
23 in which the safety systems would have to function.

24 The reason I jumped back in again was you then
25 answered in response to Mr. Ellis' question, I think,

1 that all the failures assumed in that paragraph (c) and
2 any other paragraphs referenced are failures caused by
3 the accident and I thought that was more limiting than
4 everything encompassed by that portion of (c) -- all
5 failures which can cause the accident.

6 WITNESS MINOR: It would be more limiting.
7 The example I was going to try to use would explain the
8 sequence which might have both a causative event
9 resulting in a sequence which called upon the emergency
10 system to operate. For example, an earthquake causes a
11 small LOCA which causes the emergency system to come on
12 to operate.

13 The earthquake may also cause some other
14 systems to fail. The LOCA is the accident, but the
15 earthquake occurring may set an environment which is
16 responsive to these words, "which can cause or can be
17 caused by the accident." The earthquake may have caused
18 the accident failing structures or system in the
19 neighborhood. It may be caused by the earthquake or by
20 the accident.

21 Does that clarify? Maybe I'm getting it more
22 confused. My example may not be the best example.

23 JUDGE BRENNER: What if two initiating events
24 can cause the same accident, let's say a LOCA, let's say
25 an earthquake or, hypothetically, a flood not dependent

1 on the earthquake -- two completely, in my postulation,
2 independent external events, each of which could cause
3 the LOCA. Is that kind of thing encompassed also by the
4 phrase assumed that all failures which can cause the
5 accident would be assumed?

6 WITNESS MINOR: In my opinion that would be --
7 perhaps I am getting too mechanistic in my examples and
8 I'm getting far afield from the intent here. I hope not.

9 JUDGE BRENNER: All right, let's not pursue it
10 further at this point. Judge Morris is going to explain
11 it all to me later. Seriously, we will come back to it
12 during our time in questioning if it is still not clear
13 to us at the conclusion of the examination of the other
14 parties.

15 It's about 5:00, Mr. Ellis, but if you want to
16 continue to pursue this line you can do so and reach an
17 appropriate point to break shortly or we can break now
18 and continue with it first thing in the morning.

19 MR. ELLIS: I think I do want to continue to
20 clarify this, if I may.

21 BY MR. ELLIS: (resuming)

22 Q Mr. Minor, your criticism of the single
23 failure criterion is that it fails to take account of
24 multiple failures. Would you confirm for me whether
25 (a), (b), (c) and (d) take account of multiple failures?

1 A (WITNESS MINOR) In order to answer that I
2 have to make a distinction between dependent and
3 independent failures.

4 Q All right. Let me clarify it for you. Take
5 first independent failures.

6 A (WITNESS MINOR) I would say no. That does
7 not cover the independent failures which may occur.

8 Q And the independent failures, multiple
9 failures, which may occur in the plant is part of your
10 criticism of the single failure criterion, isn't that
11 correct?

12 A (WITNESS MINOR) That is correct.

13 JUDGE BRENNER: When you said that does not
14 cover it, I remember the question had two parts. Did
15 you mean both the single failure criterion in the
16 regulation and the steps outlined here?

17 WITNESS MINOR: No, I do not. I believe the
18 steps outlined would adequately cover dependent failures
19 by the assumptions made in steps (a) through (d).

20 JUDGE BRENNER: I thought the question was
21 take independent failures first. I don't want to
22 intrude, Mr. Ellis, unnecessarily. Am I correct that
23 your question had those two parts?

24 MR. ELLIS: You are indeed, sir.

25 JUDGE BRENNER: So the question is, do you

1 believe that multiple independent failures are
2 inadequately covered by the single failure criterion in
3 the regulations? That is the first part. And I think
4 you said yes, it does not cover that and that is why you
5 think it is inadequate.

6 WITNESS MINOR: I was getting some other words
7 at the time, whether you said independent or dependent.

8 JUDGE BRENNER: Independent. I am only trying
9 to repeat the question. I am not trying to answer any
10 question.

11 WITNESS MINOR: My statement is that the steps
12 outlined cover the single failure criteria application,
13 but I do not feel they adequately cover independent
14 multiple failures.

15 JUDGE BRENNER: And that is because of your
16 preface as opposed to single failure criterion in the
17 steps outlined here, because the steps outlined here in
18 effect is a statement of the single failure criterion.

19 WITNESS MINOR: That is correct.

20 WITNESS HUBBARD: Judge Brenner, it is
21 important that we add that we are not suggesting here or
22 attacking the single failure criterion. We are saying
23 in terms of classification of items important to safety
24 the single failure criteria doesn't go far enough.

25 So you have to look at all of this in the

1 context of classification methodology in the larger set
2 of structures, systems, and components important to
3 safety, and I think the discussion over the last period
4 has gotten to a point to somehow leave the implication
5 that we are talking the single failure criteria. So
6 this would be an attack in the regulations and that is
7 not what we are trying to accomplish here.

8 JUDGE BRENNER: All right. For what it's
9 worth, Mr. Hubbard, and your clarification was
10 reasonably appropriate at this point. So I study way
11 back what seems like a long time ago, it is on a motion
12 to strike, and on ruling on the legal objections. I
13 think it is clear to the parties and to the Board that
14 some of this is going to turn on whether we have a
15 difference of opinion as to application or
16 interpretation of the regulations as distinguished from
17 an out-and-out violation of the regulations.

18 And it is pretty clear, to me at least, from
19 reading your testimony that your point of view is as you
20 have just expressed. Now that doesn't mean the other
21 parties may not choose to disagree and argue based on
22 the testimony and the questions and the answers that
23 notwithstanding your view that you are not attacking the
24 regulations, they believe you are. That is what a large
25 part of the litigation in this Contention is all about.

1 Mr. Ellis.

2 MR. ELLIS: We may have some additional
3 clarification in the morning, but I think this would be
4 an appropriate place to break.

5 JUDGE BRENNER: All right. We will excuse the
6 witnesses at this point, but we are not going to
7 recess. The witnesses will be back at 9:00 a.m. As the
8 witnesses are in the process of leaving, perhaps they
9 would be interested also in hearing the guestimate, Mr.
10 Ellis, as to how much time you have. I am asking
11 because I am wondering. I don't know whether there are
12 other witnesses waiting in the wings on other
13 Contentions and so on.

14 MR. ELLIS: Well, I must say that it has gone
15 more slowly than I anticipated and that it has gone more
16 slowly than I anticipated because it is -- I don't want
17 to make an argument, but there are very lengthy answers
18 and explanations.

19 JUDGE BRENNER: That is not necessary, and the
20 reason it is not necessary for your to state this, I
21 tried to emphasize, the sole purpose at this point of my
22 asking the question is just to get the estimate without
23 any implication as to whether it should be going faster
24 and it's not.

25 MR. ELLIS: I would not be surprised if

1 together with Mr. Rawson we took the entire day tomorrow.

2 JUDGE BRENNER: I would not be surprised
3 either -- and I didn't say that to be funny. I had no
4 doubt that we would take close to the entire day
5 tomorrow. More precisely, are we going to be able to
6 get to another Contention on Friday?

7 MR. ELLIS: I cannot predict. Much turns,
8 again, on the answers given tomorrow.

9 JUDGE BRENNER: All right. As of right now I
10 don't want to assume that we won't get to other
11 testimony because if we do the next order of testimony
12 would be Contention 11, would it not?

13 MR. LANPHER: Yes, Judge Brenner, it would be,
14 and I may want to talk with the parties tonight. We
15 have Mr. Bridenbaugh back from California solely for the
16 purpose of Contention 11. If he is not going to be on
17 this week, for obvious reasons we would like to get him
18 out.

19 I don't know if there is any change in order
20 that you can consider. I assume the Staff and LILCO
21 have similar problems. I mean, this is a logistical
22 transportation situation, but let me talk with them
23 overnight. I don't know if there is anything that can be
24 done.

25 JUDGE BRENNER: All right. Certainly somehow

1 it will be of assistance at the end of the hearing
2 tomorrow.

3 MR. LANPHER: I am not being critical of
4 anyone. It's just a little frustrating.

5 JUDGE BRENNER: All right. The witness are
6 excused until 9:00 a.m. tomorrow morning.

7 The Board has what I believe are just two
8 relatively brief subjects. We are going to attempt when
9 we have these miscellaneous matters to get them either
10 at the beginning of the day or at the end of the day
11 unless it is necessary to the flow of testimony to deal
12 with something while it is going on.

13 We have a proposed resolution of three
14 Contentions before us which we have discussed and at an
15 appropriate time this week we are going to bind the
16 proposals into the transcript and the Staff will let us
17 know if they could tell us more about their agreement
18 with the conditions at that time. I don't want to do
19 that now, but Judge Morris has a question about one of
20 the proposed settlements and he wants to ask it now so
21 that when we come back to the subject the parties will
22 be prepared with the answer.

23 JUDGE MORRIS: The subject is the settlement
24 of the turbine orientation and having read the
25 settlement I was left with a question in my mind. It

1 doesn't identify something that I think is a safety
2 issue to be pursued. It is just something I would like
3 further information on.

4 And that is that the Applicant stated, I
5 believe, that there was adequate concrete everywhere to
6 protect from any, let me call it, design basis missile
7 from the turbine and it is my understanding that the
8 Intervenor did not agree with that and that there was,
9 particularly above the spent fuel storage pool,
10 inadequate concrete. I would just like a resolution of
11 the facts on that issue.

12 JUDGE BRENNER: To clarify without asking for
13 testimony on it, and we recognize the policy favoring
14 settlements. But given the inference which Judge Morris
15 just indicated which he drew from reading the testimony,
16 it is not clear to us whether the proposed settlement
17 covers that aspect.

18 Now if SOC has withdrawn that aspect in
19 negotiating the settlement, I guess that could be an
20 answer. We want to get a better definition of what
21 happened to the controversy.

22 MR. SHEA: Judge Morris, could you repeat the
23 last aspect of your concern?

24 JUDGE MORRIS: The Applicant said that there
25 was adequate concrete, reinforced concrete, to protect

1 against a postulated missile arising from a turbine
2 failure. The Intervenor, the way I read it, believed or
3 implied that there was not adequate concrete in the roof
4 structure above the spent fuel pool.

5 JUDGE BRENNER: I guess the question is
6 primarily to SOC. What was the basis for resolution of
7 that matter in the context of the settlement or
8 otherwise, or withdrawing it for some other reason?

9 The other item relates to the possible
10 procedures to deal with any confidentiality claim by
11 Stone and Webster. Since we last discussed it, more
12 information is available from Stone and Webster's
13 counsel and I will let Mr. Lanpher describe that and
14 then I will have a comment on that.

15 MR. LANPHER: All I can describe, Judge
16 Brenner, is what Mr. Edgar put in his letter. Do you
17 want me to read that?

18 JUDGE BRENNER: No. What I meant was we had
19 not heard from Stone and Webster was the last thing we
20 had said on the record.

21 MR. LANPHER: All right, fine. Since we spoke
22 on the record earlier this morning, my office informed
23 me that we received today a letter from Mr. Edgar from
24 the law firm of Morgan, Lewis and Brockteus indicating
25 that they are not going to assert proprietary or

1 confidentiality claim with respect to document number 6,
2 which is the radiation monitoring specification, and
3 that document relates to Contention 27 primarily and
4 perhaps to some others.

5 So in terms of the May 25 testimony, finally
6 we don't seem to have any problem, and they don't take
7 any position on the quality assurance documents because
8 we have not yet designated portions.

9 JUDGE BRENNER: That is a good summary of
10 where we are now. My comment is, Mr. Edgar's letter
11 reminded me that our order of April 7, 1982,
12 establishing the interim procedures for dealing with the
13 confidentiality matter contemplated that we would set a
14 schedule for the filings initially by Stone and Webster
15 to justify their claim of proprietary treatment if the
16 parties had a disagreement as to some matters.

17 And leaving it open-ended at that time, it was
18 our contemplation that we would know today or earlier
19 this week whether there was such a disagreement or not.
20 It would afford us the luxury of some further time to
21 then determine what schedules to set.

22 As of now, subject to discussions among the
23 parties, you are contemplating that the Board would not
24 hear until about, as I indicated, at the latest in our
25 offices on May 24 the combined views of the parties as

1 to whether there is a dispute, given the information
2 that will be exchanged among the parties as to the use
3 contemplated of the documents.

4 If that is the case, we would then first be
5 setting a schedule thereafter at that time, and it looks
6 to me like the schedule is going to have to be rather
7 tight. And rather than waiting until then for Stone and
8 Webster and the other parties and LILCO and be surprised
9 by a short schedule, I would like for the parties to
10 discuss a procedure whereby at least among the parties
11 it can be ascertained sufficiently in advance of May 24
12 as to what the dispute would be.

13 So if there is a dispute extant as of May 24,
14 Stone and Webster can file their full argument at that
15 time or within a very few days thereafter, which would
16 include their written motion in support for proprietary
17 treatment keyed to the particular portions of documents
18 for which they are claiming such treatment.

19 I will look to the combined good efforts of
20 all of the parties here to so inform Mr. Edgar and also
21 to work out the schedule consistent with that.

22 Another reason for doing it at that point is
23 to the extent that we are going to have to look at some
24 of the proprietary documents to make any
25 determination -- and I don't know to what extent that

1 would be -- we are going to be in the middle of a
2 hearing that week and the Board, frankly, is going to
3 have a very tough time with what will essentially be a
4 digressive matter from the point of view. I am not
5 minimizing its importance, but it will be digressing at
6 that point from unrelated testimony that we will be
7 dealing with that day.

8 I guess the parties should realize that as
9 lawyers switch off among the parties from day-to-day and
10 issue-to-issue, it's the same with the Board. The Board
11 is here day-to-day and we have to pay attention to
12 evidence as we are hearing it and matters necessarily
13 related to that. So I am not in a position to promise
14 you a quick ruling, even if we get that motion as of May
15 24.

16 But at least if I had that morning to look at
17 it it would be helpful. I am talking about the
18 beginning of business on that Monday.

19 MR. REPKA: Judge Brenner, I would like to
20 briefly follow up on a matter that came up this morning
21 with respect to one of the open ends in the Staff
22 review, particularly item number 62, which relates to
23 remote shutdown panel and SC Contention 1.

24 By miraculous coincidence, the LILCO submittal
25 arrived in the hands of a Staff reviewer today and I

1 would just like to inform you that he anticipates his
2 review to take a matter of days. Assuming the submittal
3 is adequate and he is satisfied, he would expect to
4 close the item out very shortly.

5 What we propose to do is if and when the item
6 indeed closes out we will file with the Board and the
7 parties an advance notice of a brief description of the
8 Staff review. This would probably not be exactly what
9 the FSAR would be, but something of that nature.

10 JUDGE BRENNER: All right. That's fine. I
11 want to reiterate the point that we are not requiring
12 that no matter what it has to be finished in a few days.
13 If you do find substantive problems, that's a whole
14 different matter than not getting to something just for
15 reasons of priority.

16 We are attempting to keep a reasonable
17 schedule here. Since the indication I had from LILCO
18 was that it had been filed some days ago, in their view,
19 for future matters related to this case we have
20 indicated, I would assume, that the combined efforts of
21 LILCO and the Staff would be that they would get matters
22 in each other's hands by means other than normal mail,
23 if that was the case here, and the means of the normal
24 distribution to the Staff's offices, by the time it gets
25 to the reviewer.

1 In terms of the information that you are going
2 provide, again without prejudice, as I indicated
3 earlier, the Staff filing supplemental testimony on this
4 subject on the date that would be keyed in once that
5 schedule I indicated is implemented, but the preliminary
6 information you file needs to be sufficient to put the
7 partie on notice as to the basis for the Staff's
8 review. So it substantively should be pretty close to
9 the content of an SAR.

10 MR. REPKA: We expect that it will be and we
11 will do it as soon as possible after the completion of
12 the review.

13 JUDGE BRENNER: All right. Judge Morris has
14 one additional matter.

15 JUDGE MORRIS: I think I may have forgotten to
16 give the last item of the open issues, which was an
17 issue identified for the first time in the second
18 supplement of the safety evaluation. It occurs on page
19 1.7, I believe, and its title is "Design Verification."
20 I think there is reference to a meeting that was to take
21 place on March 15 and some kind of resolution of the
22 problem in September.

23 If I understand this, the words say assurance
24 that the facility was designed and constructed in
25 accordance with the application. It is a concept

1 somewhat similar to that being applied at Diablo for the
2 seismic systems, so it is not clear to me what the scope
3 of this is, both in terms of how much of the plant will
4 be covered, what will be required and what the schedule
5 would be.

6 So this is an item for the status report due
7 on June 22.

8 JUDGE BRENNER: Actually, it is section 1.7,
9 page 1-2, the SER supplement Number 2. It would
10 expressly indicate, as Judge Morris paraphrased, that
11 the Staff contemplates future reports on the resolution
12 of this matter in future supplements to the SAR.

13 MR. EARLEY: Judge Morris, for your
14 information, the company has made a submittal on that
15 which the Board should have received. I can give you
16 the cite to it later in the week.

17 JUDGE BRENNER: We have got it and we are
18 aware of it, but the matter of the SAR is still
19 pending. But thank you.

20 MR. REPKA: We are aware of that item and will
21 include it in the Staff's report.

22 JUDGE BRENNER: If there are no other
23 miscellaneous matters, we will adjourn at this time and
24 reconvene at 9:00 a.m. tomorrow.

25 (Whereupon, at 5:26 o'clock p.m., the hearing

1 was recessed, to reconvene at 9:00 o'clock a.m.,
2 Thursday, May 6, 1982.)

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NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

ATOMIC SAFETY AND LICENSING BOARD

in the matter of: Long Island Lighting Company (Shoreham Nuclear Power Station)

Date of Proceeding: May 5, 1982

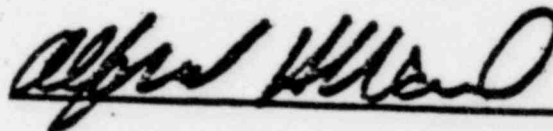
Docket Number: 50-322-OL

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.

Alfred H. Ward

Official Reporter (Typed)



Official Reporter (Signature)