

ORIGINAL

NUCLEAR REGULATORY COMMISSION

In the Matter of:

PACIFIC GAS AND ELECTRIC COMPANY) DOCKET NO. 50-275/323
)
(Diablo Canyon Nuclear Plant 1 and 2) LOW POWER TEST PROCEEDING

DATE: May 21, 1981 PAGES: 10,944-11,143

AT: San Luis Obispo, California



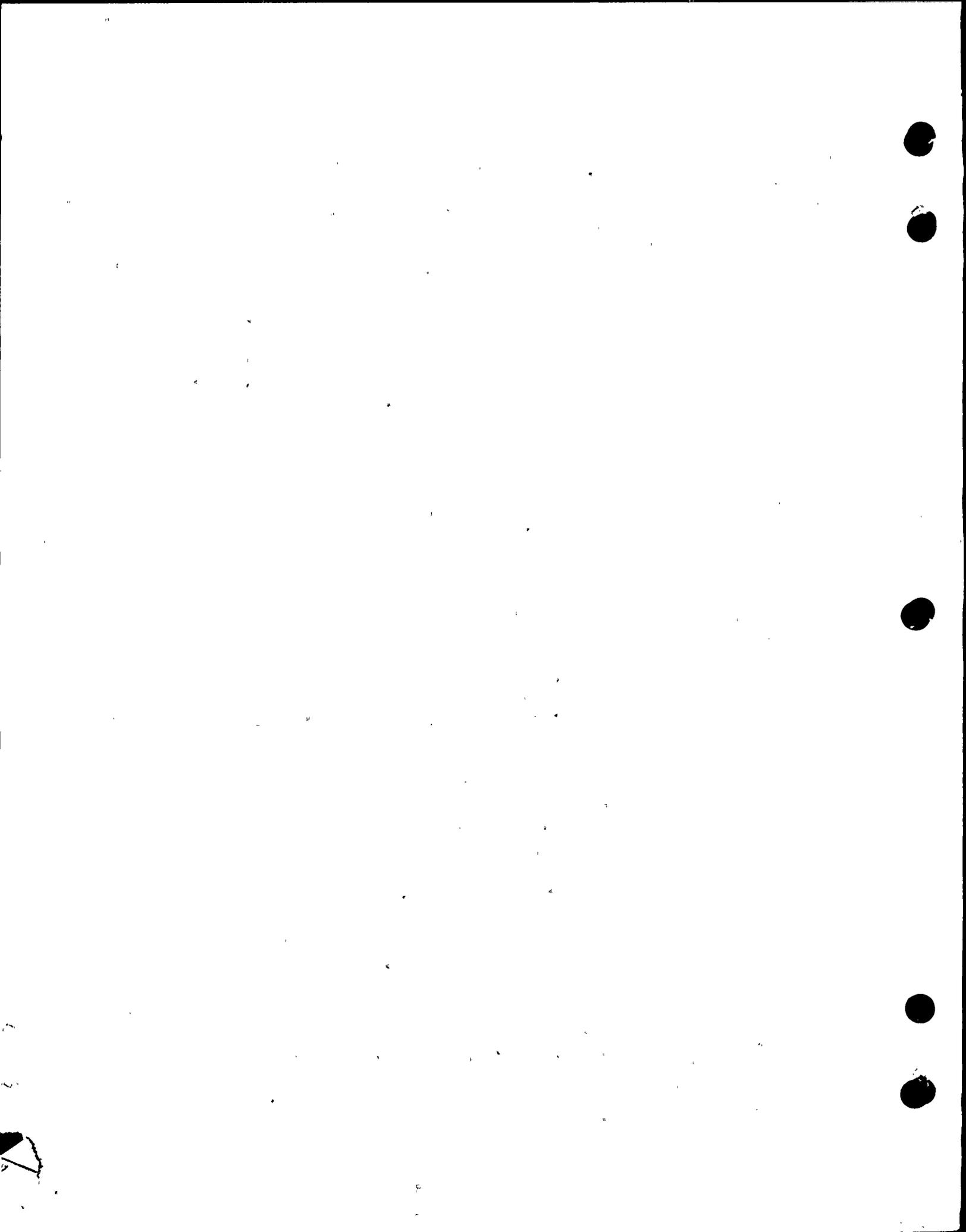
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of:)
) Docket No. 50-275
PACIFIC GAS AND ELECTRIC COMPANY) Docket No. 50-323
Diablo Canyon Nuclear Power)
Plant Units No. 1 and 2) (Low Power Test Proceeding)
)

Veterans Memorial Building
Monterey Street
San Luis Obispo, California

Thursday, May 21, 1981

The Atomic Safety and Licensing Board met, pursuant to
recess, at 9:00 a.m.

BOARD MEMBERS PRESENT:

JOHN F. WOLF, Esq., Chairman
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

GLENN O. BRIGHT
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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For the NRC Staff:

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I N D E X

	<u>WITNESSES</u>	<u>DIRECT</u>	<u>CROSS</u>	<u>REDIRECT</u>	<u>RECROSS</u>	<u>VOIR DIRE</u>
1						
2						
3	<u>WITNESSES</u>					
4	Robert E. Paulus					
5	By Mr. Norton		10954		10990	
6	By Mr. Reynolds		10985			
7	By Mr. Brown			10989		
8	Howard N. Mitchell					
9	By Mr. Norton		10958			
10	By Mr. Brown			10988		
11	Jeffrey Jorgensen					
12	By Mr. Norton		10969			
13	By Mr. Brown			10986		
14	Bartholomew C. Buckley					
15	By Mr. Olmstead	11036				
16	By Mr. Reynolds		11056			11038
17	John R. Sears					
18	By Mr. Olmstead	11015				
19		11063				
20	By Mr. Brown					11016
21	By Mr. Reynolds		11056			
22			11064			
23	G. Norman Lauben					
24	By Mr. Olmstead	10994				
25	By Mr. Lanpher		11118			10996
	By Mr. Reynolds		11093			11007



I N D E X (Continued)1
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25EXHIBITSIDENTIFIEDIN EVIDENCENRC Staff:

18 thru 25

11050

Joint Intervenor:

117

11058

11059

118

11102

11107

Governor Brown:

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P R O C E E D I N G S

9:00 a.m.

1 JUDGE WOLF: May we come to order, please.

2 Good morning, ladies and gentlemen.

3 We start again this morning by asking counsel to
4 state their appearances for the record beginning with the
5 Applicant.

6 MR. NORTON: Bruce Norton, appearing for Applicant
7 along with Phil Crane, Malcolm Furbush, Richard Locke and
8 Arthur Gehr.

9 MR. REYNOLDS: Joel Reynolds and David Fleischaker
10 for Joint Intervenors, San Luis Obispo Mothers for Peace,
11 Scenic Shoreline Preservation Conference, the Ecology Action
12 Club.

13 JUDGE WOLF: Thank you.

14 MR. BROWN: Herbert Brown and Lawrence Lanpher for
15 the Governor of California.

16 JUDGE WOLF: Thank you. NRC Staff.

17 MR. OLMSTEAD: Yes. William Olmstead and Brad
18 Jones, counsel for the NRC Staff.

19 JUDGE WOLF: Thank you.

20 Yesterday, a question arose about cross examination
21 in regard to a reference to some material that has just come
22 out, which Mr. Norton was to supply to Mr. Brown and Lanpher
23 and Mr. Fleischaker and Reynolds. Was that done last night,
24
25



1 Mr. Norton?

2 MR. NORTON: It was done yesterday afternoon and
3 we have somebody staying up all night running off additional
4 copies for the Board and for the Staff and those are available
5 now and they are being passed out at the moment.

6 JUDGE WOLF: What I was interested in was the
7 extent of the material that is being referenced. You weren't
8 referencing the whole volume, were you?

9 MR. NORTON: Absolutely not. It's in the transcript,
10 which everybody has. The explicit references and it is
11 actually a very small portion of the implementing procedures.
12 This is the document. It consists of -- I couldn't give you
13 a percentage, but maybe five or ten percent of the document
14 is referenced. That's a ballpark guess. That could be off
15 -- could be as much as fifteen or twenty percent, but I
16 believe it's more like ten percent.

17 They were just referenced by sections as to -- it's
18 covered in this section and those have been available to the
19 other counsel since we passed them out yesterday afternoon, I
20 believe.

21 MR. OLMSTEAD: Mr. Chairman, I would point out that
22 the Staff did not receive it until just five seconds ago.

23 JUDGE WOLF: Right.

24 MR. OLMSTEAD: And we have had no opportunity to
25 look over it.



1 JUDGE WOLF: We won't attempt to dispose of the
2 problem right now. We'll have to wait until everybody has a
3 chance to read it and inform us as to what the extent of the
4 cross examination will be, if any, as a result of this mater-
5 ial.

6 MR. LANPHER: Judge Wolf?

7 JUDGE WOLF: Yes, Mr. Lanpher?

8 MR. LANPHER: I would like to correct the record.
9 I had an opportunity, briefly to review it last night, because
10 Mr. Norton did supply Governor Brown with a copy. A number of
11 procedures were referenced in the redirect examination. For
12 instance, R2 -- emergency procedure R2, was referenced. I'm
13 going to hold the volume up for you. This is procedure R2.
14 Now, it's got, I think, eleven attachments. Most of the last
15 quarter of the volume under procedure G is also referenced in
16 that testimony.

17 I'm not sure if Mr. Shiffer is relying on every
18 little bit of these procedures or not. I don't think the
19 transcript makes clear. There's a very substantial amount of
20 material that has to be reviewed. I made a diligent effort
21 to do that last night. I couldn't get through even half of
22 it. My technical expert, since we had only one copy of this,
23 obviously, couldn't go through any.

24 MR. OLMSTEAD: Mr. Chairman, could I add one other
25 point from the staff?



1 JUDGE WOLF: Yes.

2 MR. OLMSTEAD: It is my present intention, although
3 I do want time to review the procedure, considerable, to move
4 to strike references to these procedures as a part of this
5 hearing on the grounds of relevancy, particularly because of
6 the need to meet our schedules and move the proceeding along.
7 I don't think that we need to go into the subject of those
8 procedures for the low power testing program.

9 At full power test situation, I think the matter
10 would be entirely different, but we do have a record here
11 with Joint Intervenor's Exhibit No. 111 that all the parties
12 agree with. It indicates that they do not meet 50-47 as it is
13 written and so we're going to have to deal with the legal
14 issue as to what that means at some point.

15 JUDGE WOLF: Yes. I interpret that you are going
16 to offer that paper that you distributed this morning at
17 some time. Is that correct?

18 MR. OLMSTEAD: Yes, sir. I'm willing to do that
19 when you wish.

20 JUDGE WOLF: I think that we ought to move along
21 with this panel and perhaps set up some time either late
22 today or the first thing in the morning to discuss this other
23 problem regarding how much of the material that was referenced
24 should be considered and whether or not a motion would lie
25 in regard to it.



1 MR. OLMSTEAD: Could I handle two preliminary
2 matters, Mr. Chairman?

3 JUDGE WOLF: Yes.

4 MR. OLMSTEAD: One is that I have given to the
5 Board and the parties a memorandum to William Dircks from
6 Samuel J. Chilk, the Commissioner, dated April 22, 1981,
7 which came to my attention. Essentially, we're providing it
8 to the Board and the parties pursuant to our Board
9 notification duty under the Mcguire Doctrine. In that line,
10 I also have been sent. I understand it's been delivered to
11 the Senate Sub-Committee on Energy and Environment on Friday,
12 the Commission's questions and answers to questions that were
13 posed by that Committee. Since a number of those deal with
14 low power testing, emergency planning and the expedited
15 licensing process that the Commission has been considering,
16 I am going to provide that to the Board as part of the Board
17 notification procedure as well.

18 Unfortunately, I only have one copy and it's large.
19 I've shown it to the parties and when we return to Washington,
20 I'll be more than happy to give everybody a copy of the docu-
21 ment, if they want it. If they want it now, I'll have to make
22 arrangements to get --

23 MR. REYNOLDS: I have not seen that document.

24 MR. BROWN: Nor have I.

25 MR. OLMSTEAD: Larry saw it this morning.



1 MR. LANPHER: No.

2 MR. OLMSTEAD: I'm not saying you read it.

3 MR. LANPHER: You mentioned that you had this
4 preliminary matter relating to it. You didn't show it to me.

5 MR. OLMSTEAD: Okay. At any rate, I do have this
6 one copy. If people want copies of it today, I have a problem.
7 But I will get people copies of it. I don't propose to use
8 it in the hearing.

9 MR. NORTON: We can make the copies. We have the
10 facilities to do that, if you'd like.

11 MR. OLMSTEAD: Okay. If the Board doesn't mind,
12 I'll provide that as soon as we get copies back.

13 JUDGE WOLF: That will be satisfactory.

14 MR. BROWN: May I ask a question for clarification,
15 Judge Wolf?

16 JUDGE WOLF: Yes, Mr. Brown.

17 MR. BROWN: I really don't understand why we're
18 getting the answers to the questions from the Congressional
19 Committee Staff. That is sort of puzzling to me, in the
20 course of this proceeding. Perhaps that could be clarified
21 for us?

22 JUDGE WOLF: Mr. Olmstead might enlighten us about
23 that.

24 MR. OLMSTEAD: Okay. The reason is that there are
25 questions and answers in there which are on the public record



1 and pursuant to my discovery obligations and to my Maquire
2 duty to notify the Board and parties about materials that
3 could be argued to be relevant to the proceeding, I am provi-
4 ding them to you. I am not taking a position as to their
5 relevancy or materiality at this point, but there are questions
6 and answers that deal with emergency planning in low power
7 test proceedings before the Commission. I feel that it is
8 therefore incumbent upon me to bring it to your attention.

9 MR. BROWN: I'm not sure exactly what your inten-
10 tion means. I know that -- Well, everyone in this room is
11 sufficiently sophisticated to know that letters to and from
12 agencies to the Staff go on all the time. Sometimes it's an
13 act of very conscious deliberative review and sometimes it's
14 a lot of gimmickry. Unless there's an intention to put this
15 into the record, and I'd like if this proceeding would some-
16 how give it evidentiary weight, which I would certainly not
17 support unless we had an opportunity to cross examine the
18 authors of it. I'd just as soon let the whole matter rest for
19 now and get a hold of that when we get back to Washington.

20 JUDGE WOLF: Mr. Olmstead is carrying out his duty
21 and it is not going to be made a part of this record.

22 MR. BROWN: Thank you very much, Judge Wolf.

23 JUDGE WOLF: We will not -- the Board that is, will
24 not weigh it or take it into consideration. I doubt that we
25 will have the opportunity to read it before we pass on the



1 record.

2 MR. BROWN: Thank you.

3 JUDGE WOLF: But he has kindly given you a copy,
4 for what it's worth, at this juncture, as soon as he can.

5 This panel is here and are we ready to proceed with
6 the examination, now? Mr. Lanpher?

7 MR. LANPHER: The panel is available for continued
8 cross.

9 JUDGE WOLF: You were in the process, were you not,
10 of cross examination, Mr. Norton?

11 MR. NORTON: Yes, Your Honor.

12 CROSS EXAMINATION

13 BY MR. NORTON:

14 Q Mr. Paulus, we talked yesterday about CDF and the
15 responsibility of Rancho Seco. CDF does have a signed
16 commitment to respond, if called upon, to fires at Rancho
17 Seco, does it not? A mutual aid agreement with the primary
18 agency -- the fire fighting agency. Do you have a mutual
19 aid agreement with them or they can call you in to fight
20 fires at that facility.

21 A I'm not familiar with that specific mutual aid
22 agreement. I would assume that's correct and we would respond
23 in a mutual aid to that fire district that has the primary
24 responsibility.

25 Q Have the CDF personnel, who might well be called to



1 respond to a fire at Rancho Seco, been trained in radiation
2 protection?

3 A To my knowledge, I don't know.

4 Q Do you have a fire pre-plan for Rancho Seco?

5 A No. That's the responsibility of that local fire
6 district. That would not be our responsibility.

7 Q Your people have been trained on that fire pre-plan,
8 though, have they not?

9 A I'm not sure of that. I don't know.

10 Q May I ask why you have not inquired if it is of
11 such concern to you?.....

12 A Because we do not have the primary responsibility
13 to protect the Rancho Seco plant.

14 Q Does it make any difference whether you have a
15 primary or secondary responsibility, if, indeed, your men are
16 going to be called upon to fight a fire?

17 A Yes, it does, because we would not be responsible
18 for the initial attack, tactics and strategy. That rests
19 with that first end jurisdiction.

20 Q But I thought your primary concern was radiation
21 training and protection.

22 A That's correct.

23 Q And that wouldn't make any difference whether
24 difference whether you got there five minutes after the fire
25 or twenty minutes after the fire or a half hour after the



1 fire, would it -- after it started?

2 A Yes, that's correct.

3 Q So, again, my question. Why haven't you looked
4 into that? Into the radiation protection and training for
5 those people that you're so concerned about?

6 A Again, we do not have a primary responsibility
7 there. If we were to respond in there, our closest station
8 is probably 25 miles from the Rancho Seco plant.

9 MR. BROWN: Judge Wolf. I think it's been answered
10 twice, but in addition, these questions belong in the Rancho
11 Seco proceeding where they are relevant. Here we're dealing
12 with the agreement for the Diablo Canyon plant. The question
13 has been asked and answered repeatedly now. I object.

14 MR. NORTON: Your Honor, I would agree. The
15 question has been asked. I don't believe it's been answered,
16 but I will move on.

17 JUDGE WOLF: Well, let's move on, then, to the
18 next question.

19 BY MR. NORTON:

20 Q Do you also supply primary protection in other
21 areas of the state to military installations where there is
22 radioactive material?

23 A Not to my knowledge.

24 Q Have you inquired about that?

25 A Yes. Generally, military bases, we do not respond



1 into Federal jurisdictions.

2 Q How about hospitals that have radioactive materials?

3 A I'm not personally aware of any. Most hospitals
4 are inside of the corporate city limits and we do not have
5 jurisdiction inside the cities..

6 Q You're not aware of any firefighting responsibility
7 CDF has with any hospital in the state of California?

8 A There could possibly be some. I'm personally not
9 aware of any.

10 Q I can't ask you the follow-up questions, if you
11 don't know whether you have that responsibility or not. So,
12 we'll move on to something else.

13 I take it from the tenure of your direct testimony
14 -- your direct oral testimony, yesterday, that you feel
15 fairly confident that there will be absolutely no problems
16 with CDF here attending a fire at Diablo Canyon effective
17 approximately the first of July?

18 A That would be about my best guess. It could be
19 a little bit longer -- two to three weeks, but in that area.

20 MR. NORTON: I have nothing further for you, Mr.
21 Paulus.

22 ////

23 ////

24 ////

25 (Further testimony will continue on the next numbered page.)



1 BY MR. NORTON:

2 Q Dr. Mitchell, yesterday and I believe also in your
3 written affidavit, you have stated that you feel your staff
4 does not have adequate communication equipment --

5 A (Witness Mitchell) Correct.

6 Q -- is that correct? And I believe you said you
7 discovered that in 1977 during a drill when somebody had to
8 go use a pay phone, et cetera, correct?

9 A It was the more recent one. I think it was the '79
10 one that I heard.

11 Q But you first learned of it in '77?

12 A We have been aware of it for some time, yes.

13 Q And what have you done to upgrade your communication
14 equipment?

15 A We have made requests, budget requests up until
16 last year, which were not agreed to. It was decided at that
17 time, that in view of what had occurred in Pennsylvania, that
18 we would have a whole new plan, which was discussed by
19 Supervisor Jorgensen yesterday, at which point then the
20 equipment which we would need would be more clearly
21 delineated, but we at this time have some ideas of things we
22 need, yes.

23 Q Well, do you not have the ability under State law to
24 simply order the communication equipment that you need for
25 your vehicles, and correct me if I am wrong, wouldn't you need



t2 2g
1 that communication equipment under any plan? I mean, you are
2 not going to be incommunicado under any plan, are you?

3 A I hope not.

4 Q Okay. So you would need that equipment under any
5 plan, wouldn't you?

6 A I hope so.

7 Q All right. Why then -- isn't there State law that
8 provides for you to literally get that equipment for free?

9 MR. BROWN: Object. He is not a lawyer.

10 BY MR. NORTON:

11 Q Do you know the answer to that?

12 JUDGE WOLF: It calls for a conclusion of law, I
13 think.

14 BY MR. NORTON:

15 Q Let me try again. Are you aware that you can get
16 that equipment for free?

17 A (Witness Mitchell) I am not aware of that, no.
18 We have Civil Defense equipment which was provided to us by
19 the State, but we found it not worth anything.

20 Q Well, have you reviewed -- have you reviewed the
21 State Government Code regarding the Office of Emergency
22 Services and nuclear radiation protection, et cetera, have you
23 reviewed that as County Health Officer?

24 A I rarely read the government code, as a matter of
25 fact. In fact, I have not read that code.



t2 3g

1 Q Would you refuse the communication equipment if
2 somebody gave it to you?

3 A I would not.

4 Q All right. Am I correct in understanding that the
5 County Board of Supervisors has repeatedly turned down your
6 request for that communication equipment in your budget
7 request?

8 A In the previous years that the requests were made,
9 yes.

10 Q '77, '78, '79?

11 A Yes.

12 Q Do you need that communication equipment for other
13 purposes?

14 A As a matter of fact, yes. It would be very handy to
15 have it because of what I said yesterday, in that my staff
16 are all over the county, and sometimes they are really truly
17 out of communication with our office, when they are in their
18 cars.

19 Q Speaking of your staff, are they receiving training
20 on the mobile van that Mr. Shiffer talked about?

21 A I had a note they were out there yesterday, I
22 believe, some of them were out there yesterday.

23 Q You didn't know about that?

24 A Oh, yes. Of course I knew about it.

25 Q Okay. Are they going to be trained on the use of



2 4g
1 that van in going to these various locations to measure, to
2 be able to on-the-spot measure from these various devices?

3 A I understand that is what is intended, and I approve
4 of that.

5 Q That van does have excellent communication equipment,
6 does it not?

7 A Once you get to it, yes.

8 Q Do you know whether PG & E and your office are
9 working together in terms of communications?

10 A They are, and particularly during the last two weeks
11 there has been a real fervor of interaction.

12 (Applause)

13 JUDGE WOLF: We will have no hand-clapping here.

14 BY MR. NORTON:

15 Q Well, how much fervor of action has there been
16 prior to that on your part to get communications equipment?

17 A As as far asking PG & E for it, you mean, or --

18 Q Yeah.

19 A I don't believe we ever requested it of PG & E.

20 Q Nor of the State?

21 A I said what we got from the State.

22 Q No, you were talking about Civil Defense.

23 A That is right. That is what they provided to us.

24 Q As a matter of fact, the van, you don't believe
25 that they just called up the local Chevy dealer and ordered



t2 5g 1 that van, do you?

2 A I haven't the foggiest idea what they did.

3 Q Well, don't -- isn't that a rather sophisticated
4 van with a tremendous amount of sophisticated equipment in
5 it?

6 A So I have been told, and described, yes.

7 Q And don't you believe that they ordered that a long
8 time ago, not in the last two weeks?

9 A I hope that that is the case, yes, I indeed presume
10 so.

11 Q And just because it got there at this time doesn't
12 mean that they did it for this hearing to you, does it, Dr.
13 Mitchell?

14 A They are doing a lot more things than working with
15 the van. I hope you are aware of the fact that they have
16 also been discussing all the other kinds of activities going
17 on for monitoring in. There has been training of that nature
18 going on, too.

19 Q And you don't believe again, that they just got
20 those monitors, that they just now ordered them and got them,
21 do you?

22 A Of course not.

23 Q All right. And doesn't it make sense that as you
24 get to the point where you are going to load fuel, that you
25 start gearing these things up?



t2 6g
1 A Yes, of course.

2 Q And doesn't it also make sense, doctor, to train
3 people, the people who are going to be available at the time
4 you need them, if you need them, as opposed to some other
5 people who may or may not be there years down the road.

6 A Yes, I think that is a reasonable point. However,
7 you can't accomplish this in two weeks, I might point out.

8 Q And as far as you know, they are not loading fuel
9 in two weeks, are they, doctor?

10 A I hope not.

11 Q Now, you have a paragraph that you changed a little
12 bit about the County being inadequately prepared to evacuate
13 people from the LPZ, et cetera. You are not responsible for
14 evacuating people from the LPZ, are you?

15 A What I said was, that I am concerned about those
16 persons who might, for example, be bedfast, or require an
17 ambulance kind of vehicle. These things are of concern to me
18 because they are medical in nature.

19 Q But Dr. Mitchell, what I am getting at is you are
20 not the one who is responsible for evacuating the 65
21 permanent residents of the LPZ?

22 A What I was saying is that I am concerned about and
23 responsible for a group of people that are under my care.
24 Under the Home Health Agency, and under the Homemaker program,
25 people who are homefast or bedfast, and I would want to be



t2 7g 1 sure they could be evacuated.

2 Q Again, could you answer my question?

3 A Ask it again.

4 Q All right. You are not responsible for the
5 evacuation of the 65 permanent residents in the LPZ, are you?

6 A The actual physical transportation, no.

7 Q I take it, then, you are very concerned that there
8 may be someone out there that is bedridden and cannot move
9 themselves.

10 A I am concerned about that and the availability of
11 a vehicle like an ambulance to carry them out. Yes.

12 Q Have you gone out to the area with your staff
13 during the four years since 1977 to see if there are any such
14 people in the LPZ?

15 A In the LPZ, there is not one person in the LPZ. Go
16 one mile further, and I think we have something like 25.

17 Q There are no people in the LPZ that fit that
18 description, is that correct?

19 A At this moment, I believe not.

20 Q And isn't it a fact that the Sheriff is responsible
21 for evacuation of the LPZ?

22 A That is the plan.

23 Q Well, isn't that his legal responsibility in any
24 kind of emergency. If we had a train derailment with
25 chemicals or something, where people had to be evacuated in



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the County, it would be the Sheriff's responsibility to evacuate, would it not?

A As a matter of fact, not. In many cases, the CalTrans comes into this, the California Highway Patrol. We have had many exercises dealing with all kinds of incidents, and everybody has a certain role to play and the Highway Patrol is generally the lead on these kinds of things.

Q In the County area?

A Yes. They are part of our team in the County, yes.

Q Oh, they are part of your team?

A Yeah.

Q So you are prepared for such an event?

A Prepared for what event?

Q The one I just described, when I said if a train derailed and you had chemicals and you had to evacuate people, and you said, no, not the Sheriff, the Highway Patrol, they are part of our team.

A There are a whole group of individuals and agencies that have worked together dealing with chemical spills and this kind of thing.

Q And evacuation, correct?

A No evacuation has taken place.

Q You have never had to evacuate anybody?

A No.

Q All right. Are you prepared to do that in the case



t2 9g
1 of a chemical spill?

2 A I would hope so. I couldn't be positive on that,
3 though.

4 Q Have you had, in cases of practice, this teamwork
5 for chemical spills, have you had evacuation drills where you
6 have actually physically evacuated people?

7 A No.

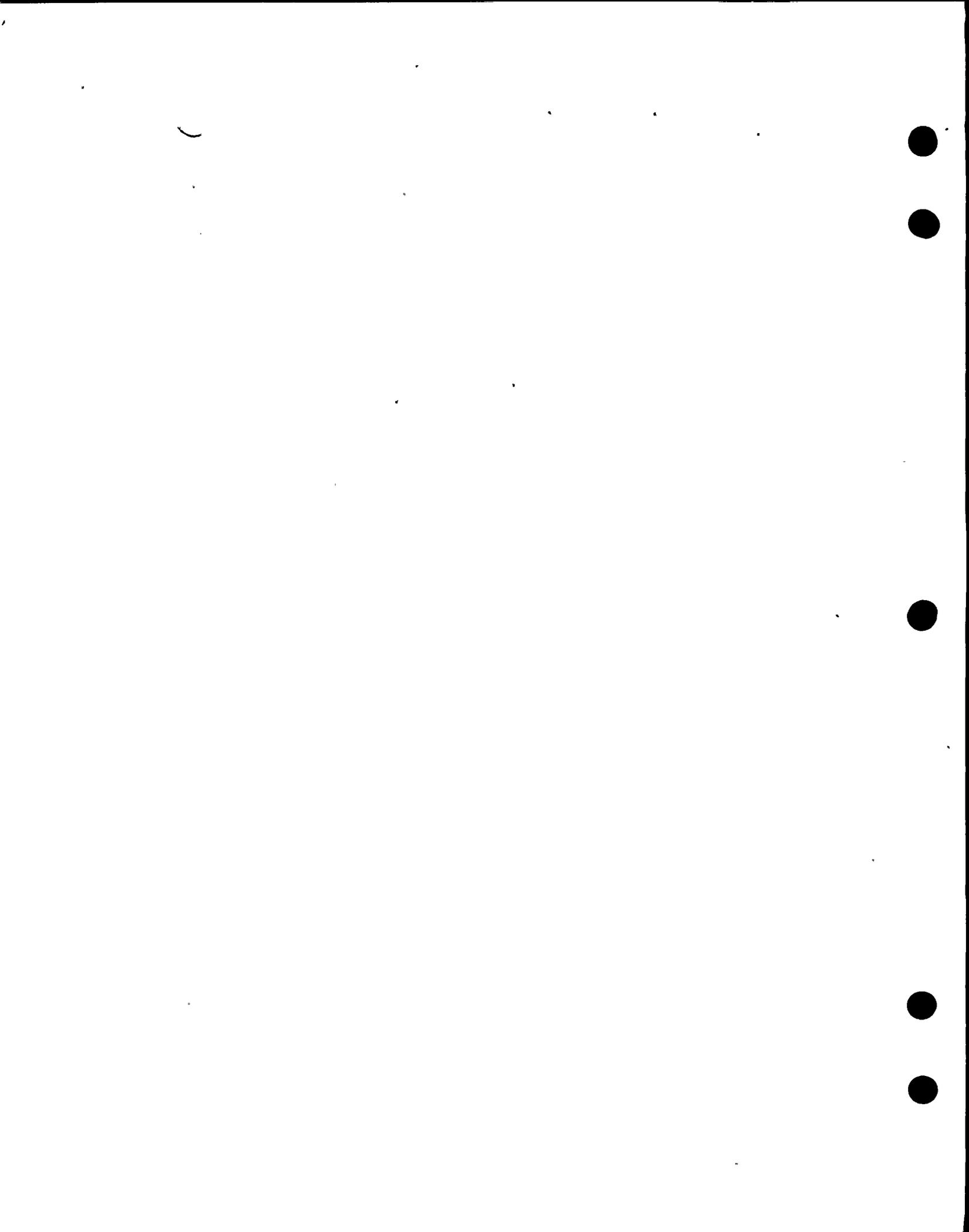
8 Q Isn't that a pretty rare exercise, as a matter of
9 fact, to evacuate a civilian population, if you will, in
10 practice drills, to physically evacuate?

11 A Are you talking abstractly or in regard to our
12 County?

13 Q I am talking in regard to throughout the United
14 States, to where you actually physically evacuate civilian
15 population in a practice drill, where there is no real
16 emergency, and I am not talking about the school fire drills
17 where the children walk out the door and then go back in. I
18 am talking about evacuation of a civilian population, 1,000
19 people, 2,000 people, whatever.

20 A As a matter of fact, in real drills, people are in
21 fact moved out of where they are, not only hospitals. I was
22 at the State Health Department recently, and I couldn't get
23 in because they were having a fire drill, and everybody had
24 to get out of the building, they were doing a real drill.

25 Q Okay. Yeah, again, I am talking about evacuating a



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1 civilian population, say, a quarter of a city or a half a
2 city, for a practice drill. Have you engaged in those kinds
3 of drills?

4 A Have I?

5 Q Yes.

6 A No.

7 Q Ever?

8 A Never.

9 Q Dr. Mitchell, are you aware that in the public
10 record at County Board of Supervisors meetings, that the
11 Applicant in this case, Pacific Gas and Electric, has offered
12 to aid the County in any way it can in preparation of its
13 County plan?

14 A In general, I understand that to be the case, yes.

15 Q All right. Then I will ask you again, why have you
16 not gone to them and asked for help with communication for
17 your vehicles?

18 A That is an interesting question. Maybe we should do
19 that.

20 Q Maybe you should.

21 Mr. Jorgensen, you are aware --

22 MR. BROWN: I think -- I believe -- Judge Wolf, I
23 believe the name is Mr. Jorgensen, as opposed --

24 MR. NORTON: I am sorry. I thought --

25 JUDGE WOLF: Mr. Jorgensen.



1 MR. NORTON: Mr. Jorgensen.

2 MR. JORGENSEN: Thank you, Mr. Norton.

3 BY MR. NORTON:

4 Q Mr. Jorgensen, you are a lawyer, right?

5 A Yes, I am.

6 Q So I can ask you if you have read the Government
7 Code, can't I?

8 MR. BROWN: No, he is here -- we object to that, of
9 course, because he is here not as an expert lawyer on the
10 witness stand. He is here in support of his testimony, which
11 are matters of fact.

12 WITNESS JORGENSEN: I am not appearing here today
13 as an attorney or expert on the law in the matter. I am here
14 to testify as to information that I have as a member of the
15 Board of Supervisors, and furthermore with respect to the
16 legal issues involved here, the County has hired a consultant
17 to inform us as to the consistency of our plans with those
18 legal requirements. Those plans have not been completed, and
19 I would rely on them in any event, and on our County Counsel,
20 rather than on my own legal knowledge for an answer to
21 questions like that.

22 JUDGE WOLF: I think, Mr. Norton, that the questions,
23 the cross-examination, should be limited to the written
24 testimony submitted by Mr. Jorgensen.

25 MR. NORTON: Well, how about his oral testimony?



1 Can we cross-examine him on that, Your Honor?

2 JUDGE WOLF: The oral testimony just now, you mean?

3 MR. NORTON: Particularly that yesterday.

4 JUDGE WOLF: No, I think we will limit it to his
5 written testimony. We can move to strike that, if you wish.

6 MR. NORTON: His oral testimony yesterday?

7 JUDGE WOLF: No, his testimony just now.

8 MR. NORTON: And I cannot cross-examine him on his
9 oral testimony yesterday?

10 JUDGE WOLF: You can cross-examine him on his oral
11 testimony yesterday, yes.

12 MR. NORTON: All right.

13 BY MR. NORTON:

14 Q You stated that you are a member of the Board of
15 Supervisors yesterday, did you not?

16 A (Witness Jorgensen) Yes, I did.

17 Q And you do know what your legal responsibilities as
18 that member of a Board of Supervisors are, do you not?

19 A I hope so.

20 Q All right. And one of those responsibilities, is
21 it not, is to keep in full force and effect any existing
22 County plan, is it not?

23 A I can't answer that. I am not sure what the purpose
24 of the question is.

25 Q Well, then if you can't answer that as a Supervisor



10970
1 and as a lawyer, you do not know whether you have a legal
2 responsibility as the County Board of Supervisors, to keep the
3 County plan in full force and effect? You can't answer that?

4 A I am not sure what plan you are referring to.

5 Q The County plan?

6 A What plan?

7 Q The nuclear emergency plan..

8 A We have lots of plans.

9 Q The emergency plan. I think that is the subject of
10 this hearing.

11 A I already testified yesterday that we have a plan
12 which is in effect technically. It has never been legally
13 rescinded, but it has never been implemented, and there has
14 been no action since the Three Mile Island accident in 1979
15 to implement it, update it, test it, train it, purchase
16 equipment or personnel under it.

17 Q Have you discussed with the Sheriff of your County
18 his ability to evacuate the LPZ?

19 A No, I have not. And I might say that --

20 Q Excuse me. I think you have answered the question.
21 You will have an opportunity to give --

22 MR. BROWN: Judge Wolf, he wanted to explain his
23 answer. He shouldn't be cut off like that.

24 JUDGE WOLF: Do you want to explain the answer, Mr.
25 Jorgensen?



1 WITNESS JORGENSEN: Yes, the normal procedure --

2 JUDGE WOLF: You may.

3 WITNESS JORGENSEN: Yes, sir. The normal
4 procedure is that we have an emergency services coordinator
5 who is responsible for emergency planning in this County, not
6 the Sheriff of San Luis Obispo County, and I rely on the
7 emergency services coordinator, the administrative office of
8 the County, and on the consultant who we have hired to prepare
9 the plans, for my information with respect to the overall
10 planning effort of the County.

11 BY MR. -NORTON: --

12 Q Mr. Jergensen, as a matter of fact, it is the
13 Sheriff --

14 A (Witness Jorgensen) Excuse me, Mr. Norton, my name
15 is Jorgensen.

16 Q Jorgensen, I am sorry, Mr. Jorgensen, as a matter
17 of fact, it is the Sheriff's responsibility to evacuate what
18 is called the LPZ, is it not?

19 A Under the 1976 plan, which as I mentioned has never
20 been fully implemented, the Sheriff would be called on to
21 evacuate the LPZ under the direction of an emergency operations
22 center, if that could be convened.

23 Q Are you trying to tell me that if Diablo Canyon
24 called the Sheriff directly and said, Sheriff, we have a
25 potential problem out here, we need you to evacuate the LPZ,



1 he would not do it?

2 MR. BROWN: I object. Mr. Jorgensen doesn't know
3 what the Sheriff would say on the telephone in response to a
4 telephone call that might come in from somebody else.

5 MR. NORTON: Excuse me, Your Honor. That is not a
6 proper objection at all. That is testimony by Mr. Brown. I
7 would like the witness to answer the question, not Mr. Brown.

8 MR. BROWN: Mr. Norton asked what would the Sheriff
9 say. We can have that read back, Judge Wolf, by the reporter
10 if we wish.

11 JUDGE WOLF: Read it back, would you, Mister
12 Reporter?

13 (Whereupon, the previous question, page 10971, line
14 23 through page 10972 line 1; was read back.)

15 MR. NORTON: Your Honor, you will not that I did
16 not ask him what the Sheriff would say. I asked him if the
17 Sheriff was called upon, is it his testimony that the Sheriff
18 would not respond and evacuate the people in the LPZ?

19 JUDGE WOLF: Well, Mr. Jorgensen, do you know what
20 the Sheriff would do if he were called upon? Do you have any
21 knowledge of that?

22 WITNESS JORGENSEN: No, I assume he would respond.
23 In the absence of any plans.

24 JUDGE WOLF: All right. Let us have the next
25 question.



1 BY MR. NORTON:

2 Q There is a County plan which the Sheriff, at least,
3 is operating under, is there not, Mr. Jorgensen?

4 MR. BROWN: Your Honor, I continue to object. Mr.
5 Jorgensen is here as Mr. Jorgensen, not as the Sheriff. If
6 Mr. Norton wants to ask the Sheriff these questions, I presume
7 the Sheriff is nearby, this is his County.

8 JUDGE WOLF: Well, I think he can ask whether or not
9 Mr. Jorgensen is aware of a plan that the Sheriff is
10 operating under. What the Sheriff would do or what other
11 implications of it would be; I don't think that he can
12 answer, but he can answer this question.

13 WITNESS JORGENSEN: The 1976 has a standard
14 operating procedure which calls for the Sheriff to have
15 responsibility in the Low Population Zone. It also refers
16 to a detailed and specific plan which the Sheriff would have
17 available which would talk about the actual specifics of
18 carrying out a plan such as that.

19 That detailed and specific plan that is referred to
20 in the SOP is not in the 1976 plan, and in consultation with
21 the emergency services coordinator, the emergency services
22 coordinator nor I are familiar with any detailed and
23 specific implementing plan for the LPZ. I heard the testimony
24 yesterday. There may be, you know, telephone conversation
25 agreements or letters, but as far as any official knowledge of



1 a specific plan for evacuation, no, other than that
2 reference in the SOP.

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1 Q You are not an expert on evacuation, are you?

2 A No, I am not.

3 Q And the Sheriff, I presume, would be more of an expert
4 on evacuation than you are, would he not?

5 MR. BROWN: I object to that. That is such wild
6 speculation. If we want to know what the qualifications and
7 expertise the Sheriff has, we have no idea of the basis that
8 he ran for Sheriff, or even if he was elected.

9 JUDGE WOLF: I will sustain the objection.

10 MR. NORTON: Fine.

11 BY MR. NORTON:

12 Q Mr. Jorgensen, I take it that you personally, as a
13 member of the Board of Supervisors, will cooperate with the
14 Applicant, Pacific Gas and Electric, in every way that you
15 possibly can to develop the County Plan, will you not?

16 A Yes, I think so.

17 Q You think so?

18 A I think there are some limitations there.

19 MR. BROWN: Judge Wolf, may I ask for a clarification
20 from Mr. Norton so Mr. Jorgensen's answer is clear?

21 Mr. Norton, were you referring to the 1976 Plan or
22 the Plan now being revised?

23 MR. NORTON: I said to develop a County Plan. I
24 presume they are in the process, as he testified, of developing
25 a County Plan.



2
1 JUDGE WOLF: Do you have something you want to offer,
2 Mr. Jorgensen?

3 WITNESS JORGENSEN: Yes.

4 JUDGE WOLF: You may.

5 WITNESS JORGENSEN: I would say that one of the most
6 important commitments that I have made as a member of the Board
7 of Supervisors is to develop the best possible emergency planning
8 for the protection of the people of San Luis Obispo County,
9 and in the capacity as a member of the Board of Supervisors,
10 I have done everything in my power to make sure that that
11 emergency planning takes place and to cooperate in every
12 respect, to make sure it is done properly and in as expeditious
13 a manner as possible.

14 BY MR. NORTON:

15 Q You have now the Draft Plan that was developed by
16 a consultant hired by the County in your hands, do you not?

17 A I have a Preliminary Draft Administrative Plan
18 which was distributed on May 1st, 1981.

19 Q May I see the cover of that, please? I see you
20 holding it up.

21 This has been circulated and comments received back
22 on it, has it not?

23 A Comments received back from whom?

24 Q Interested agencies.

25 A No, that is not correct.



3

1 Q It has not been circulated at all?

2 A It has been circulated. I received it sometime
3 after May 1st, and I believe that the other people on the
4 circulation list may have received it yesterday or today.
5 But if you are referring to other County departments, that is
6 the only thing I would have knowledge of.

7 Q Okay.

8 A And there certainly have not been comments.

9 Q Have you reviewed it?

10 A I have met with the Emergency Services Coordinator
11 and the consultant.

12 Q Excuse me. I asked you, have you reviewed the Plan?

13 A I have not completely reviewed the Plan. I have not
14 had adequate time to review it.

15 Q How much of it have you reviewed in the several weeks?

16 A I have looked at most of it. Most of it was already
17 contained in other documents which were prepared previously.

18 Q So you are then pretty well familiar with the content
19 of it?

20 A Generally speaking, yes.

21 Q Is it a better Plan than the existing Plan?

22 A It is more thorough than the existing Plan, and I
23 hope a better Plan than the existing Plan, to the extent that
24 it has been developed. It does not contain standard operating
25 procedures, which is actually the meat of any emergency plan.



4
1 And to that extent, it is not complete.

2 Q Is it more complete than the 1976 Plan? More
3 thorough?

4 A As far as it has been developed, yes, I hope so.

5 Q Then do you not think that it should be adopted
6 immediately if it is more complete and more thorough than the
7 1976 Plan?

8 A Well, no, because, first of all, it is a preliminary
9 draft, and under the procedures which we are required -- under
10 state law, we were required to develop an administrative
11 draft document within six months of the establishment of
12 emergency evacuation zones for the state.

13 Q Excuse me. Is that the state law that you couldn't
14 testify about when I first started questioning you?

15 A I am not sure what state law you are referring to.

16 Q But you are going to quote that law now?

17 A No, the consultants and our staff indicated to us
18 that we had six months in which to prepare a preliminary
19 draft Administrative Plan, and we are on schedule. It will
20 come before the Board of Supervisors on May 26th, with an
21 action to receive and transmit it to the State and Federal
22 Government for their review, their comments, any proposed
23 changes which they feel are necessary.

24 It will come back to the Board of Supervisors. We
25 will hold public hearings, and then, hopefully, it will be



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1 adopted. And that is the procedure that has been established
2 all the way along.

3 So it is meaningless to say that this document should
4 be approved and adopted immediately, because it is not an
5 operational document.

6 Q But it is better than the one you have?

7 A I certainly hope so.

8 Q Incidentally, you testified yesterday -- I think you
9 surmised; you were surmising, and I didn't object to your
10 surmising, about what had happened prior to your being on the
11 Board. I think you said, subsequent to TMI and prior to your
12 appointment on the Board, you surmised what happened.

13 Who appointed you to the Board of Supervisors?

14 A The Governor of the State of California.

15 Q That is the same Governor Brown that is in these
16 proceedings?

17 A That is right.

18 Q Is it not a fact that you relayed to the Governor
19 your opposition to Diablo Canyon prior to your appointment to
20 the Board of Supervisors?

21 A No, that is not a fact.

22 Q You never had any such discussion with the Governor,
23 or any of his representatives?

24 A No, I did not.

25 Q Were you not, in fact, actively engaged in opposition



6

1 to Diablo Canyon prior to your appointment?

2 A No, I was not.

3 Q Have you signed advertisements in opposition to
4 Diablo Canyon?

5 A I have signed advertisements and participated as an
6 individual in many, many activities in the community, some of
7 which relate to Diablo Canyon. To my knowledge, I have
8 attempted to support those issues where it encouraged public
9 involvement, particularly with respect to specific issues
10 like emergency planning, and other things.

11 Q Is it not a fact that you are opposed to the operation
12 at Diablo Canyon?

13 A Not necessarily.

14 Q Are you in favor of the operation at Diablo Canyon?

15 A Not at this time.

16 Q Do you not feel that your involvement or your personal,
17 as opposed to your Board of Supervisor and as opposed to your
18 legal, that your personal feelings towards Diablo Canyon
19 could in any way affect your decision-making ability as
20 respects the Emergency Plan?

21 A No, I don't feel so, particularly in light of the
22 position that I took when I ran for the Board of Supervisors
23 and was elected, which was that I would not use my office
24 as a member of the Board as a platform for my personal feelings
25 on the matter, because the Board of Supervisors does not have



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1 authority to make a decision on whether or not the Plant ought
2 to be licensed.

3 I made it very clear that my primary responsibility
4 would be to assure that adequate emergency plans were developed
5 in the event that Diablo Canyon was licensed, and I have
6 repeated that statement many times, and I believe that my
7 record on the Board of Supervisors clearly indicates that that
8 has been my position.

9 Q Now, your affidavit does not go specifically to
10 the LPZ, the six-mile ring, land ring, around Diablo Canyon,
11 does it?

12 A No, it does not.

13 Q Your affidavit goes to an emergency plan for the
14 whole County; does it not?

15 A Yes, it goes to the existence of actual preparedness
16 under an emergency plan.

17 Q Also, when you say in your affidavit that the new
18 Plan is only at the concept stage, I take it that now that
19 the draft is out, it is at the draft stage as opposed to the
20 concept stage; correct?

21 A No, that is not entirely correct.

22 The document which is before us is a preliminary
23 draft Administrative Plan. The second phase of the planning
24 process, which is beginning right now, and will go concurrently
25 with the state and federal review of the Administrative



8
1 Draft Plan, will be to develop standard operating procedures,
2 equipment, training, testing and drills, and that is called
3 Phase 2, and that is where the actual implementation of the
4 Plan will occur.

5 So Phase 1, the preliminary draft administrative
6 document, is an administrative document and, to that extent,
7 largely conceptual.

8 Q Mr. Jorgensen, isn't it a fact that you have been
9 informed that the SOP's which you are talking about will be
10 completed in four to six weeks?

11 A No, I have not.

12 Q You have never had any such conversation with any-
13 body?

14 A I have consulted with the Emergency Services
15 Coordinator, and he has informed me that they will be preparing
16 SOP's, preliminary SOP's, but obviously the standard operating
17 procedures cannot be formally adopted until the Administrative
18 Plan is approved.

19 I have some concerns about what the purpose of
20 state and federal review and public hearings is if it is
21 assumed that the procedures have already been adopted.

22 MR. NORTON: Excuse me, Your Honor. I have to ask
23 for a 10-minute break. It is an urgent matter. I am sorry.

24 JUDGE WOLF: You may have 10 minutes.

25 (Recess.)



1 JUDGE WOLF: On the record.

2 Mr. Norton, are you ready now?

3 MR. NORTON: Yes.

4 JUDGE WOLF: You may proceed.

5 MR. NORTON: I apologize for the interruption,
6 Your Honor.

7 BY MR. NORTON:

8 Q Mr. Jorgensen, the schedules that you -- the timing
9 and so on that you've bandied around, I take it, again, your
10 personal opinion, they are not schedules that have been
11 established by a formal vote of the Board of Supervisors?

12 A (Witness Jorgensen) First let me clarify something
13 that was said prior to the break and that is that in my
14 conversation with the emergency services coordinator, he did
15 indicate that draft SOPs would probably be developed by
16 sometime in August. I don't have any firm date on that.

17 It is not my opinion in the sense that there is
18 a chart in the emergency services coordinator's office indi-
19 cating the time lines for the various planning phases that
20 I've discussed and I believe that my testimony has been
21 accurate with respect to those time lines. All of the Board
22 of Supervisors, to my knowledge, is familiar with that chart
23 and the time lines.

24 Q And did you also testify a little earlier, that
25 the Sheriff had absolutely no detailed plans whatsoever for



1 evacuating the LPZ?

2 A No; I did not testify to that.

3 Q Then he does have detailed plans.

4 A I said that I do not know of any detailed plans
5 nor does the emergency services coordinator, as of yesterday.

6 Q Have you asked the Sheriff he has detailed plans
7 for the LPZ?

8 A No, I have not asked the Sheriff. As I testified
9 previously, the coordination -- the responsibility for
10 coordination of emergency planning rests with the emergency
11 services coordinator, not with the Sheriff.

12 Q But the responsibility for the evacuation of the
13 LTZ rests with the Sheriff?

14 A I don't know that to be the case, except techni-
15 cally --

16 Q Have you read the plan that is in existence?

17 A Yes, I have read the 1976 plan.

18 Q Does it not say that the Sheriff is responsible for
19 evacuating the LPZ?

20 A Under certain circumstances, yes. But as I
21 testified, earlier, that plan is not being relied on by our
22 consultant or by the emergency services coordinator and has
23 not been implemented and it makes reference to certain --
24 The plan itself makes reference to additional specific detailed
25 information on how an evacuation of the LPZ might be



1 accomplished. I am not aware of that.. It is not in the plan.
2 This is the emergency services coordinator's copy of the plan.
3 It is not in there. He has no personal knowledge of any
4 such plan and none has ever been given to me.

5 Q So, I take it then that you believe that the
6 Sheriff has no such detailed plan?

7 A No, I did not testify to that. I do not know.

8 Q So, if you don't know, you can't testify that there
9 isn't anything, right?

10 A I didn't testify that there wasn't.

11 Q Okay.

12 (Pause)

13 MR. NORTON: We have no further questions of this
14 panel.

15 JUDGE WOLF: Thank you. Mr. Reynolds, Mr. Fleisch-
16 aker. Mr. Reynolds, are you prepared to cross examine, here?

17 MR. REYNOLDS: I only have one quick question for
18 Mr. Paulus.

19 CROSS EXAMINATION

20 BY MR. REYNOLDS:

21 Q Mr. Paulus, attached to your testimony is Exhibit
22 A is a copy of the February 13, 1979 letter of understanding
23 between CDF and PG&E. Is that correct?

24 A (Witness Paulus) Yes, that's correct.

25 Q Under that letter of understanding, isn't it a fact



1 that the parties agreed that the basic training and radiation
2 protection would be provided by PG&E personnel?

3 A That's correct.

4 MR. REYNOLDS: I have no further questions.

5 JUDGE WOLF: That completes your examination, Mr.
6 Reynolds?

7 MR. REYNOLDS: Yes, it does.

8 JUDGE WOLF: Thank you.

9 A Mr. Olmstead?

10 MR. OLMSTEAD: I have no questions, sir.

11 JUDGE WOLF: Thank you.

12 Do you have any redirect, Mr. Brown?

13 MR. BROWN: Yes, we do, Judge Wolf.

14 REDIRECT EXAMINATION

15 BY MR. BROWN:

16 Q Mr. Jorgensen, if I may ask you several brief
17 questions? I would like to make certain that the record
18 is absolutely clear with respect to the existing plan, which
19 is the one I believe you testified has not been implemented
20 and the new plan.

21 Is it a fair characterization to say that the 1976
22 plan was passed and adopted by the County Board of Supervisors
23 with the expectation that it would be implemented?

24 MR. NORTON: Object. This man has no idea what
25 the Board of Supervisors in 1976 thought. He was not a



1 member of that Board at that time. It is pure speculation.

2 MR. BROWN: I'll accept that and withdraw the
3 question.

4 BY MR. BROWN:

5 Q Is it your understanding that the reason that now
6 the 1976 plan is not being implemented and that appropriations
7 aren't coming forth for it, because of the elements of that
8 plan are unsatisfactory and that a new plan is required?

9 A Yes, that is my understanding.

10 Q And therefore, even though the plan exists on
11 paper, your Board, the County Board, is not appropriating the
12 funds to implement it at this time?

13 A That's correct.

14 Q And are we correct that the reason we're not
15 appropriating the funds to implement that plan is that what-
16 ever resources the County has are being directed toward
17 implementing the new plan which is now under development?

18 A That's correct.

19 Q Could you please state for the record, to clarify
20 one other point concerning your own term of office. It was
21 brought up earlier this morning, I believe, that you were
22 appointed to the Board by Governor Brown. Were you subsequent-
23 ly elected to the Board of Supervisors and are you now, in
24 fact, an elected member?

25 A Yes, sir. I was appointed to the Board on March



1 15, 1980 and for those who are not residents of California,
2 I would like to point out that under the laws of the State
3 of California, when a vacancy occurs on the Board of Super-
4 visors, the Governor of the State appoints a replacement. I
5 replaced a gentleman who retired for health reasons.

6 In June of 1980, three months after I was appointed,
7 I ran for election in a primary and was elected to a four
8 year term beginning January 1, 1980, the first of this year,
9 so I have a four year term to complete.

10 Q Thank you.

11 Dr. Mitchell, I've got a couple of questions for
12 you. A question came up on cross examination by Mr. Norton
13 with regard to whether there was anyone bedridden or other-
14 wise sick and not ambulatory at this time.

15 You weren't trying to suggest, I take it, that
16 after this power plant -- after Diablo Canyon is in line,
17 there would necessarily not be anyone who is bedridden or
18 not ambulatory in this proximity of the plant, were you?

19 A (Witness Mitchell) No. As a matter of fact, I
20 hope that -- One of the things that I suggested -- I think
21 it's very important that we keep a constant census of know-
22 ledge with respect to the people who live nearby there and
23 who would require special needs, as I've indicated, for
24 transportation or whatever. I think it's imperative that we
25 be aware all the time of that kind of information.



1 Q Mr. Norton, also brought out the questions to you
2 that you have never gone to PG&E as a -- in your official
3 capacity and requested that PG&E either buy or pay for the
4 communications equipment which you've identified as being
5 lacking. Could you please explain for the benefit of the
6 Board why you did not go to PG&E and ask them to pay for or
7 buy that equipment?

8 A First of all, I didn't realize that they were being
9 quite so willing to do it. Second, I have no legal author-
10 ity to do it. I would have to go through the Board of
11 Supervisors to get permission to do this kind of thing and
12 it's not in our budget and officially I couldn't do this. It
13 is a delightful thought and I hope to carry it forward.

14 (Laughter).

15 Q Mr. Paulus, to clarify your testimony with respect
16 to when there would be preparedness of the Forestry Department.

17 Is it your testimony that after a new agreement is
18 signed between the California Department of Forestry and PG&E
19 there will, in fact, be the necessary preparedness?

20 A (Witness Paulus) That's correct.

21 Q And until that time, you could not state that
22 such preparedness exists. Is that correct?

23 A That's correct. Until we have had time to examine
24 the pre-fire plan and review that in detail and test that
25 pre-fire plan.



1 Q And execute the agreement, I assume?

2 A And execute the agreement, yes.

3 MR. BROWN: I have no further questions, Judge
4 Wolf.

5 JUDGE WOLF: Thank you.

6 MR. NORTON: Your Honor, I have some based on the
7 last questions.

8 JUDGE WOLF: Would you reserve for a minute. I
9 want to ask the Board --

10 MR. NORTON: Certainly.

11 JUDGE WOLF: -- if they have any questions. We
12 may be able, then, to finish all questions. Do you have
13 any questions, Mr. Bright? Dr. Klein, do you have any ques-
14 tions?

15 JUDGE KLEIN: No questions.

16 JUDGE WOLF: Now, if you will?

17 MR. NORTON: Yes.

18 RECROSS EXAMINATION

19 BY MR. NORTON:

20 Q Mr. Paulus, the signing of a letter of agreement
21 will have nothing to do with your preparedness, will it? It
22 is the training, the equipment, etcetera. When the letter is
23 signed, has nothing to do with it, does it?

24 A (Witness Paulus) I think the signing of the
25 letter would indicate to me that yes we are prepared.



1 Q But, you also could know you're prepared, if your
2 superior, for example, refuses to let you sign the letter
3 and you know you're prepared --

4 MR. BROWN: We object. There is nothing whatsoever,
5 Judge Wolf in this record dealing with an effort by any
6 superior to preclude Mr. Paulus from executing the jobs of
7 his office.

8 MR. NORTON: Excuse me. May I ask my question?
9 Your Honor, I was in the middle of my question when I got a
10 speech from Mr. Brown.

11 JUDGE WOLF: ...You may complete the question--and then
12 I'll rule on it.

13 BY MR. NORTON:

14 Q The signing of the letter isn't what's important.
15 It's the training and the equipment that's important. Isn't
16 that true, Mr. Paulus?

17 A That's correct.

18 Q And whether the letter is ever signed or not, has
19 nothing to do with whether or not you're prepared. What that
20 has to do with is the training that you've requested and the
21 equipment that you have requested, in the pre-plan. I
22 appreciate that.

23 A I'm a little confused by your question.

24 Q All right. Let me put it this way. You stated
25 that you are very happy with the radiation training that the



1 people have got, correct? You're very happy, now, with the
2 equipment. That's changed. That's no problem. So the only
3 thing now is the pre-plan which you're getting a draft of
4 on June 5th, I believe, you testified. You would hope to
5 have that finalized and approved by around the first of July.

6 Once that's done, whether there is ever a letter
7 signed, has nothing to do with the preparedness of CDF to
8 fight a fire, right?

9 A I don't quite understand how you put those two
10 issues together.

11 Q That's my problem.

12 A Signing the letter of agreement or the letter of
13 understanding does not -- would not necessarily indicate one
14 or the other.

15 Q That's my point. So, the signing of the letter is
16 not important. What's important is the equipment and the
17 training.

18 A That's correct.

19 Q Thank you.

20 MR. NORTON: I have nothing further.

21 JUDGE WOLF: Thank you.

22 Mr. Reynolds?

23 MR. REYNOLDS: I have nothing further.

24 JUDGE WOLF: Mr. Olmstead, do you have any
25 questions?



1 MR. OLMSTEAD: No questions.

2 JUDGE WOLF: If there are no further questions,
3 the panel may be excused.

4 (Whereupon, the panel was excused.)

5 MR. BROWN: Thank you, Judge Wolf.

6 MR. LANPHER: Judge Wolf?

7 JUDGE WOLF: Yes.

8 MR. LANPHER: Is it agreeable for this panel to
9 be released? They have jobs to return to.

10 JUDGE WOLF: Let me just ask. Anyone have any
11 reason why the members of the last panel should remain here?...
12 Mr. Olmstead?

13 MR. OLMSTEAD: No, sir.

14 JUDGE WOLF: Mr. Reynolds?

15 MR. REYNOLDS: No..

16 JUDGE WOLF: Mr. Norton?

17 MR. NORTON: We'd be happy to have them go work
18 on the plant.

19 (Laughter.)

20 JUDGE WOLF: They may be excused.

21 MR. LANPHER: Can we take a couple of minute break?

22 JUDGE WOLF: Yes, you may. Off the record.

23 (A brief recess.)

24 ////

25 (Testimony begins on the next numbered page.)



T5

1 JUDGE WOLF: Mr. Olmstead, are you ready to present
2 the Staff's written testimony?

3 MR. OLMSTEAD: Yes, sir. I have had the Staff
4 witnesses on this contention take their seats. I will ask
5 them to stand so they can be sworn. The one seated next to
6 you is Bart Buckley.

7 JUDGE WOLF: I beg your pardon, I didn't get the name.

8 MR. OLMSTEAD: It is Mr. Bartholomew C. Buckley.
9 The gentleman in the middle is Mr. John R. Sears, and the
10 gentleman seated nearest me is G. Norman Lauben. So I would
11 like to have them stand and be sworn, please.

12 JUDGE WOLF: Raise your right hand, please.
13 Whereupon,

14 BARTHOLOMEW C. BUCKLEY

15 JOHN R. SEARS

16 G. NORMAN LAUBEN

17 were called as witnesses, and having been duly sworn, were
18 examined and testified as follows:

19 JUDGE WOLF: You may be seated.

20 DIRECT EXAMINATION

21 BY MR. OLMSTEAD:

22 Q Mr. Lauben, I have in front of me, and I believe you
23 have in front of you, a document entitled, "Testimony of G.
24 Norman Lauben." Do you have that document?

25 A (Witness Lauben) Yes, I do.



2
1 Q And I ask you if that is the testimony you prepared
2 to be presented in this proceeding?

3 A Yes, it is.

4 Q And do you have any additions or corrections to make
5 to that testimony?

6 A Yes, sir, I do. On Page 4 of my testimony, Line 84,
7 in the middle of the line there is a number "10." I would like
8 to change that number to "20."

9 Q Very good. Do you have additional changes or
10 corrections?

11 A I have no additional changes or corrections to the
12 testimony. However I do have a change in my --

13 Q I will get there.

14 Okay. Attached to your testimony, at Page 11, is
15 a Statement of Professional Qualifications, Norman Lauben. I
16 ask you if that is a statement of your professional qualifica-
17 tions?

18 A Yes, sir, it is.

19 Q And do you have any additions or corrections to that?

20 A Yes, I do.

21 On Line 241, Page 11, which is statement of my
22 qualifications, there should be inserted the word after
23 "reactor," and that word is "safety."

24 Q Do you have any additional corrections to make?

25 A No, sir, I do not.



3
1 Q Mr. Lauben, I ask you if the testimony that you
2 prepared for this proceeding is true and correct, to the best
3 of your knowledge and belief?

4 A Yes, it is.

5 MR. OLMSTEAD: Mr. Chairman, I move that the testimony
6 and professional qualifications of G. Norman Lauben be bound
7 into the transcript as if read.

8 JUDGE WOLF: Are there any objections to the receipt
9 of the testimony of G. Norman Lauben in evidence?

10 MR. LANPHER: Judge Wolf, this is Mr. Lanpher for
11 Governor Brown. First, as a preliminary matter, I am going
12 to be conducting the cross-examination of Mr. Lauben, and my
13 colleague, Mr. Brown, will be conducting the examination of
14 the other two Staff witnesses.

15 I would like to have the opportunity, before passing
16 on objections, to conduct some limited voir dire of Mr. Lauben.

17 JUDGE WOLF: You may do that.

18 VOIR DIRE EXAMINATION

19 BY MR. LANPHER:

20 Q Mr. Lauben, directing your attention to your State-
21 ment of Professional Qualifications, you have stated that you
22 have worked directly on reactor safety matters, including
23 ECCS performance review and LOCA analysis.

24 Now, could you describe your work on ECCS performance
25 review, please?



4
1 A Yes. It has been my duty off and on for 13 years,
2 since I joined the Commission, to review the analysis methods
3 and the analyses performed by Applicants and submitted by
4 reactor vendors, in support of their safety analysis for
5 various plant applications and, in addition, generic reviews
6 on the particular evaluation models, in particular ECCS that
7 they have submitted.

8 Q Would these reviews be to make sure that the single-
9 failure criteria is met, so that if there is a failure, then
10 another failure, that regulatory requirements will, indeed, be
11 met?

12 MR. NORTON: Excuse me, Your Honor, I object to
13 the question, because it is not proper voir dire, but in
14 addition to that, Mr. Lanpher says, are these reviews to,
15 and then he asks a singular question, as if that is all they
16 were for, and if the man says "yes," it would imply that it
17 wasn't for anything else.

18 It is just the form of the question I object to in
19 that manner. I know he didn't mean that, but that is the way
20 the question was asked.

21 MR. LANPHER: Let me rephrase the question.

22 JUDGE WOLF: You may do that.

23 BY MR. LANPHER:

24 Q Would these reviews typically, Mr. Lauben, be to
25 take the safety analysis reports supplied by an Applicant and



5
1 perform a review of that?

2 A Such analysis would be performed by the Staff, but
3 that is not the type of analysis that I personally was involved
4 in. I did not involve myself in single-failure reviews.

5 Q Okay. Now, you also state in your Statement of
6 Professional Qualifications that you worked on LOCA analysis.
7 Do you have anything additional to describe as to what that
8 work involved, sir, or did your previous answer already cover
9 that?

10 A Yes, it did.

11 Q Now, you also referenced that you have developed
12 or worked on the development of a computer program used for
13 transient fuel pin thermal analysis... Could you describe what
14 that work involved?

15 A Yes. I was the actual computer programmer and
16 engineer who did the work on developing the Code, programming
17 it, checking it out, and using it for various reactor safety
18 analyses.

19 Q Now, prior to 1968, you were not with the Nuclear
20 Regulatory Commission; is that correct?

21 A No, sir, I was not.

22 Q But you were working in nuclear-related matters for
23 a number of years prior to '68; is that correct?

24 A Yes.

25 Q Could you describe your nuclear-related work, please?



6
1 A Yes. I started out in the summer of 1967 as an
2 engineer at the Savannah River Plan in Aiken, South Carolina,
3 doing pilot plant work there. In 1968, I joined the National
4 Advisory Committee for Aeronautics, which subsequently became
5 the National Aeronautics and Space Administration.

6 I worked there in various engineering capacities.
7 I attended a nine-month school in reactor technology and worked
8 on the start-up and pre-operational testing of the Pembroke
9 nuclear facility in Sandusky, Ohio.

10 After that, I joined, in 1962, Atomics International,
11 Division of North-American Aviation, which subsequently became
12 Rockwell International.

13 At that time, I worked on the sodium reactor
14 experiment in Santa Susana, California, and, in addition, was
15 the Chief Project Engineer on the sodium fires experiment
16 in support of reactor safety for the Fast Breeder Reactor
17 Program.

18 Q Now, you have two degrees in chemical engineering,
19 I believe, but not a degree in nuclear engineering; is that
20 correct?

21 A That is correct. I hate to show my age, but at
22 that time, there were very few degrees in nuclear engineering
23 given out.

24 Q Fair enough.

25 Have you taken any courses in nuclear-related work?



7
1 A Yes, I have. I took one course in undergraduate
2 school, one course in graduate school, and, as I pointed out, a
3 nine-month course given by NASA, which included reactor physics,
4 safety; a rather comprehensive course. It was patterned after
5 the Oak Ridge School reactor technology course.

6 Q Now, Mr. Lauben, did you work on WASH-1400?

7 A No, sir, I did not.

8 Q Were you one of the official peer reviewers of
9 WASH-1400?

10 A No, sir, I was not.

11 Q Did you testify regarding the adequacy of WASH-1400
12 before the Lewis Committee, the Reactor Assessment Overview
13 Group?

14 A No, sir.

15 Q Have you participated in any plant-specific or site-
16 specific probabilistic risk assessments?

17 A I have participated in the relative-risk assessments
18 for low-power operation for Diablo Canyon, for Sequoia, and
19 for the restart of TMI-1.

20 Q Now, in the course of those three projects you just
21 referred to, have you done any fault tree or event tree analysis?

22 A Only to a very limited degree, and the reason why
23 it was only done to a very limited degree is, if one is
24 engaged in relative risk assessment, it isn't necessary to
25 go through a complete fault tree analysis.



8
1 I should also point out that don't obviously work
2 in a vacuum, and I had available to me the expertise of people
3 in the Commission who are quite familiar with these methods.

4 Q Have you personally prepared fault tree or event
5 tree analyses?

6 A Not of a detailed sort that would appear in WASH-1400.

7 Q Then would it be fair to say that you would not
8 consider yourself to be an expert in fault tree and event
9 tree analyses?

10 A No, I am not.

11 Q Did you prepare the introductory material in SER
12 Supplement 10 relating to the risk of low-power operation at
13 Diablo Canyon?

14 A Yes, I did. I prepared the original and, of course,
15 it went through peer and management review.

16 MR. OLMSTEAD: Excuse me. Would you identify for
17 the record what page number you are referring to?

18 MR. LANPHER: I certainly will. Pages 2 and 3 of
19 SER Supplement 10, the bottom two-thirds of Page 2 and the top
20 two-thirds of Page 3.

21 BY MR. LANPHER:

22 Q Is that what you were referring to, Mr. Lauben?

23 A Yes, sir.

24 MR. LANPHER: That completes my voir dire questions,
25 Judge Wolf. Governor Brown does have an objection to portions



9
1 of Mr. Lauben's testimony. I can state them for the record
2 now, if that would be appropriate.

3 JUDGE WOLF: Would you repeat the last part of your
4 sentence?

5 MR. LANPHER: Governor Brown does have objections
6 to portions of Mr. Lauben's prepared direct testimony, and I
7 can state those objections for the record, or I can wait
8 until after Joint Intervenors have gone forward, if you would
9 prefer.

10 JUDGE WOLF: You can bring them up later, then.

11 MR. OLMSTEAD: ~~Excuse me, Mr. Chairman.~~

12 JUDGE WOLF: Yes.

13 MR. OLMSTEAD: I would object to that, because this
14 is obviously an objection based on the professional qualifica-
15 tions of the witness. If he is going to challenge that, I
16 want to hear what the objections are and pose any additional
17 questions I might have to cover that objection.

18 JUDGE WOLF: I didn't understand that he was
19 challenging his professional qualifications.

20 MR. LANPHER: Yes, Mr. Olmstead is correct.

21 The basis for my objection to portions of this
22 testimony is that Mr. Lauben, based on the voir dire, is not
23 an expert in probabilistic risk assessment, and thus, sub-
24 stantial portions of his testimony -- I would be happy to
25 delineate those precise portions -- deal with probabilistic



1 risk assessment, and thus, I do not believe he is qualified
2 to sponsor that testimony. The portions --

3 MR. NORTON: Excuse me, Your Honor.

4 MR. LANPHER: May I complete my statement, Judge
5 Wolf?

6 JUDGE WOLF: Yes. Let him, Mr. Olmstead, complete
7 that.

8 MR. OLMSTEAD: That was Mr. Norton, and I would
9 object to Mr. Norton objecting to my objection.

10 JUDGE WOLF: Well, in any event, we will allow
11 Mr. Lanpher to complete his statement.

12 MR. LANPHER: What I was about to do, if it is
13 appropriate with the Board, is to go through Mr. Lauben's
14 testimony, so everyone will know precisely what portions
15 Governor Brown is objecting to.

16 JUDGE WOLF: Yes. Will you do that?

17 MR. LANPHER: Yes.

18 I object on Page 2 to the Answer from Lines 33
19 through 44. It all deals with probabilistic risk assessment;

20 I object to the Answer at the bottom of Page 2 and
21 continuing on Page 3, Lines 47 through 59;

22 The bottom of Page 3, that Answer, beginning at
23 Line 63 and continuing through Line 76. I object to all
24 portions, because it deals with probabilistic risk assessment,
25 except that we do not object to those calculations related



11 1 to the calculation of the reduced fission product inventory;

2 On Page 4, we object to the last three words in
3 Line 85, and the next three lines. In other words, also
4 Lines 86 through 88;

5 On Page 5, Governor Brown objects to the Answer
6 beginning at Line 121 and continuing to Line 124;

7 On Page 7, beginning at Line 156, the last four words
8 of that line, "Because of the time. . ." continuing through the
9 end of that Answer, at Line 162;

10 And the next Answer, at the bottom of Page 7, Lines
11 168 and 169;

12 On Page 8, the last word in Line 178, continuing
13 through the end of that Answer, at Line 181;

14 Further down that page, Lines 185 through 188;

15 On Page 9, we object to Lines 200 through 206, and
16 also Lines 214 and 215.

17 That completes the delineation of those portions
18 of Mr. Lauben's testimony that the Governor objects to.

19 MR. OLMSTEAD: Mr. Chairman, I want to be sure that
20 I understand this, so I would ask the Board to verify with
21 the Governor's Counsel that the basis for this objection is,
22 they are arguing that all of those sections of the testimony
23 are based on probabilistic risk assessment? Is that the
24 basis for the objection?

25 JUDGE WOLF: That was what I understood.



1 Is that correct?

2 MR. LANPHER: That is correct. That it involves
3 probabilistic risk assessment; that this gentleman is not an
4 expert in that. He has not done risk studies.

5 Well, I have set forth the bases.

6 MR. OLMSTEAD: With that understanding, Mr. Chairman,
7 I would like to ask the witness a few questions following up
8 on the questions Mr. Lanpher asked.

9 JUDGE WOLF: You may do that, Mr. Olmstead.

10 DIRECT EXAMINATION (Continued)

11 BY MR. OLMSTEAD:

12 Q Mr. Lauben, did you do a probabilistic risk assess-
13 ment in preparing this testimony?

14 A Yes, I did.

15 Q Did you do a relative risk assessment?

16 A Yes, I did.

17 Q Could you describe for us what the difference is
18 between those two?

19 A Well, a relative risk assessment is to determine --
20 in this particular case, was to determine what the relative
21 risk of low-power operation was for a short period of time,
22 compared to full-power operation for an extended period of
23 time.

24 Q And in doing a relative risk assessment, what kinds
25 of numbers do you need?



1 A Well, certain things can be assumed to occur whether
2 the event occurs at low power or whether it occurs at high
3 power. The event trees that were referred to by Governor
4 Brown's attorney are assumed to apply in large measure to
5 events at high power or events at low power.

6 Therefore, one need not go through an entire detailed
7 fault tree analysis.

8 Q So it is possible to do a probabilistic risk assess-
9 ment without an entire fault tree analysis; is that correct?

10 A Yes, that is correct.

11 Q And have you done those types of assessments before?

12 A Yes, I have.

13 Q Many times?

14 A I did them several times for the cases that I mentioned.

15 I also did them with people who are on the Probabilistic
16 Analysis Staff at the NRC. I asked them to review what I had
17 done.

18 Q Very good. And have you briefed the Commission on
19 these matters with regard to low-power testing in license
20 applications?

21 A I did not personally brief the Commission. However,
22 I helped prepare a brief that was presented in the matter of
23 issuing Sequoia a low-power license in January, 1980.

24 MR. OLMSTEAD: Mr. Chairman, I think that Mr. Lauben
25 is adequately qualified for the type of risk analysis that



1 is done in this testimony. He is relief on by the Office of
2 Nuclear Reactor Regulation to do this very type of analysis,
3 and I think that the objection tendered by Mr. Lanpher is
4 inappropriate.

5 MR. REYNOLDS: Judge Wolf, may I be heard?

6 JUDGE WOLF: Yes.

7 MR. REYNOLDS: I would like to ask Mr. Lauben just
8 one or two questions.

9 JUDGE WOLF: You may.

10 VOIR DIRE EXAMINATION

11 BY MR. REYNOLDS: CROSS EXAMINATION

12 Q You stated that you prepared the risk analysis in
13 Sup 10; is that correct?

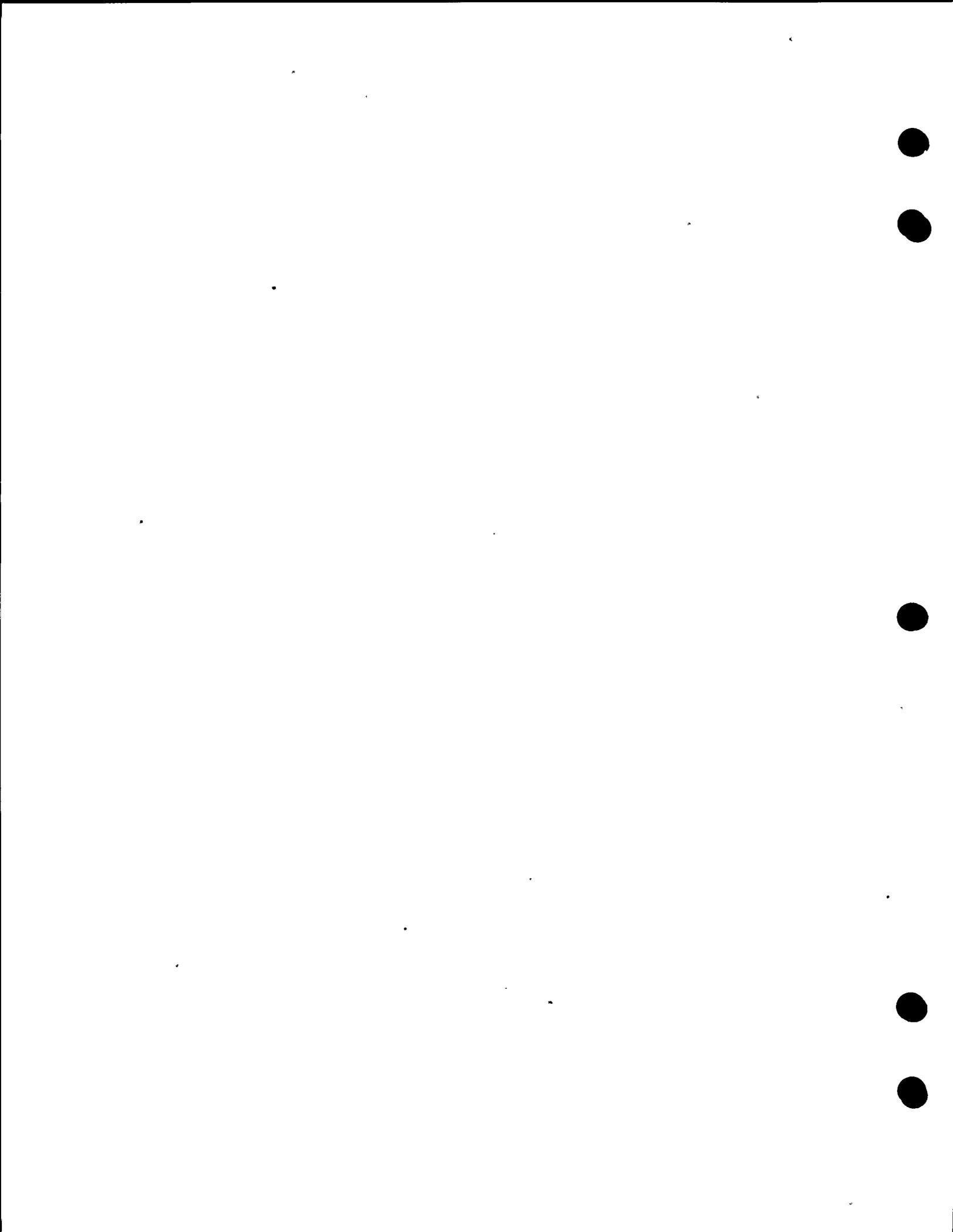
14 A The testimony in Supplement 10, yes.

15 Q Is the analysis contained on Pages 2 and 3 of that
16 Supplement an extrapolation from WASH-1400?

17 A In part, the analysis is; however, there should be
18 several things that I would like to point out about that.

19 First of all, it doesn't rely on the numerical
20 conclusions of WASH-1400. That is, about the risk of nuclear
21 power, which has, as I understand, been questioned by the
22 Lewis Committee, and other organizations.

23 What it does rely on is the identification of what
24 the major events are, the high-risk contributors are, to
25 nuclear reactor safety.



1 However, it doesn't even rely entirely on the
2 numerical evaluation of each of those events. It has relied
3 more upon more recent risk assessments that have been done after
4 that, in particular, the Zion Indian Point Study, and other
5 follow-up studies that have been done subsequent to WASH-1400

6 Q Did you utilize the same fault tree/event tree
7 which was utilized in the WASH-1400 analysis?

8 A No, it wasn't required.

9 Q Did you utilize the same failure rates?

10 A What I relied upon were the results supplied to me
11 by members of the Probabilistic Analysis Staff that were done
12 after WASH-1400.

13

14 / / / /

15 (Please read to the next numbered page.)

16

17

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25



BY MR. REYNOLDS:

Q So do you know whether or not the failure rates which you utilized were the same utilized in WASH-1400?

A (Witness Lauben) Well, based on my discussions with other members of the staff, some of them were and some were not.

Q All right.

MR. REYNOLDS: I have no further questions.

MR. NORTON: Your Honor?

JUDGE WOLF: Yes?

~~MR. NORTON:~~ MR. NORTON: The Applicant, I would like to point out one thing. I have been sitting here reading the portions that Governor Brown moved to strike, and I would point out to the Board that in ruling on this motion, if they rule that Mr. Lauben is qualified, that would end it.

However, if there is any question, you must read each individual answer, because to me, there are big differences. Some of them are opinions, no questions, for instance, in my opinion, there is a reduction of -- but others simply, and I am looking at page two, lines 33 through 44, are simply stating facts, what is contained in a document, et cetera, and I think that, for example, if this Board were to find that he weren't qualified, I don't see how that would in any way affect his answer as given on page two, as opposed to other places where if they made that finding, I



t6 2g
1 would agree with Mr. Lanpher that if he weren't qualified
2 that an opinion should be struck.

3 So, I point that out that these are not all the same
4 level of answers, and the Board would indeed have to go
5 through answer by answer in ruling if they make the -- if they
6 do not find that he is indeed qualified.

7 MR. LANPHER: Judge Wolf, could I ask, based upon
8 the witness's answers to Mr. Reynolds, I have just one or
9 two further questions. May I pursue those?

10 JUDGE WOLF: You may.

11 ~~VOIR-DIRE EXAMINATION~~

12 BY MR. LANPHER:

13 Q You were referred, Mr. Lauben, I believe, to Zion
14 and Indian Point studies, is that correct?

15 A (Witness Lauben) Yes.

16 Q Did you conduct those studies personally?

17 A No, I did not, and I didn't say that I did. I said --

18 Q No.

19 A -- I relied on the results of those with the
20 probabilistic analysis staff to form part of the basis as a
21 starting point for a relative risk assessment.

22 Q But you did say, I believe, in answer to an earlier
23 question, that you are not an expert, or you do not consider
24 yourself an expert in probabilistic risk analysis?

25 A That is right.



t6 3g
1 Q I think my --

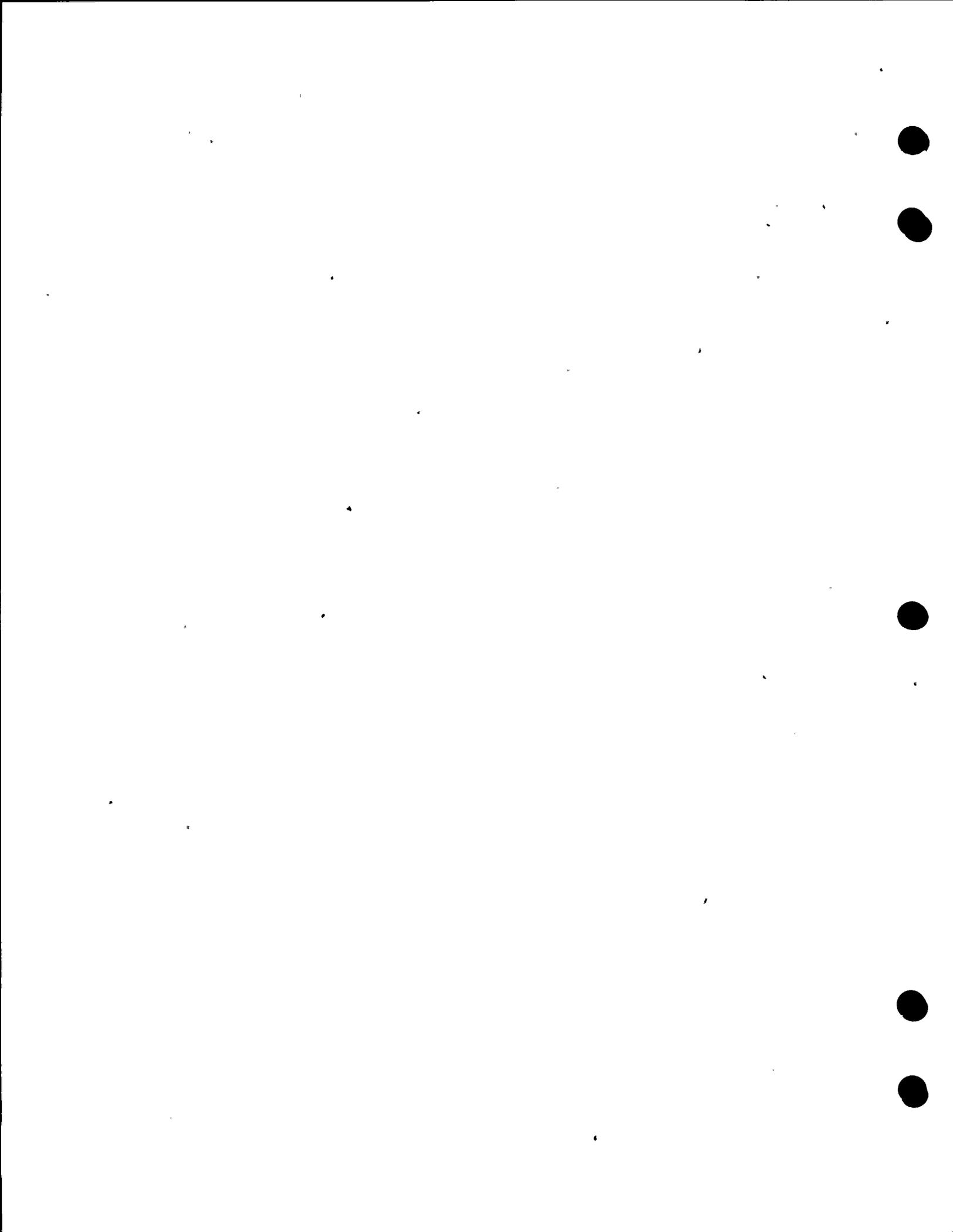
2 A That doesn't mean that I don't understand the basic
3 principles of probabilistic risk assessment. It means that I
4 don't consider myself an expert in the sense that some people
5 will spend their entire lives in this sort of activity.

6 MR. OLMSTEAD: Mr. Chairman, I think -- I hesitate
7 to jump in until I have heard all of the objection. I assume
8 I have heard it all so that I can respond, but I would like
9 to respond to this.

10 Number one, it is a cardinal principle of evidence
11 in these proceedings that experts rely on the opinions of
12 other experts, and the distinction we are trying to make here
13 between someone who actually spends the bulk of their time
14 drawing up event trees, versus someone who uses the results
15 of those event trees in their risk analysis, I don't think is
16 sufficient to tender an objection to the expert qualifications
17 of a witness...

18 Secondly, this testimony is for the most part
19 relative risk assessment, and they certainly, when they get to
20 the merits of the testimony, can look at the particular
21 analysis done, and ask where the data came from, and -- which
22 is true in any cross-examination situation.

23 You can get the document the expert relied upon, and
24 decide to either put your own witness on or cross-examine
25 this witness.. I think the objection is totally without merit,



t6 4g
1 and so I am not reaching Mr. Norton's point of which pages in
2 the testimony meet the objection and which don't, because I
3 don't think they have made their case as to any of it.

4 If the Board disagrees with me, then I would have to
5 go through, as Mr. Norton quickly did, and see what I think
6 about the particular segments of the testimony.

7 JUDGE WOLF: The Board will take a minute --

8 MR. LANPHER: Excuse me. I would like to respond to
9 Mr. Olmstead. Maybe Mr. Reynolds does, too.

10 MR. OLMSTEAD: Mr. Chairman. I object. An
11 objection is made, a response is made. We don't continue to
12 argue back and forth. If he responds, I will want to
13 respond. It could go on forever.

14 MR. REYNOLDS: Excuse me. I don't believe that I
15 have been heard on the objection.

16 MR. OLMSTEAD: I am the last person entitled to
17 respond, and I will insist on getting the last word.

18 JUDGE WOLF: Well, I will insist on ruling who gets
19 the last word.

20 MR. LANPHER: With the Board's leave, I would like
21 to make a comment.

22 JUDGE WOLF: I think that at this juncture, we have
23 heard enough of the argument, and we will take it under
24 advisement, and rule immediately. Off the record.

25 (Brief recess.)



t6 5g
1 JUDGE WOLF: On the record.

2 MR. LANPHER: Judge Wolf?

3 JUDGE WOLF: Yes.

4 MR. LANPHER: During the recess, I had a request
5 from someone in the back of the room that if the Board and
6 everyone else can speak up -- they couldn't hear a lot of the
7 last exchange.

8 JUDGE WOLF: We will be glad to do that.

9 The Board has concluded that the Governor Brown's
10 Counsel's motion to strike parts of the written testimony will
11 be denied.

12 In explanation of that, Mr. Bright will make a
13 brief statement as to the reasons for our conclusion.

14 JUDGE BRIGHT: Well, the Board has -- can you hear
15 me back there?

16 The Board has looked through the testimony, and
17 although it is perhaps worded in a way in places, that one
18 might think that Mr. Lauben had been running a probability
19 risk analysis, in actuality, the Board believes that in
20 actuality he was doing a relative risk analysis, and if there
21 is anyplace where a probabilistic risk analysis has been done,
22 we believe that it can be brought out in cross-examination.

23 We have every faith in you gentlemen to do just that.

24 JUDGE WOLF: Thank you. Are we ready to proceed
25 now? Okay.



1 MR. OLMSTEAD: I believe the last item was, I was
2 moving the testimony of Gene Norman Lauben into the record as
3 if read.

4 JUDGE WOLF: And in view of the Board's conclusion
5 regard the motion, that was stated by Counsel for Governor
6 Brown, the testimony --

7 MR. REYNOLDS: Excuse me, Judge Wolf, just for the
8 record, I would like -- I don't believe I stated it before,
9 Joint Intervenor's position on Mr. Lauben's testimony is that
10 we also object for the reasons stated by Governor Brown's
11 Counsel.

12 JUDGE WOLF: I thought you had stated that, but
13 perhaps it was --

14 MR. REYNOLDS: No, I haven't.

15 JUDGE WOLF: -- Mr. Lanpher who had stated that you
16 took the same position. Very well, that position is noted,
17 Mr. Reynolds.

18 The written testimony of Norman Lauber will be
19 received in evidence -- I would like to restate that. The
20 written testimony of Gene Norman Lauber will be received in
21 evidence and bound in the record as if read.

22 MR. OLMSTEAD: And including his statement of
23 professional qualifications?

24 JUDGE WOLF: Yes, including his statement of
25 professional qualifications.

(Whereupon, the prepared statement was inserted into the record.)



1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION

3 BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

4 In the Matter of)
5)
6 PACIFIC GAS AND ELECTRIC COMPANY) Docket Nos. 50-275 O.L.
7) 50-323 O.L.
8 (Diablo Canyon Nuclear Power Plant)
9 Unit Nos. 1 and 2)

10 TESTIMONY OF G. NORMAN LAUBEN

11 Q. Please state your full name.

12 A. G. Norman Lauben.

13 Q. By whom are you employed, and describe the work you perform?

14 A. I am employed by the Reactor Systems Branch, Division of Systems
15 Integration, Office of Nuclear Reactor Regulation, U.S. Nuclear
16 Regulatory Commission. A copy of my professional qualifications is
17 attached to this testimony.

18 Q. Have you read "Memorandum and Order (Granting PG&E's and NRC Staff
19 Motions for Summary Disposition of Joint Intervenor's Contentions 5
20 and 13; Denying their Motions as to Contentions 4 and 24)"? In
21 particular, have you read Contentions 4 and 24 as stated therein?

22 A. Yes.

23 Q. Would you describe the scope of the subject matter addressed in your
24 testimony?

25 A. I have been asked to address the safety significance of the low
26 power testing program as it would affect the necessity to have in



27 place an emergency plan which meets all the requirements of
28 NUREG-0654. I have also been asked to address the safety
29 significance of block valve failure during the low power testing
30 program.

31 Q. What are the major factors affecting safe reactor operation during
32 low power testing?

33 A. In supplement 10 to the Diablo Canyon SER (NUREG-0675), the risk
34 associated with low power testing was addressed. As discussed in
35 that SER there are three major factors which contribute to a
36 substantial reduction in risk for low power testing as compared to
37 continuous full power operation. First, there is additional time
38 available for the operators to correct the loss of important safety
39 systems needed to mitigate relatively high risk events, or to take
40 alternate courses of action. Secondly, supplement 10 also discussed
41 the significant events that contribute to that risk and the
42 reduction in risk associated with the significant postulated events
43 during the low power testing program. Third, there is a reduction
44 in required capacity for mitigating systems at low power.

45 Q. What are the significant postulated events that could potentially
46 affect the public health and safety?

47 A. The dominant events are (1) small break LOCAs with loss of the
48 emergency core cooling system (ECCS), (2) transients with total loss
49 of feedwater, and (3) failure of double check valves between the
50 reactor coolant system (high pressure) and the residual heat removal



51 system (low pressure) which results in a LOCA (inter-system LOCA)
52 outside containment, i.e. the interior of the reactor vessel
53 communicates directly with the environment. Since the publication
54 of the Reactor Safety Study (WASH-1400), the NRC staff has continued
55 to study the risk to the public from potential severe accidents at
56 nuclear power plants. This effort has confirmed that the event
57 scenarios dominating accident risks are generally the same for
58 different PWR designs, i.e., small break loss of coolant accidents
59 (LOCAs) and transients.

60 Q. What was done specifically to address the question of risk due to
61 low power testing, and what was the conclusion of that effort?

62 A. We have reexamined the dominant scenarios to estimate the reduction
63 in the probability of the event because of the additional time
64 available during low power operation for the reactor operators to
65 correct the loss of important safety systems needed to mitigate the
66 event or to take alternate courses of action. Similarly, we have
67 calculated the reduced fission product inventory for operation of an
68 initially unirradiated core at 5% power for 6 months and have
69 determined the reduction in potential public exposure via reduction
70 in potential release magnitudes. Risk is roughly proportional to
71 the probability of severe accidents (which lose the heat sink) and
72 to the fission product inventory in the core. From these factors we
73 have estimated that the overall reduction in risk to the public



74 should be a factor of 400 to 1500 if a plant is operated at 5% power
75 from initial startup for 6 months compared to continuous full power
76 operation.

77 Q. In your review of fuel load and low power test programs what have
78 you concluded about the potential risk of low power testing?

79 A. Based on the actual power history of other reactors during their low
80 power testing program, the actual power history expected at Diablo
81 Canyon would result in even less available fission product
82 inventory. The peak power during this time period is only expected
83 to be 3 or 4% of rated capacity. Operation at this power level is
84 only expected for a maximum of 10 days. This would result in a
85 further risk reduction by a factor of about 2. It is therefore
86 concluded that the public risk due to fuel loading and the proposed
87 low power test program is less than public risk due to full power
88 long-term operation by a factor of about 400 to 3000.

89 Q. How could risk to the public be affected by small break or inter-
90 system LOCA's?

91 A. Risk to the public would occur only if there is release of
92 substantial amounts of radioactive fission products outside the
93 containment. This could occur only if there is a failure to cool
94 the core for an extended period of time. During this time the fuel
95 element cladding would have to fail by overheating. The reactor
96 coolant pressure boundary would have to be violated and the reactor
97 building containment would have to be violated. Of course the

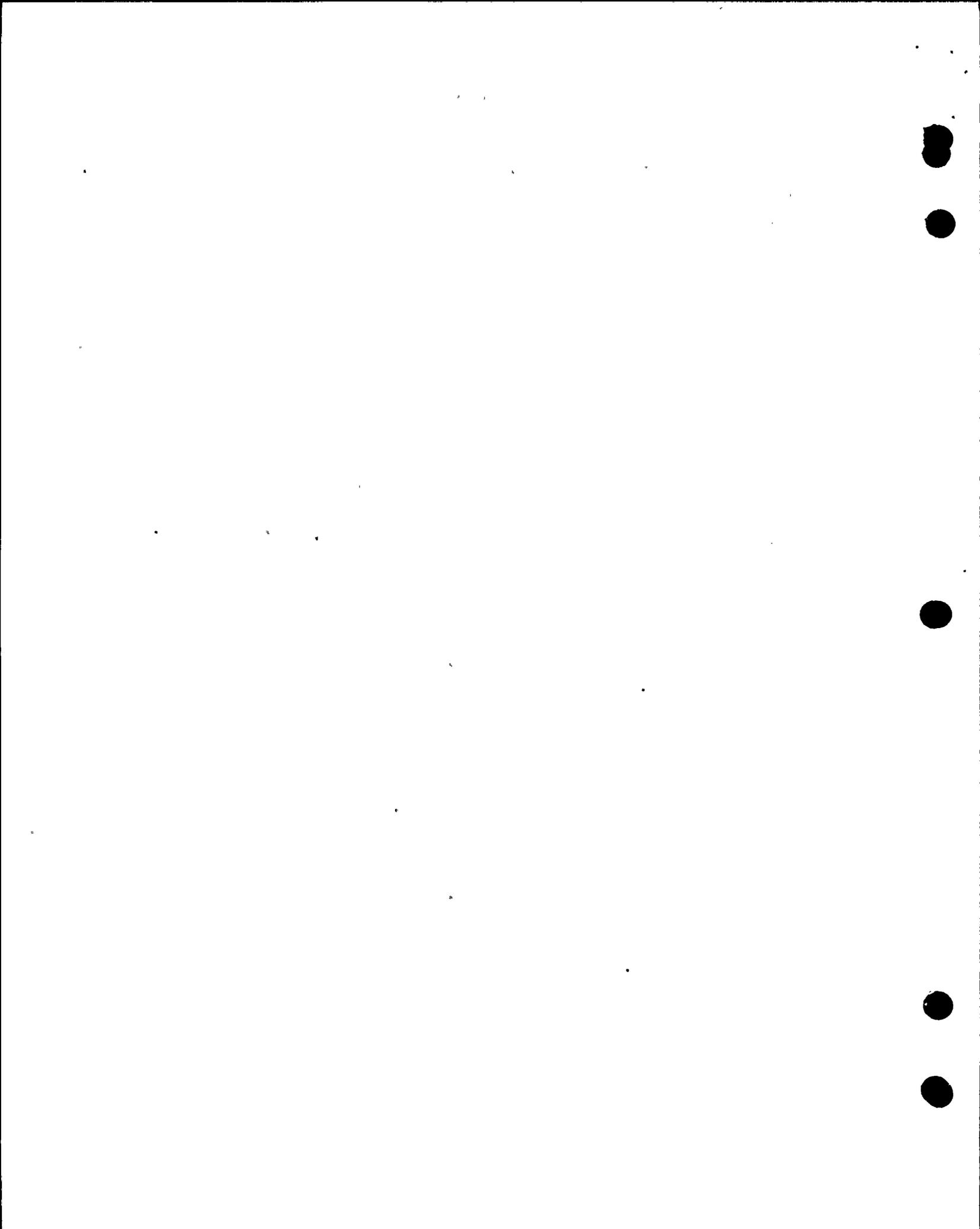


98 latter condition would occur for the intersystem LOCA. The
99 important factor is that the core would have to remain uncooled for
100 a significant length of time. (Approximately 10 hours during the
101 low power test program).

102 However, NRC requires that all facilities licensed to operate
103 are provided with reliable and redundant emergency core cooling
104 systems (ECCS). NRC regulations (10 C.F.R §50.46) require
105 applicants to analyze a spectrum of pipe breaks and locations with
106 various assumed equipment failures. These analyses are performed
107 with NRC-specified conservative assumptions and must demonstrate
108 coolability of the core and minimum generation of hydrogen.
109 Specifically, ECCS evaluations must demonstrate that ECCS
110 performance will result in a coolable geometry and less than 1%
111 core-wide metal-water reaction even with the reactor at 102% power
112 and worst-case linear heat rates. The Diablo Canyon ECCS is
113 required to conform to these requirements. Thus, for all power
114 levels the requirements of NRC regulations provide adequate
115 protection against severe core damage. Thus for small break LOCAs,
116 substantial risk to the health and safety of the public would occur
117 only if the ECCS failed to operate as designed. Therefore, when
118 performing risk assessment this condition must be evaluated.

119 Q. With a reactor operating at a maximum of 5% of full power, could
120 these events lead to the significant amounts of core damage?

121 A. No. I have looked at these events and have concluded, as discussed
122 herein, that at 5% power it is extremely unlikely that such events

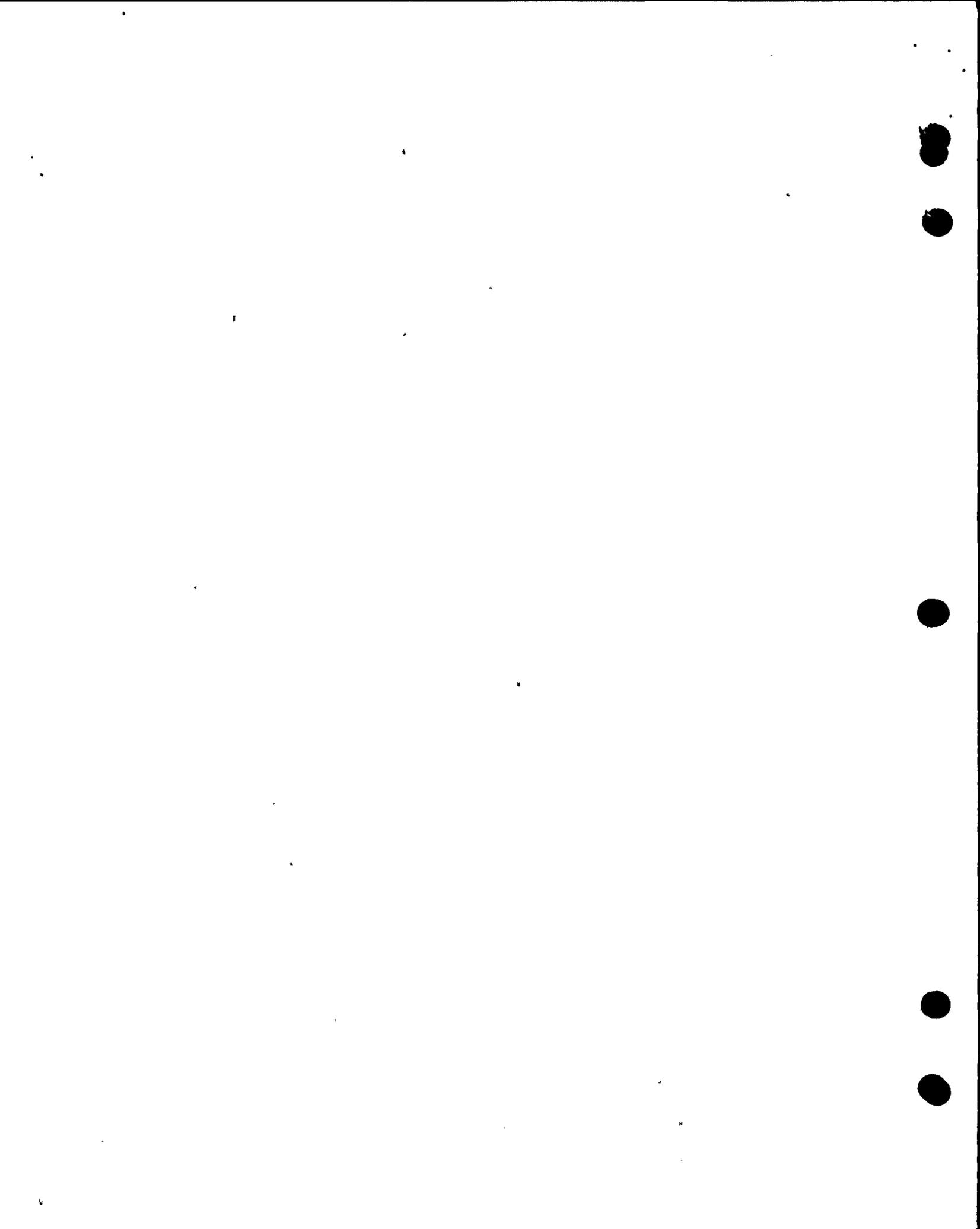


123 would lead to significant amounts of core damage by "significant" I
124 mean 5% metal-water reaction.

125 Q. Please provide the basis for your conclusions?

126 A. LOCA analyses with severely degraded ECCS's were performed which
127 demonstrate the large amount of time that would be available at 5%
128 power for diagnosis and corrective action to prevent significant
129 core damage. For these analyses, it was conservatively assumed that
130 none of the pumped ECCS systems was functioning. I have had Sandia
131 Laboratories, our consultant, run a calculation for me using the
132 RELAP4 code to estimate the time at which boil-off begins. For a
133 small 4-inch cold-leg break LOCA, boil-off would not begin for about
134 1 hour and uncovering would be delayed until about 3 hours. Rapid
135 increase in fuel clad temperature, leading to severe core damage,
136 would not begin until about 15 hours.

137 I have also obtained information from the NRC staff Project
138 Manager for the Sequoyah nuclear power plant concerning the actual
139 maximum power level and test duration for the low-power test
140 program. Sequoyah is a comparable facility and the test program is
141 similar to that planned for Diablo Canyon. This information
142 indicates that actual test power was about 4% full power or less and
143 lasted only some 8 days. For similar conditions at Diablo Canyon
144 uncovering would not occur until about 4 to 5 hours. More than 20
145 hours would elapse before significant core damage would occur.

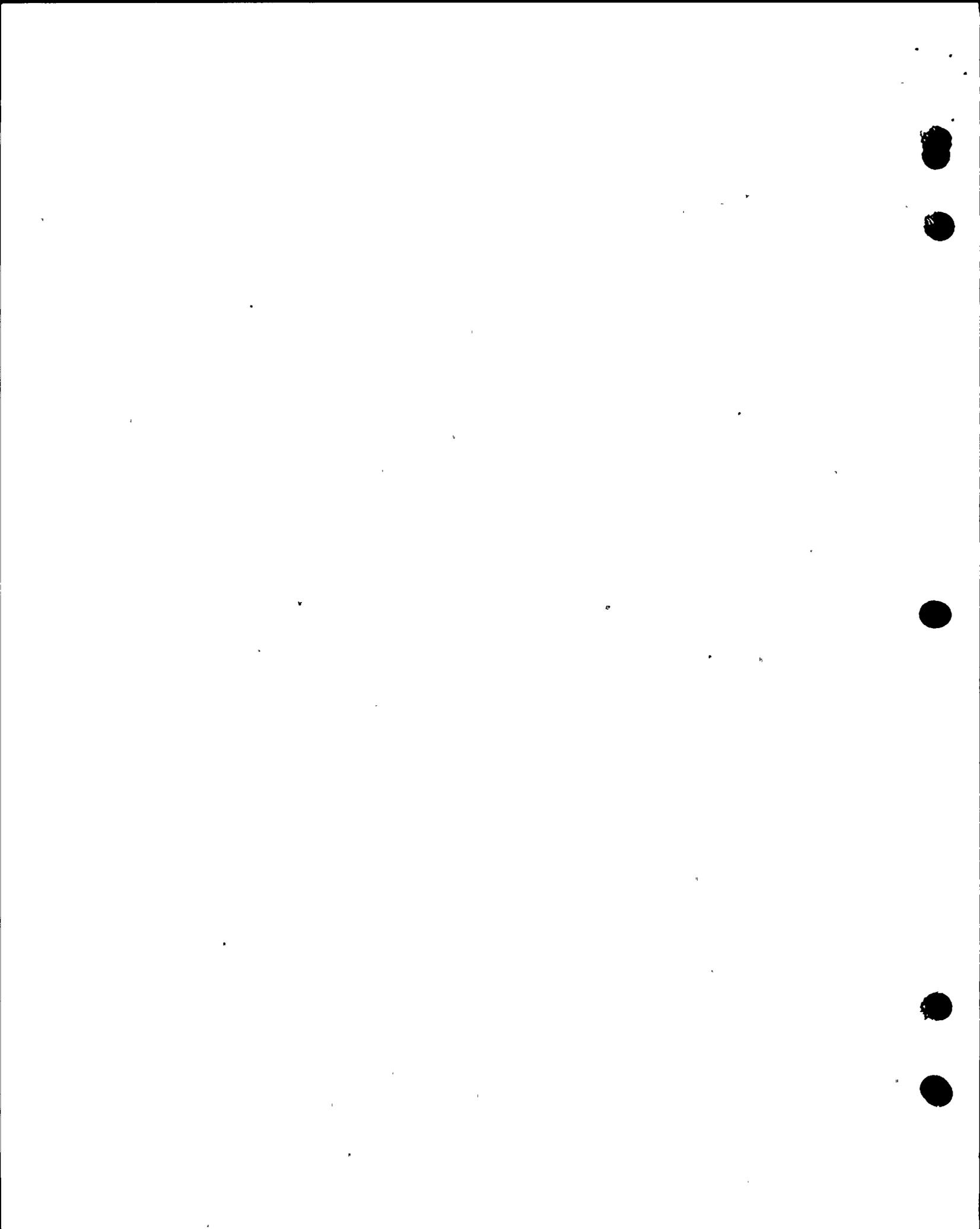


146 Q. Based upon this assessment, what is the likelihood of significant
147 core damage at low power due to a LOCA?

148 A. As I have indicated above, with the NRC's requirements for reliable
149 ECCS performance, the potential for severe core damage and
150 associated significant hydrogen generation is very small even at
151 full power. The time available at low power for the operator to
152 take corrective action ranges from 15 hours to more than 20 hours in
153 the event of a small LOCA. In addition, the coolant flow required
154 to dissipate decay heat at 10 hours following a LOCA would be only
155 about 8 gpm which is within the capacity of the centrifugal charging
156 pump used for the normal make-up systems. Because of the time
157 available for the operators to correct malfunctions in the ECCS or
158 to initiate cooling with the normal charging system, we believe that
159 the probability of a small LOCA resulting in excessive fuel damage
160 and significant radiological release is reduced by at least a factor
161 of 400 to 1600 for low power operation as compared to operation at
162 full power.

163 Q. What about the potential effects of other significant events, e.g.,
164 transients with total loss of feedwater, on the public risk?

165 A. At 5% power the number of events that can result in failure to
166 adequately cool the core is greatly reduced. All transients
167 initiated by turbine trip are eliminated since the turbine is not on
168 line. Total loss of feedwater caused by any other transient becomes
169 negligible with respect to core damage and public risk. In such a
170 case, core heat is transferred through the steam generators from the



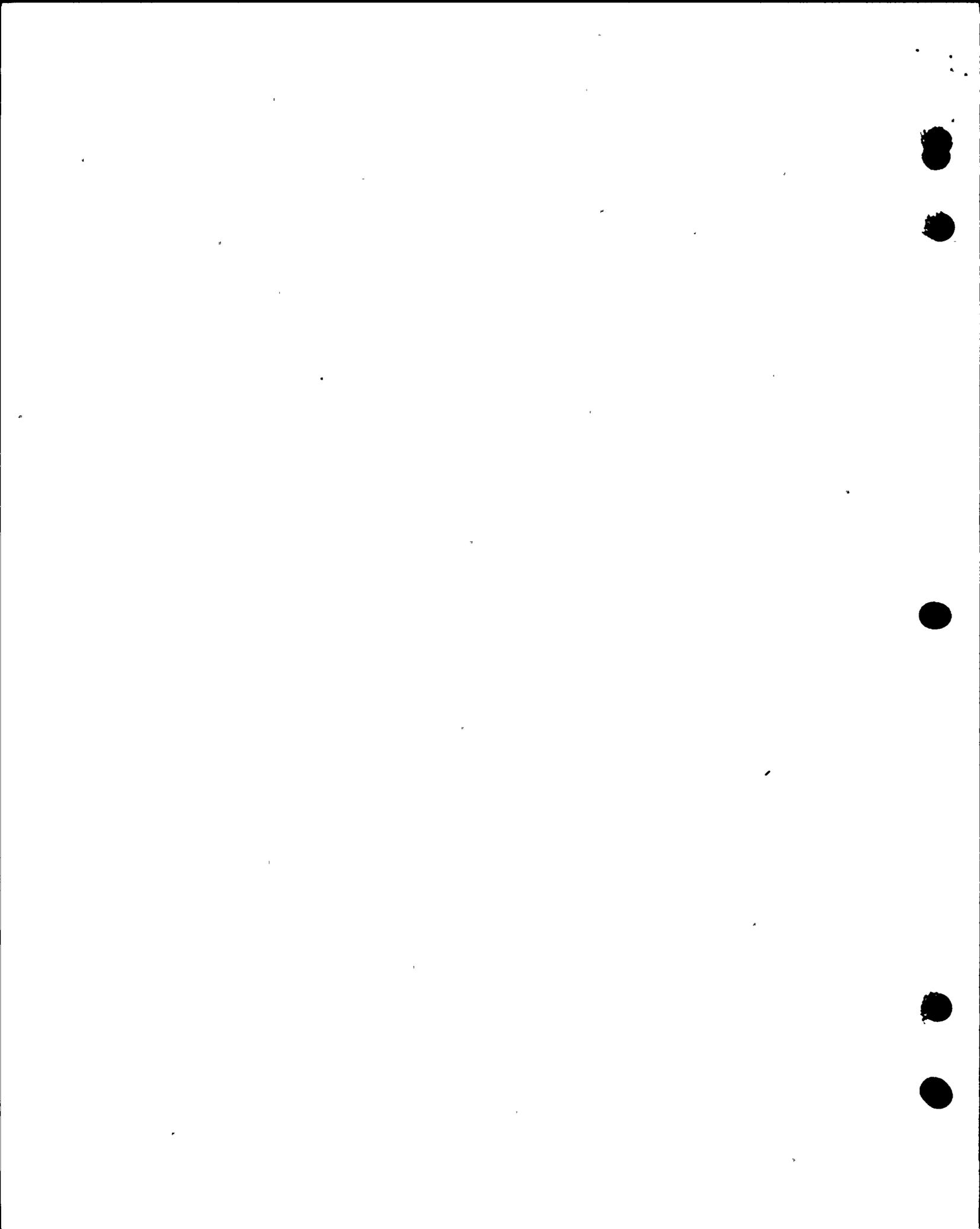
171 primary to secondary systems. After a scram from 5% power I
172 calculate that it would take about 2½ days to boil the steam
173 generators dry, conservatively assuming no feedwater makeup. During
174 that period of time, diagnosis, corrective action or alternate heat
175 removal methods could easily be accomplished. Moreover, by that
176 time fission product heat will have decayed sufficiently so that
177 passive steam heat losses (radiant heat transfer) would be enough to
178 keep the reactor cool, even if no corrective action were taken. As
179 a consequence we believe that the total risk reduction associated
180 with these events is about 1000 to 20,000 lower compared to full
181 power operation.

182 Q. If, as you say, feedwater transients are of almost no concern at low
183 power, what about other scenarios? Could they not now become
184 dominant at low power?

185 A. Other transients (steam line break, steam generator tube rupture,
186 rod ejection and ATWS) were also examined. A similar reduction in
187 risk was evident. Therefore, these transients did not become
188 dominant.

189 Q. But an ATWS event could result in a significant primary to secondary
190 heat imbalance. Why isn't this of concern?

191 A. If one assumes that the highly unlikely scenario of total loss of
192 feedwater is followed by a failure of the reactor system to scram
193 (i.e., the worst ATWS event), complete boil-off of the water in the
194 steam generators would occur in 45 minutes. During this period of



195 time there are a number of things the operator could do to bring the
196 reactor to safe shutdown, including initiation of the boron
197 injection system and diagnosis and correction of the failure to
198 scram. These would terminate the event before boil-off of
199 significant reactor vessel inventory and thus, well before the onset
200 of severe core damage. Moreover, at low power, significant
201 overpressurization of the primary system does not occur because of
202 the low integrated reactor power. It should be emphasized that the
203 sequence which involves a transient, total loss of feedwater, and
204 failure to scram as independent events has such a low probability
205 that it cannot be considered a credible event (less than 10^{-7} per
206 reactor year).

207 Q. How does the above discussion relate to the need for a qualified
208 emergency plan during low power operation?

209 A. The above discussion shows that abundant time (at least 20 hours) is
210 available to take corrective action to mitigate or terminate the
211 most likely scenarios which could affect public risk during low
212 power testing. For some sequences of concern at full power, no
213 action would be required during low power operation to prevent
214 public risk. Under these conditions the risk is so small that there
215 is virtually no need for a qualified emergency plan.

216 Q. What is the safety significant of a failure of a block valve during
217 low power testing?



218 A. None. Each block valve is located upstream of one PORV. There are
219 three sets of these valve pairs in parallel. In theory a block
220 valve could fail open or closed. During operation the block valves,
221 are normally open and the PORVs are closed. If the PORVs are not
222 challenged the position of the block valves has no significance.
223 PORVs can be challenged only if a heat imbalance occurs. As
224 discussed earlier the transient events that could cause this
225 condition are those for which secondary heat sink is lost when
226 feedwater is lost. At low power these events have virtually no
227 safety significance and PORV challenge is extremely unlikely.

228 Q. But what if a block valve and a PORV should both fail open?

229 A. The likelihood of this double failure is extremely remote. As noted
230 in the testimony of Mr. Frank Cherny, the Diablo Canyon type PORVs
231 will be tested in the EPRI program prior to fuel loading. If this
232 should occur it would simply be a small LOCA which was discussed
233 previously. The size of this LOCA would be even smaller than that
234 previously discussed. Thus even more time would be available to
235 correct, mitigate or avert fuel damage and public risk.



236

STATEMENT OF PROFESSIONAL QUALIFICATIONS

237

NORMAN LAUBEN

238

My name is George Norman Lauben. I am employed as a Nuclear
239 Engineer in the Reactor Systems Branch, Division of Systems Integration,
240 U.S. Nuclear Regulatory Commission. I have worked in the field of
241 nuclear reactor for 19 years, and in nuclear activities for 23 years. I
242 have worked for the Commission and its predecessor, the Atomic Energy
243 Commission, since 1968. During this time I have worked directly on
244 reactor safety matters, including Emergency Core Cooling System (ECCS)
245 performance review and Loss-of-Coolant Accident (LOCA) analysis.

246

I was a member of the 1971 AEC ECCS task force and the AEC Staff
247 Panel for the ECCS Rulemaking Hearing. I am the author of the TOODEE2
248 computer program used by the NRC and the nuclear industry for transient
249 fuel pin thermal analysis during a LOCA. I was a member of the technical
250 team that accompanied Mr. Harold Denton to the Three Mile Island Reactor
251 on March 30, 1979.

252

I have a B.S. and M.S. in Chemical Engineering from Case Institute
253 of Technology (now Case Western Reserve University).

[The text in this section is extremely faint and illegible due to low contrast and noise. It appears to be a multi-paragraph document.]



DIRECT EXAMINATION (Resumed)

BY MR. OLMSTEAD:

Q Mr. Sears, do you have in front of you a copy of a document entitled "Testimony of John R. Sears?"

A (Witness Sears) Yes, sir.

Q And did you prepare this testimony for presentation at this proceeding?

A Yes, sir.

Q And do you have any additions or corrections to make to that testimony?

A I have one addition. On page five, line 112, after the word "that," insert the preposition "for."

Q Okay, do you have any further additions or corrections?

A No, sir.

Q Attached to the testimony is a copy of a document called John R. Sears, professional qualifications, emergency preparedness program office. Is that a statement of your professional qualifications?

A Yes, sir.

Q And are there any additions or corrections you wish to make?

A No, sir.

Q Is this testimony, Mr. Sears, true and correct to the best of your knowledge and belief?



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1 A Yes, sir.

2 MR. OLMSTEAD: Mr. Chairman, I move the testimony
3 of John R. Sears be bound into the record as if read.

4 MR. BROWN: Judge Wolf, this is Herbert Brown.

5 JUDGE WOLF: Yes, Mr. Brown?

6 MR. BROWN: I would like, if possible, to conduct a
7 brief voir dire of Mr. Sears.

8 JUDGE WOLF: Very well.

9 VOIR DIRE EXAMINATION.

10 BY MR. BROWN:

11 Q Mr. Sears, were you at the time that FEMA made its
12 so-called finding, as referred to in your testimony, were you
13 on the FEMA-NRC steering committee?

14 A (Witness Sears) No, sir.

15 Q And did you at that time produce technical inputs
16 for the FEMA-NRC steering committee?

17 MR. OLMSTEAD: Mr. Chairman, could we have the
18 question specified a little more particular? What --

19 MR. BROWN: I am sorry. I will rephrase it.

20 BY MR. BROWN:

21 Q Did you work for them? Were you on their staff?

22 A (Witness Sears) I am on the staff.

23 Q No, I mean did they have an independent staff, I
24 should say, to your knowledge?

25 A No, sir. No, sir. The NRC FEMA steering committee



1 consists of, I believe, two or three members from NRC and
2 about two members from FEMA, and I am not on the steering
3 committee.

4 Q What was your position at the time on the staff of
5 the NRC, what was your position at the time the so-called
6 FEMA finding was made?

7 A My position was the same as it is stated in my --
8 in my qualifications here. I am a senior reactor engineer in
9 the emergency planning group.

10 Q This is the division of inspection and enforcement?

11 A We have changed -- at that time -- yes, I believe
12 it was inspection and enforcement then.

13 MR. BROWN: Judge Wolf, we are going to have an
14 objection to a portion of the testimony proffered by Mr.
15 Sears, and I can --

16 JUDGE WOLF: Can you delineate that portion for us,
17 please?

18 MR. BROWN: Yes. We are going to object to two
19 parts. The testimony at lines 123 through 135, which is on
20 page six, and we are going to object to a part of line 170,
21 which is on page eight, and the portion we are going to object
22 to is the phrase "State and local" in the center of that
23 sentence.

24 The reason is that Mr. Sears just isn't the right
25 witness for us. We are going to have extensive questions and



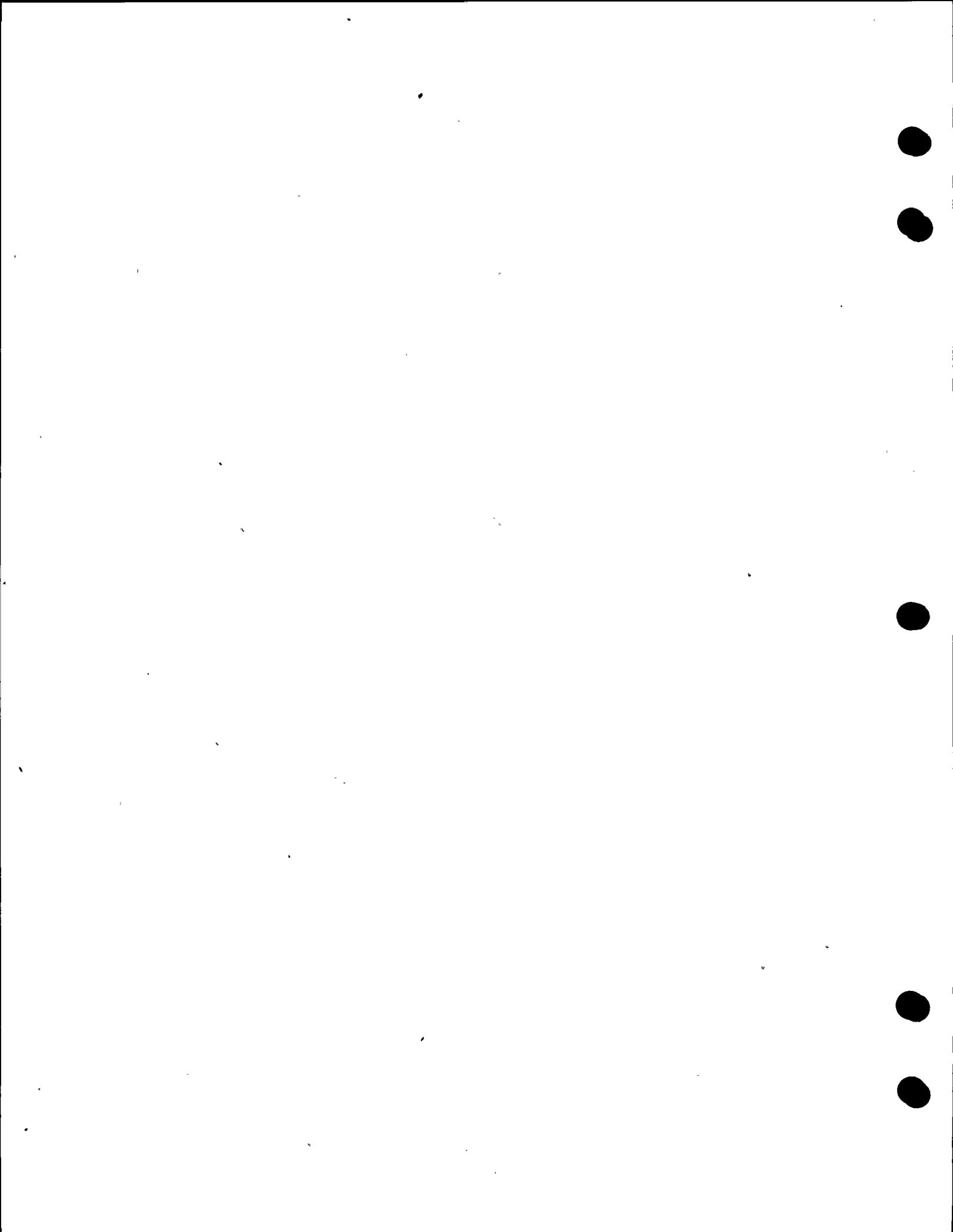
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1 a great deal of cross-examination about this so-called
 2 finding, and I have got to have someone presented who was
 3 involved in making it, because I intend to go extensively
 4 into the basis of that finding, the reasons for it, the
 5 intentions of those who so-called found certain things, and
 6 I am just not going to be able to do it with anyone who wasn't
 7 the one to make the finding.

8 I need someone actually involved. I am actually
 9 going into the intentions and the mind-set of the witness, as
 10 one would do in delving and probing the basis of any
 11 conclusion that one deemed critical, so I have got to have
 12 somebody to cross-examine, and I am afraid this gentleman just
 13 isn't the right one. I can't do it. His evidence isn't
 14 reliable, and we can't make it reliable in this testimony.

15 MR. OLMSTEAD: Objection. This objection is not a
 16 qualifications objection, and I object to him saying the
 17 testimony isn't reliable. Essentially Governor Brown doesn't
 18 like the testimony of the staff's witnesses, and so he is
 19 trying to impugn their credibility without doing it properly.

20 MR. BROWN: No, I like his testimony. I don't
 21 object to anyone using these words at all. I want that
 22 clear. Mr. Olmstead has just flipped out. I like this. I
 23 want someone to say it so I can ask questions about it. This
 24 gentleman just can't respond to it. He declared he was not
 25 involved in the making of the finding.



11g t6

1 Now, I do not object to someone proffering this and
2 supporting it. I want it. It is indispensable for this
3 hearing we get it, that we get it, sir, and I am not in any
4 way objecting to the right person doing this. I just can't
5 carry on the function that I have to interrogate a witness on
6 these words, because he is -- there is no witness there who
7 is capable of answering my questions.

8 JUDGE WOLF: Well, if he can't support the statements
9 when you cross-examine him, it would seem to me that that
10 will eliminate those statements, and that area just won't be
11 a fact we can consider.

12 MR. BROWN: Judge Wolf? I am sorry. I apologize
13 for interrupting.

14 JUDGE WOLF: I don't know why we have to rule on
15 these phrases at this time. It seems to me that is the
16 function of your cross-examination.

17 MR. BROWN: I have to have someone to cross-
18 examine, though. This gentleman was not --

19 JUDGE WOLF: Well, if you want to make -- you are
20 saying in effect that you want to make an affirmative
21 contribution to the record about something. Well, that is up
22 to you to supply the witness.

23 MR. BROWN: No, sir. I am saying there is an
24 affirmative statement being made by a person who cannot make
25 that statement, and I cannot cross-examine him because he was



12g t6
1 not involved in making the FEMA finding.

2 MR. OLMSTEAD: Mr. Chairman, that just isn't true.
3 He can make the statement that FEMA has made a finding,
4 because the very next question is, where is the finding
5 documented, and a specific document is referred to.

6 Governor Brown has known that this is the staff's
7 position since we responded to his interrogatories. He had
8 ample opportunity to subpoena whatever witness he wanted, if
9 he didn't feel we provided the proper staff witness, he hasn't
10 done so, and he can't be heard at this late date to come in
11 and say he needs another witness.

12 MR. BROWN: That is not, Judge Wolf, how our system
13 works. Our system puts an obligation on each person to do
14 his job right. Mr. Olmstead didn't; in this case, he
15 normally does and I have a great deal of respect for him.
16 This time for some reason he didn't.

17 I want somebody from FEMA or NRC who was on that
18 committee. I accordingly request the Board to direct the
19 staff to bring to this hearing a person who was on the NRC
20 FEMA steering committee on the date on which the so-called
21 finding was made, and who is familiar with the intention of
22 those who made that finding, and the bases for that finding.

23 I can't have somebody just say the finding was made
24 on a piece of paper. That kind of absurdly gross hearsay
25 cuts off any cross-examination. For example, all I could say



13g t6

1 then is, this is the piece of paper, do you know anything
 2 about this piece of paper? What did the person who wrote
 3 this intend, and so on? I can't get answers. I accordingly
 4 move this Board to direct the staff to bring a witness who
 5 was on that committee, and I think the most productive would
 6 be a FEMA person, because that is the affirmative obligation
 7 of Mr. Olmstead. It is his statement. It is into his SER.

8 These are just elementary responsibilities of his.

9 MR. NORTON: Your Honor, the Applicant would like
 10 to be heard, please.

11 JUDGE WOLF: Yes.

12 MR. NORTON: I find Mr. Brown's position not
 13 surprising. He has had the testimony, of course, as we all
 14 have, since I believe it was May 8. He knows that this
 15 gentleman is not on the steering committee and he has known
 16 that, but he would rather wait, of course, until the last
 17 minute, and then ask for a further delay while we go out and
 18 get another witness.

19 As Mr. Olmstead correctly pointed out, the position
 20 of the staff has been set forth, and in this answer, it says
 21 where the documentation is, SER subnumbers 10 and 12. Mr.
 22 Brown has had those for a very long time.

23 If he wants to present affirmative evidence to this
 24 Board, it was his obligation to request a subpoena from this
 25 Board, and he could have done so months ago, or he could have



1 done so at least when he received the testimony, which ¹¹⁰²² was
2 weeks ago, but instead, as their usual effort to further
3 delay, they wait until now.

4 This Board has absolutely no obligation to do that.
5 That is Mr. Brown's obligation, and it isn't Mr. Olmstead who
6 has failed to do his duty. It is Mr. Brown who has failed to
7 do his duty.

8 MR. BROWN: Judge Wolf, I have to object to one
9 thing. I am not asking for delays or anything else. I find
10 whenever I make the most simple elementary remark that
11 people start characterizing it with epithets and phrases
12 which have nothing to do with what I am saying.

13 I think I am making a request here which is so
14 fundamental, that we used to read these kinds of things in
15 law school in what were called the trot sheets. It is better
16 it is more fundamental than the black letter law and the
17 hornbook.

18 The staff has to give me a witness I can cross-
19 examine, and the reason I didn't ask for it until now, Judge
20 Wolf, in light of what Mr. Olmstead said, and Mr. Norton,
21 was that it wasn't until approximately eleven o'clock this
22 week Tuesday that Mr. Olmstead gave me several pieces of
23 paper, letters which explained to me -- which put me on the
24 track of finally getting a feel for what the basis was for
25 the FEMA finding.



1 But notwithstanding that, I don't ask for delay. I
2 only ask for this hearing to be conducted in a legally proper
3 way, and I know that we have to have a person on that NRC FEMA
4 committee that I can cross-examine.

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1 JUDGE WOLF: We do not consider any problem of
2 delay here. We are going to move the case along. But we
3 will decide the issue that you have raised on the basis that
4 we think is proper and legal.

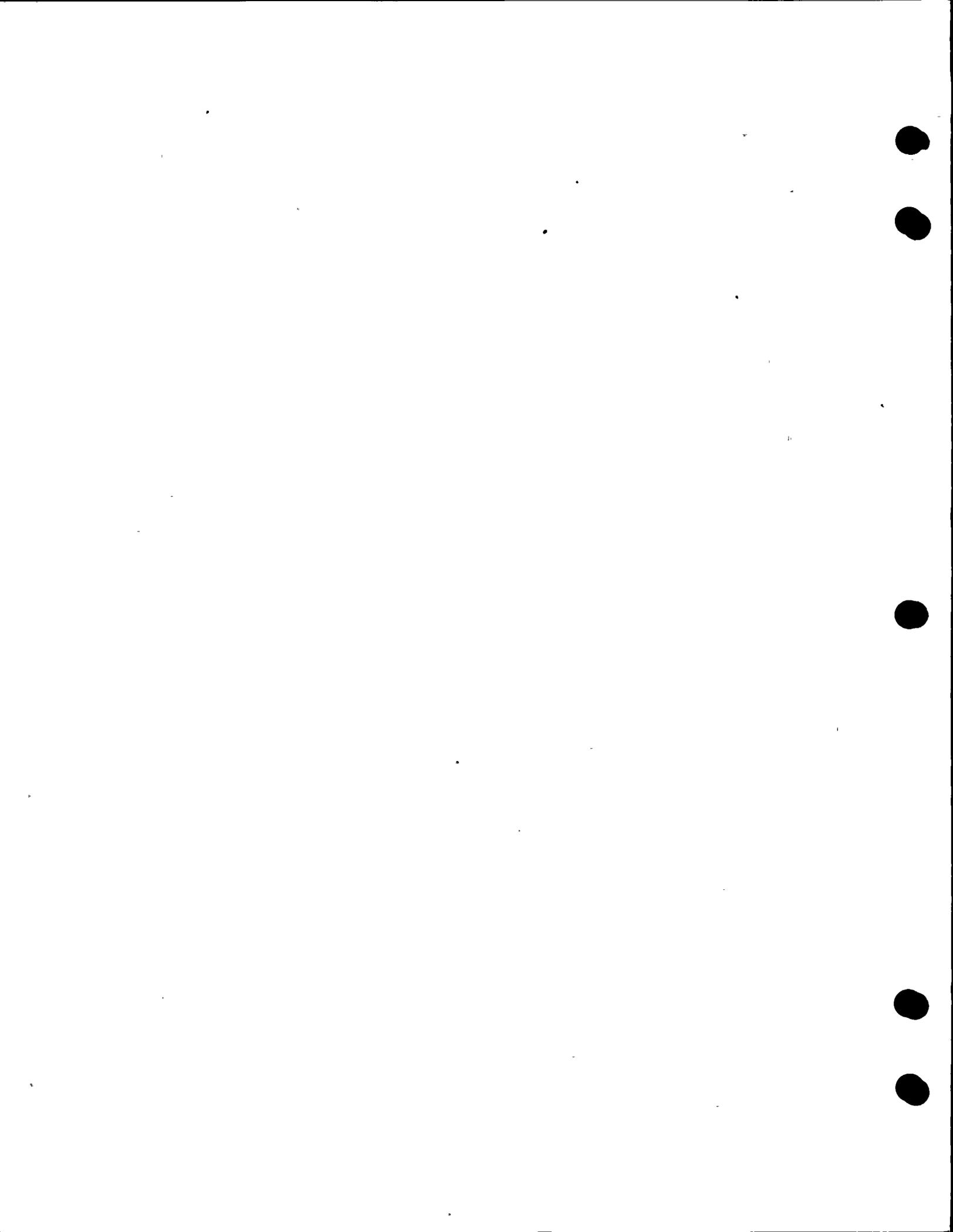
5 Do you have any comments, Mr. Reynolds?

6 MR. REYNOLDS: Yes. We also intend to cross examine
7 rather extensively on Mr. Sears' statements with respect to
8 the FEMA NRC Steering Committee finding. I would note that
9 it is FEMA's legal responsibility to make a finding concerning
10 the adequacy of the off-site plans, off-site emergency plans.
11 It is a critical issue in this proceeding. We have had
12 testimony raising questions about the adequacy of the off-
13 site plan. Mr. Sears has testified and he has supplied two
14 pieces of paper from the FEMA NRC Steering Committee to
15 support his view that the findings have been made. It is
16 critical for the Joint Intervenors to be able to inquire into
17 the basis for that finding. Without somebody here from that
18 committee, we are absolutely precluded from doing that.
19 Accordingly, we would support Gov. Brown's motion and we
20 would object to Mr. Sears' testimony with respect to the FEMA
21 finding.

22 MR. OLMSTEAD: Mr. Chairman, may I now respond?

23 JUDGE WOLF: Yes.

24 MR. OLMSTEAD: Okay. First of all, on March 10,
25 1981, we responded to interrogatories from both Joint



1 Intervenor and Gov. Brown where we identified those FEMA
2 documents that we intended to use, we identified who our
3 witnesses were. I subsequently called counsel and told them
4 we would make additional documents available to them. They
5 took advantage of that, came out and looked at emergency
6 preparedness documents. They have known all along since that
7 day what the staff's theory of this case was, what witnesses
8 we were going to use, and if they wanted to make a motion to
9 produce some other witness, they should have come in pursuant
10 to 2.720 H2 and asked this Board to issue a subpoena for that
11 staff person.

12 They have not done that. They cannot do it now.
13 They are too late. And they cannot get there by bootstrapping
14 at this point.

15 (Pause while the Judges confer)

16 JUDGE WOLF: Mr. Olmstead?

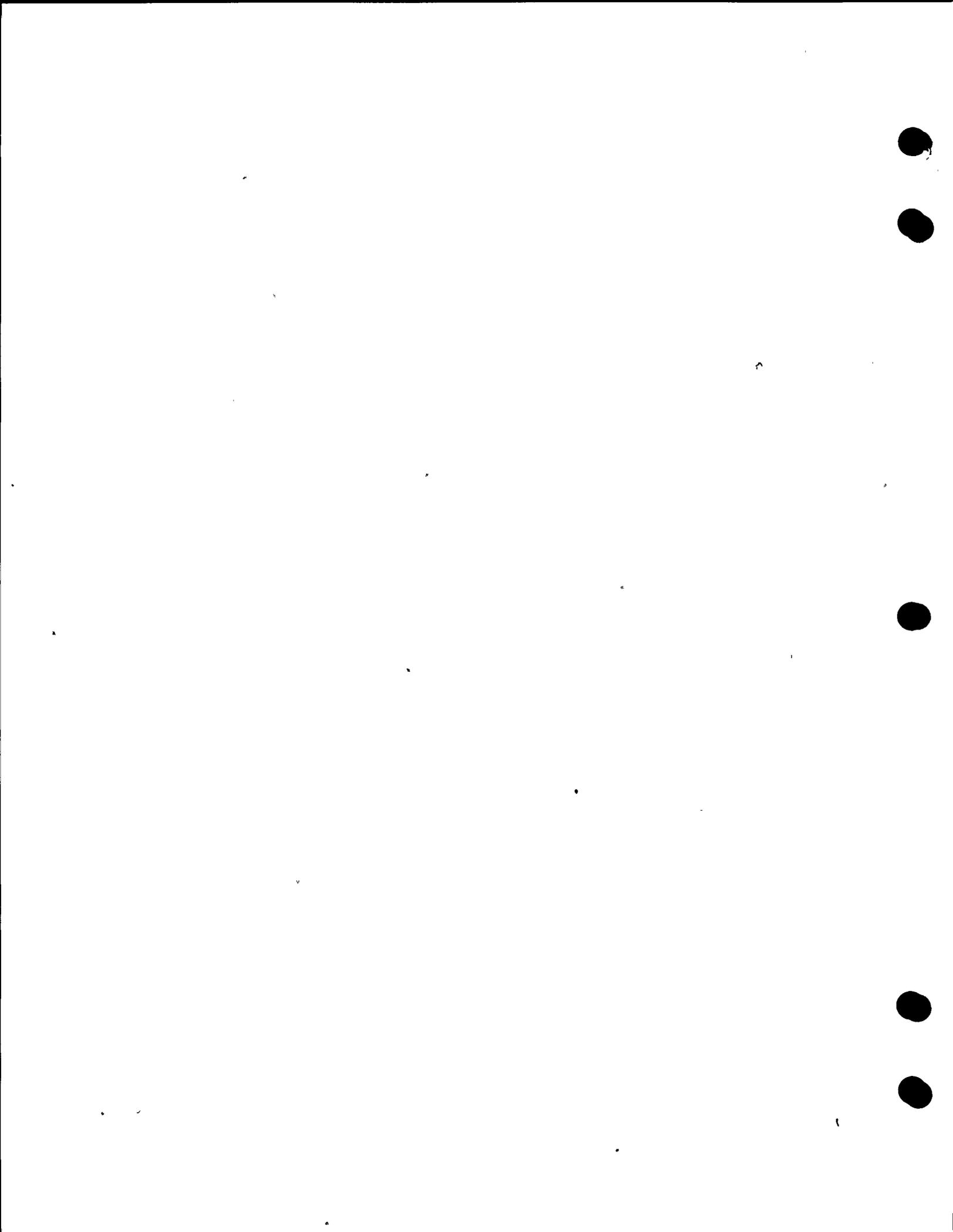
17 MR. OLMSTEAD: Yes, sir?

18 JUDGE WOLF: In the written testimony of Mr. Sears
19 on page 6 there is a question that says where is FEMA's findings
20 documented. Do you see that question?

21 MR. OLMSTEAD: Yes.

22 JUDGE WOLF: I assume that you are going to want
23 to offer that memorandum to Mr. Denton, is that correct?

24 MR. OLMSTEAD: I believe that memorandum is docu-
25 mented in SER Supplements 10 and 12, which we will be offering



1 in evidence just shortly. Yes, sir. And I would point out
2 that regulations in addition to 2.720, which I cited earlier
3 about witnesses, the regulations also require the receipt of
4 the SER into evidence.

5 JUDGE WOLF: Yes, but the SER can be challenged.

6 MR. OLMSTEAD: That's right. If it is challenged
7 at an appropriate time.

8 JUDGE WOLF: I beg your pardon?

9 MR. OLMSTEAD: If it is challenged at the appro-
10 priate time, an issue can be put in controversy. But every-
11 thing in those SER's that we are going to introduce that
12 hasn't been challenged cannot now be challenged at this date.

13 JUDGE WOLF: Why do you say that?

14 MR. OLMSTEAD: Because they have been available
15 to the parties for several years, in some cases, and there
16 was a time, namely February 13, when they were to have their
17 contentions in.

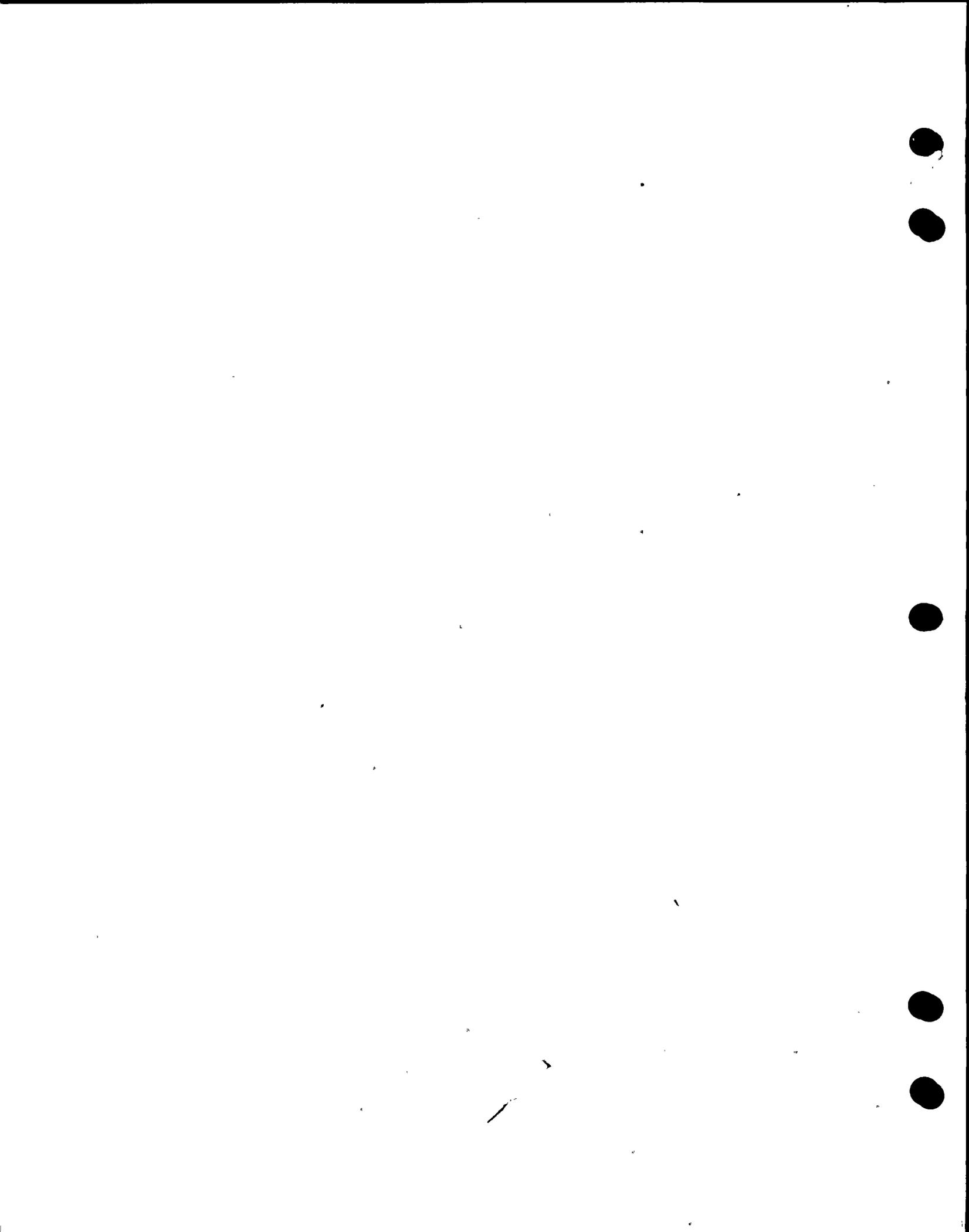
18 JUDGE WOLF: Not 10 and 12 haven't been available.

19 MR. OLMSTEAD: No, but they have had time to revise
20 contentions on those documents, too. And they have submitted
21 them and the Board has ruled on them.

22 MR. NORTON: Excuse me, Your Honor. Supplement
23 10 has been available. It was published --

24 JUDGE WOLF: I beg your pardon?

25 MR. NORTON: Supplement 10, which is the document



1 that refers to the memorandum of understanding regarding low
2 power testing, was printed in August of 1980. It certainly
3 was available to the parties when they had their contentions
4 in this case, in February of 1981.

5 MR. BROWN: Your Honor, documents Supp. 12 and 14
6 were in this year in the last two months. But I believe that
7 this is the time that we can of course make our position known.
8 This is why we are convened at this hearing. I really, I know
9 Mr. Olmstead is going to vealously represent his client, just
10 as I am attempting to do, but what we are doing here is far
11 too fundamental to engage in an exercise in obscure statements.
12 We are asking for something as fundamental a principle of law
13 as there is, just the opportunity to cross examine someone on
14 the words proffered.

15 MR. OLMSTEAD: Mr. Chairman, the regulation stand-
16 ard in 2720H2 requires Mr. Brown to make certain showings that
17 he has not even attempted to make here, much less attempt to
18 make them at a proper time, which was several months ago.

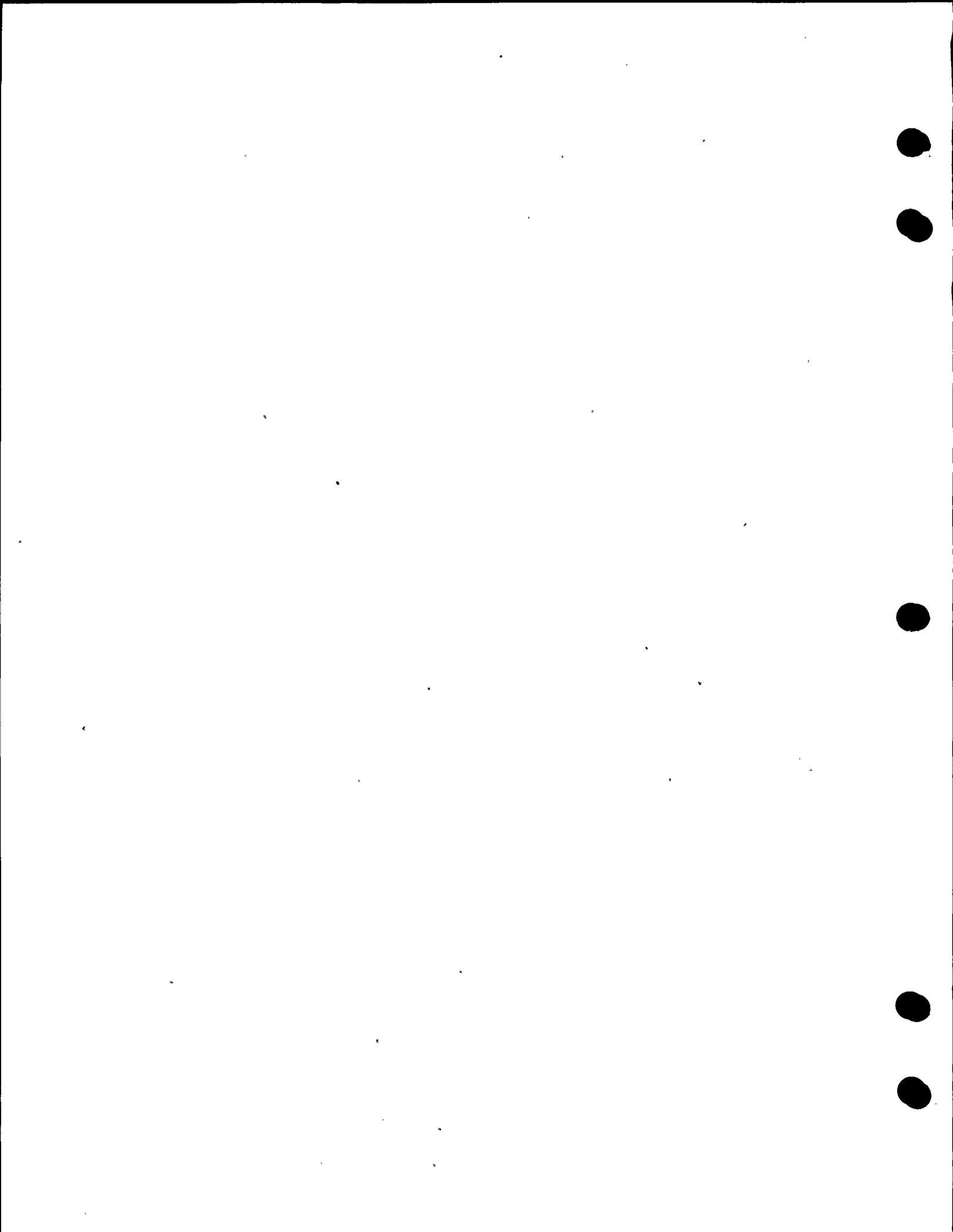
19 MR. BROWN: I guess I'm bound, he says, to let him
20 have the last word, so I won't respond this time for the
21 benefit of the Board. But I don't agree.

22 (Laughter)

23 JUDGE WOLF: We were assuming that, Mr. Brown.

24 (Laughter)

25 MR. FLEISCHAKER: Excuse me. Mr. Chairman?



1 JUDGE WOLF: Yes?

2 MR. FLEISCHAKER: May I say one thing on this
3 that hasn't been brought up yet, and that is that there has
4 been a great deal of discussion here of who has the respon-
5 sibility, the staff to come forward or Mr. Brown to request
6 the staff to come forward. I'd like to point out that in
7 these proceedings the burden of proof is on the applicant.

8 JUDGE WOLF: Yes. We know that.

9 MR. FLEISCHAKER: And the staff in support of the
10 applicant's position, it seems to me, has the burden, the
11 two of them have the burden to demonstrate that all of the
12 elements necessary to be found by this Board are met. Without
13 a showing in a manner that permits us the right to cross
14 examine, I do not think this Board can make a requisite finding.

15 So if they don't produce a witness who can support
16 a critical element and thereby deny us the right to cross
17 examine, I don't believe that this Board is able to make the
18 required finding.

19 (Applause)

20 JUDGE WOLF: We won't have any hand clapping here.
21 This is a serious matter and doesn't call for that kind of a
22 response.

23 Mr. Olmstead, one of the things that worries me
24 is that the FEMA finding is a rebuttal presumption.

25 MR. OLMSTEAD: That's correct. But I want to --



1 JUDGE WOLF: I'm going to ask you -- just a minute.
2 And consequently if the witness that you are proffering here
3 cannot respond to questions regarding FEMA findings what would
4 be the basis for this Board then coming to a conclusion that
5 it was supportable?

6 MR. OLMSTEAD: Okay. I think the thing that is
7 important to understand, because there are some what I think
8 are unwarranted characterizations of staff counsel being made;
9 is that the staff's case is not that 5047 has been met. The
10 staff has consistently since the pre-hearing conference in
11 this proceeding said that the standards in 5047 are not met
12 by PG&E for low power testing. Our case is not on those
13 standards. Our case is on the question of whether there is a
14 low risk associated with low power testing and whether 5057(c)
15 ought to be used.

16 JUDGE WOLF: We understand that. We have no
17 problem with that.

18 MR. OLMSTEAD: So I am not attempting to demonstrate
19 compliance with 5047(c).

20 JUDGE WOLF: I think that that is the burden of
21 the applicant.

22 MR. OLMSTEAD: To the degree that that regulation
23 is applicable to a low power test motion.

24 JUDGE WOLF: Correct.

25 MR. NORTON: Excuse me, Your Honor. I am concerned



1 . about the tenor of responses and questions going back and forth
2 here. As I understand it, what Gov. Brown's counsel is
3 arguing is that there is some document referred to in the
4 SER -- the language in the testimony is just quoting from the
5 SER, basically the same words are in the SER -- that he has
6 the right to now call those people that are being referred to
7 in the SER.

8 If you look at the page 3B-2 of SER Supp 10, for
9 example, almost every line talks about reports and who did
10 this and who did that. For example, immediately below what
11 we are talking about it says "as a result of the Commission's
12 action plan for promptly upgrading emergency preparedness of
13 power reactors, the Emergency Planning Review Team conducted
14 a site visit". Mr. Brown can say we want that emergency
15 planning review team here now. You've got to subpoena them
16 today because I want to --

17 MR. BROWN: I did not say that, Judge Wolf. But --

18 MR. NORTON: Excuse me. I have a right to finish,
19 Mr. Brown.

20 JUDGE WOLF: Just a minute, Mr. Brown.

21 MR. NORTON: The point is, if his theory is correct,
22 he can do that with everything that is mentioned in there.
23 He can now say we don't agree with that because they are
24 offerring it into evidence and we demand that you bring that
25 review team here so we can cross examine them to see if they



1 did.

2 My point is that yeah, he has the right to do that,
3 but months and months and months ago he had that right. He
4 can't now at this time say "Aw gee, we're surprised by that.
5 We want to cross examine it." That's what discovery is for.
6 That's what drafting contentions are for, which we have
7 all been through, which we have all done with. And now he
8 wants to start all over.

9 I again submit, regardless of the flowery speeches
10 Mr. Brown gives, he is doing it for one purpose only: to
11 delay.

12 JUDGE WOLF: Well, we won't go into that.

13 Mr. Brown?

14 MR. BROWN: Judge Wolf, at some point, you know,
15 I'm not sure at what point the Board just wants to instruct
16 Mr. Norton to quit saying I'm trying to delay. I'm getting
17 sick of it. I'm truly getting sick of mischaracterizations
18 of my motives.

19 JUDGE WOLF: Well, let me say --

20 MR. BROWN: Pardon me, sir. Just so I can get my
21 position straight. There's an old adage I learned as a little
22 boy that I think we can all stipulate: "As you ramble on
23 through life, brother, whatever be your goal, keep your eye
24 upon the doughnut and not upon the hole." The issue here,
25 sir, is simply whether we have a witness who I can cross



1 examine on the words proffered here. The staff can withdraw
2 these words. But I don't want them to withdraw it. I want
3 to have a witness to cross examine.

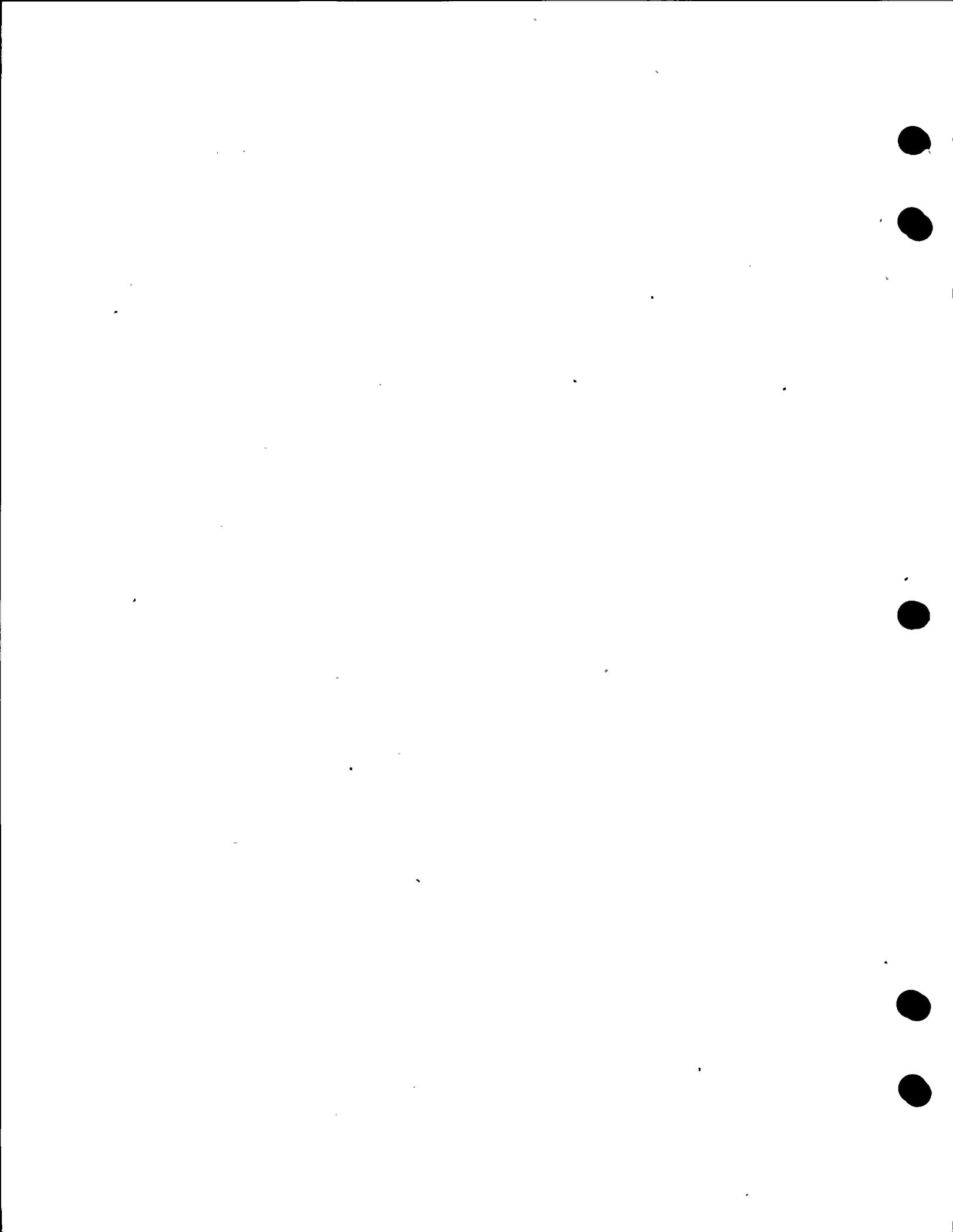
4 I'm not trying to delay. I'm not trying to cause
5 any of these problems which Mr. Norton seems to think are the
6 product of some flowering of my tongue.

7 JUDGE WOLF: Well, we don't see the problem quite
8 as simplisticly as you do. But we will adjourn now for lunch
9 and try to come back --

10 MR. NORTON: Your Honor, excuse me. We have had a
11 request from some of the witnesses and some of the other
12 counsel have mentioned to me that they would like a little
13 bit longer than the 60 minutes they were given yesterday,
14 simply because some of them had to leave meals half finished
15 in order to get back here at one o'clock. It is now 12:10
16 and at the request, I think, of the majority of the people --

17 JUDGE WOLF: We'll make it 1:30.

18 (Thereupon, at 12:10 p.m., a recess was taken until
19 1:30 p.m., the same day.)
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A F T E R N O O N S E S S I O N

1
2 JUDGE WOLF: Mr. Brown, at this time would you
3 restate your motion that you made earlier regarding the
4 written testimony of Mr. Lauben?

5 MR. BROWN: I believe it is Mr. Sears, Judge Wolf.

6 JUDGE WOLF: Right. You are right. Mr. Sears.

7 MR. BROWN: In light of the fact that Mr. Sears did
8 not serve on the FEMA Steering Committee, and that he has no
9 personal knowledge of the finding that FEMA made, we move that
10 the Board direct the staff to produce a competent witness to
11 support the testimony at lines 123 to 135 of Mr. Sears'
12 testimony, and the -- a part of line 170, of his testimony,
13 that refers to State and local emergency plans.

14 We make this motion in order to be able to cross-
15 examine a witness with personal knowledge on the FEMA
16 finding, and the testimony that I just pointed to.

17 In the alternative, Judge Wolf, we would ask this
18 Board to find inadmissible the testimony at lines 123 to 135
19 and the portion of line 170 that refers to State and local
20 plans.

21 JUDGE WOLF: Thank you. The Board will deny the
22 motion requiring the staff to produce a witness as requested
23 by Counsel for Governor Brown regarding the questions raised
24 in connection with Mr. John R. Sears' written testimony.

25 We know of no duty set forth in the rules requiring



1 such a production, and we leave that -- the Intervenor's have
2 had sufficient time to examine the memorandum from FEMA in
3 question, and that consequently the duty was upon them to
4 raise the question of -- or raise to subpoena any witness
5 that they needed to carry out their position regarding the
6 memorandum.

7 As to lines 123 to 135 and line 137 (sic), it is
8 the Board's view that those lines, the information contained
9 therein, should be raised by the Intervenor's on cross-
10 examination, and the record then will show what -- whether or
11 not the witnesses provided -- whether or not Mr. Sears; I
12 guess, can support the statements made therein.

13 You may proceed now, if you will, Mr. Olmstead.

14 MR. OLMSTEAD: I believe that I still have my
15 motion to enter the testimony of John R. Sears into the
16 record as if read, along with a copy of his professional
17 qualifications.

18 JUDGE WOLF: The motion to enter the written
19 testimony of John Sears into the record as if read, along
20 with his qualifications, is granted.

21 MR. NORTON: Excuse me, Your Honor.

22 JUDGE WOLF: Yes.

23 MR. NORTON: Just procedurally, I don't believe the
24 other parties are on record with objections or not.

25 JUDGE WOLF: I beg your pardon?



3 t8
1 MR. NORTON: The other parties have not been
2 called upon as to whether they have objections or not, just
3 as a matter of the record. The Joint Intervenors I don't
4 think have been asked whether they have objections, and we
5 have not been asked.

6 MR. REYNOLDS: We stated earlier we supported the
7 motion to compel the staff to bring a witness in who could
8 testify with respect to the NRC-FEMA Steering Committee, and
9 we also supported the motion to strike.

10 JUDGE WOLF: All right.

11 MR. REYNOLDS: For the record, we object to the
12 admission of Mr. Sears' testimony with respect to the
13 sections cited by the Governor's Counsel.

14 JUDGE WOLF: Very well.

15 MR. NORTON: We have no objection.

16 JUDGE WOLF: I think the record showed that already,
17 Mr. Norton. Are you ready to go on then, Mr. Olmstead?

18 (Whereupon, the prepared statement of the above
19 party was inserted into the record.)
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1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION

3 BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

4 In the Matter of)
5)
6 PACIFIC GAS AND ELECTRIC COMPANY) Docket Nos. 50-275 O.L.
7) 50-323 O.L.
8 (Diablo Canyon Nuclear Power Plant)
9 Unit Nos. 1 and 2)

10 TESTIMONY OF JOHN R. SEARS

11 Q. Please state your full name.

12 A. John R. Sears.

13 Q. By whom are you employed?

14 A. I am employed by the U.S. Nuclear Regulatory Commission. I am a
15 Senior Reactor Safety Engineer in the Emergency Preparedness
16 Licensing Branch, Division of Emergency Preparedness of the Office
17 of Inspection & Enforcement.

18 Q. Describe the nature of your work with respect to the Diablo Canyon
19 operating license proceeding?

20 A. I am responsible for review and evaluation of the Emergency Plan for
21 the Diablo Canyon reactors.

22 Q. Have you reviewed the emergency plans for plants other than Diablo
23 Canyon?

24 A. Yes.



25 Q. What previous review experience have you had with respect to
26 emergency plans?

27 A. Prior to the summer of 1979, I was responsible for review of the
28 emergency plans for all operating reactors.

29 Q. Would you detail your professional qualifications?

30 A. Attached is a copy of my professional qualifications.

31 Q. Has PG&E revised the Diablo Canyon Power Plant Emergency Plan?

32 A. PG&E filed a revision to the Diablo Canyon Power Plant Emergency
33 Plan in February of 1980. PG&E also provided additional information
34 in letters, PG&E to NRC, dated January 13, 1981 and February 27,
35 1981.

36 Q. Did you participate in the NRC review of these documents?

37 A. Yes.

38 Q. How was the Emergency Plan evaluated?

39 A. The Emergency Plan was reviewed against the specific criteria of the
40 sixteen Planning Standards in Part II of the "Criteria for
41 Preparation and Evaluation of Radiological Emergency Response Plans
42 and Preparedness in Support of Nuclear Power Plants," NUREG-0654,
43 Rev. 1, November 1980. The same sixteen standards are listed as
44 requirements of 10 C.F.R. 50.47, Final Regulations on Emergency
45 Planning, August 18, 1980. The NRC Staff has prepared an Emergency
46 Preparedness Evaluation Report which lists each of the sixteen



47 standards listed in 10 C.F.R. 50.47 in order, followed by a summary
48 of applicable portions of the Emergency Plan as they apply to the
49 Standard.

50 In addition, the Emergency Plan has been evaluated against the
51 requirements of Sections II.A.1.1 and III.A.1.2 of NUREG-0694 (now
52 superceded by the same sections of NUREG-0737).

53 Furthermore, California nuclear plant licensees and applicants
54 have been requested to provide analyses on the effects of earthquake
55 on their emergency plans, specifically in terms of the utilities'
56 capabilities to insure availability of personnel and equipment to
57 the sites.

58 Q. Where are the results and conclusions of the NRC Staff's evaluation
59 reported?

60 A. The NRC Staff's results and conclusions are reported in Appendix B
61 Emergency Preparedness Evaluation Report, to Supplement No. 14 to
62 the Safety Evaluation Report, April 1981.

63 Q. What is the NRC staff conclusion?

64 A. The NRC Staff conclusion is that the Diablo Canyon emergency plan,
65 when revised in accordance with the commitments made, provides an
66 adequate planning basis for an acceptable state of emergency
67 preparedness and will meet the requirements of 10 C.F.R. 50 and
68 Appendix E.



69 Q. Do you concur in the results and conclusions of the Emergency
70 Preparedness Evaluation Report?

71 A. Yes.

72 Q. Are there deficiencies in the Diablo Canyon Emergency Plan?

73 A. Yes.

74 Q. Has PG&E made commitments to correct these deficiencies?

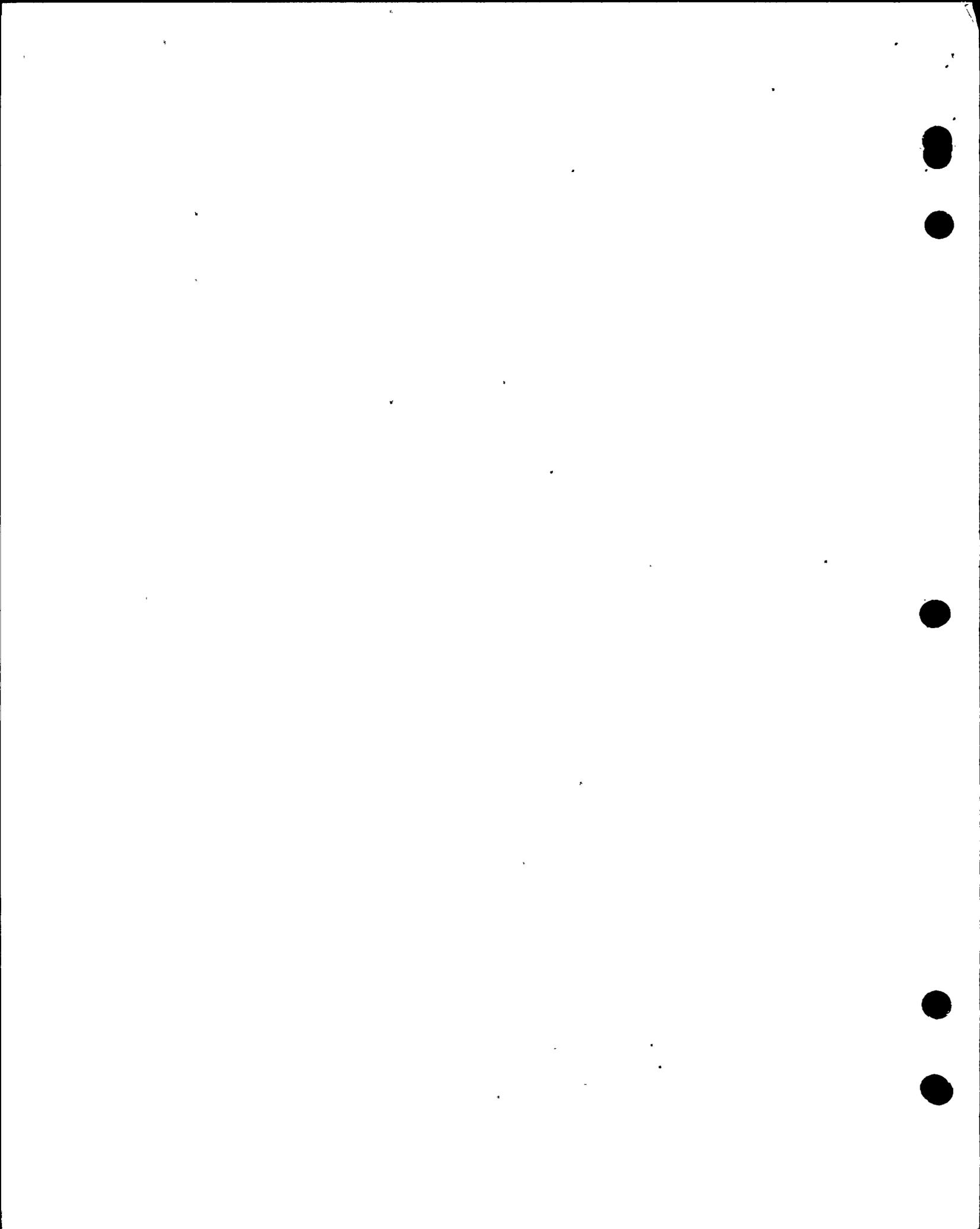
75 A. Yes, PG&E has committed to correct these deficiencies before a
76 license for full power is granted.

77 Q. What are these deficiencies?

78 A. The principal deficiency is that a fast public alerting system is
79 not in place. 10 C.F.R. 50 Appendix E requires a demonstration of a
80 fast alerting system to the general public. PG&E has described its
81 proposed system in Section 7.2.11 of the Emergency Plan. PG&E has
82 contracted for the installation of 52 electro-mechanical sirens to
83 perform this function. Installation will commence as soon as
84 necessary local permits are obtained.

85 Q. What is the significance of this deficiency for low power operation?

86 A. The requirement for a system to alert the public within 15 minutes
87 is based on an accident scenario which could result in an offsite
88 release of radiation in as little as thirty minutes from the time of
89 initiation of an accident. The requirement is not necessary for
90 operation at 5% power because, even if a credible LOCA occurred, the



91 resultant heat up of the core to melting point would take at least
92 15 hours and consequently a fast alerting system is not required.

93 Q. Is there a deficiency regarding a public information program?

94 A. Yes, 10 C.F.R. 50 Appendix E requires the dissemination to the
95 public within the 10 mile Emergency Planning Zone of basic planning
96 information. PG&E has a public information brochure in draft form.
97 The final version must be integrated with the emergency plans of
98 local governments which are presently being revised and upgraded.

99 Q. What is the significance of this deficiency for operation to 5%?

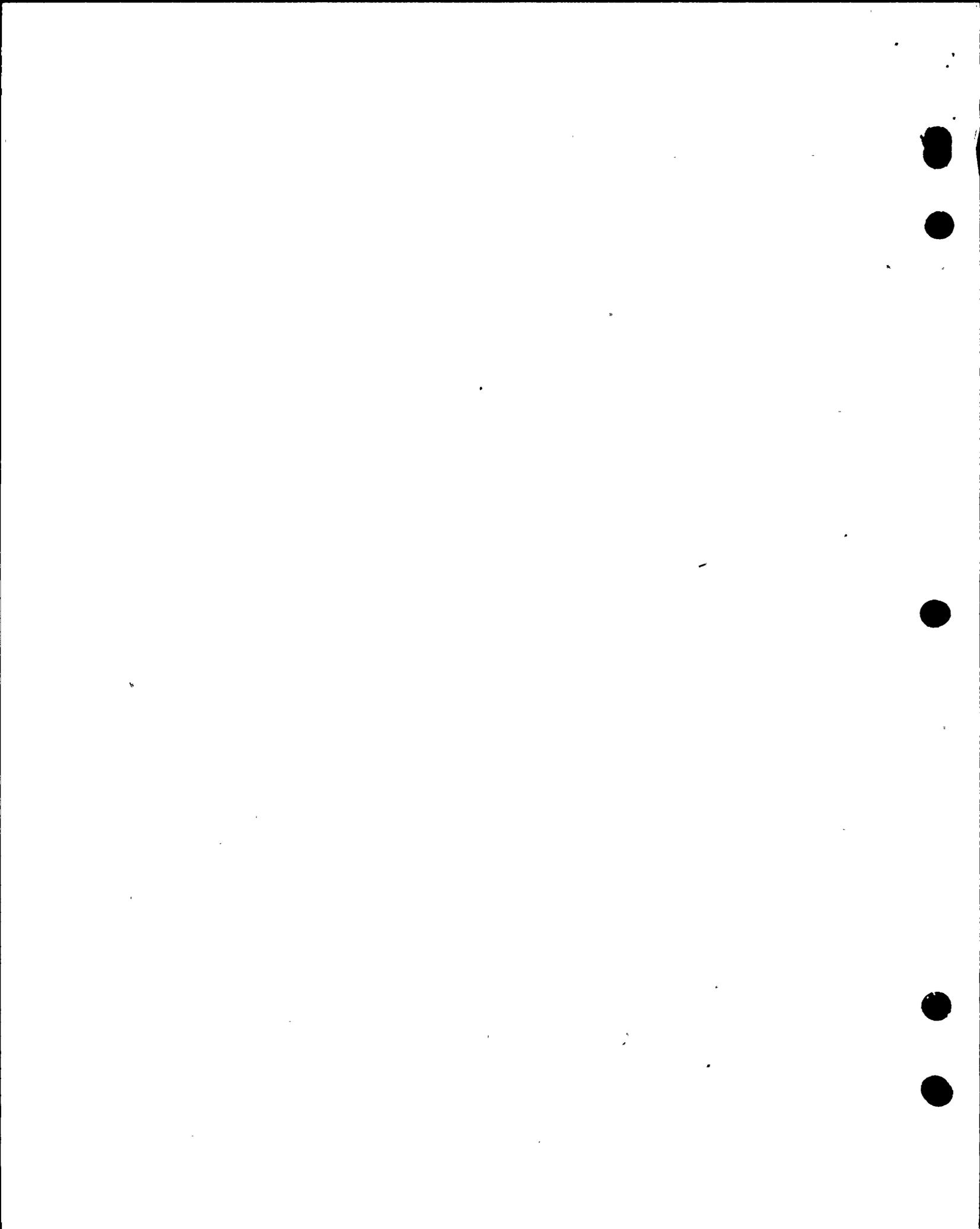
100 A. The purpose of the requirement for a public information program is
101 to inform the public of how they will be alerted and what to do in
102 an emergency. Since the alerting system is not yet in place, there
103 is not yet a need for a public information program explaining the
104 system.

105 Q. Are there other deficiencies in the Diablo Canyon Emergency Plan?

106 A. There are othe areas where the On-Site Plan is not in full
107 compliance with the elements of the guidance in NUREG-0654. Many
108 have been addressed in the letter, PGE to NRC, dated January 13,
109 1981.

110 Q. What is the significance of these deficiencies for 5% power?

111 A. These deficiencies are not significant for operation at 5% power.
112 PG&E has committed in its letter to NRC, dated 2/27/81 that a full
113 power license NUREG-0654 will be substantially complied with.



114 Q. Will a supplement to the Emergency Preparedness Evaluation Report be
115 issued?

116 A. Yes, a supplement to the Emergency Preparedness Evaluation Report
117 will be issued.

118 Q. What will the supplement contain?

119 A. The supplement will set forth the findings and determinations of the
120 Federal Emergency Management Agency (FEMA) as to whether State and
121 local emergency response plans are adequate and capable of being
122 implemented for full power operation.

123 Q. Has FEMA made a finding for low power operation at Diablo Canyon
124 Power Plant?

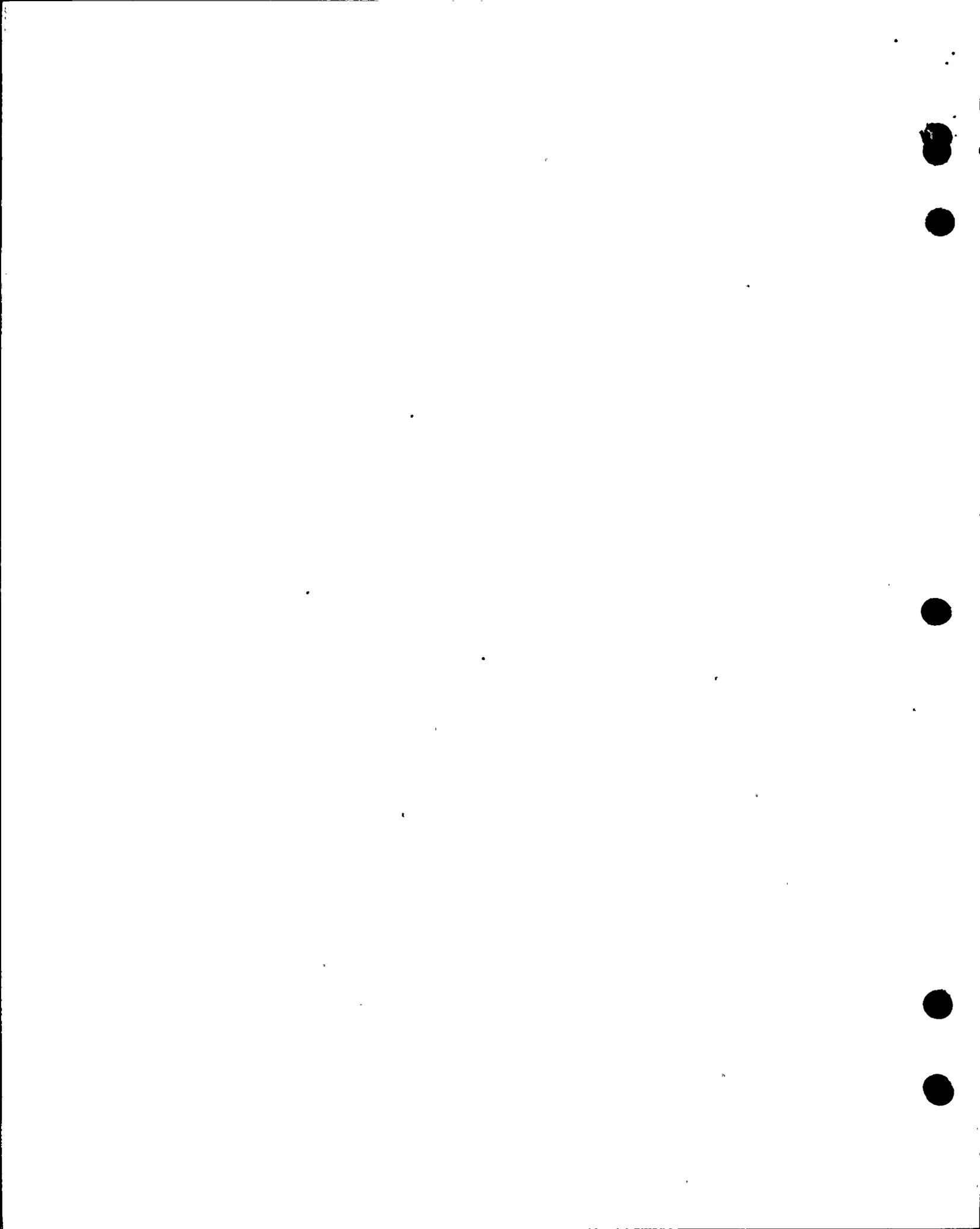
125 A. Yes.

126 Q. What was FEMA's finding for the adequacy of the present emergency
127 plans at Diablo Canyon?

128 A. FEMA has made a finding that the present emergency plans at Diablo
129 Canyon adequately protect the public health and safety for the
130 purposes of low power testing.

131 Q. Where is FEMA's finding documented?

132 A. FEMA's finding is documented in a Memorandum for Harold R. Denton
133 and John W. McConnel from FEMA/NRC Steering Committee and in the
134 FEMA/NRC Interim Agreement on Criteria for Low Power Testing at New
135 Commercial Nuclear Facilities -- SER Supplements Nos. 10 and 12.



136 Q. How is PG&E complying with the NRC request that all California
137 nuclear plant licensees' and applicants provide analyses on the
138 effects of earthquake on their emergency plans, specifically in
139 terms of the utilities' capabilities to insure availability of
140 personnel and equipment to the sites?

141 A. I have been informed by PG&E that a contractor, has been employed to
142 study the impact of earthquakes on the emergency plans of the
143 utility and of offsite authorities.

144 Q. When will the contractor issue their report?

145 A. The report is due in mid-May of 1981.

146 Q. How has PG&E proposed to utilize the contractor's report?

147 A. PG&E will revise the Emergency Plans to include the contractor's
148 recommendations. This will be done prior to full power operation.

149 Q. Are there presently emergency plans for the Diablo Canyon facility?

150 A. Yes.

151 Q. Does the licensee's plan presently have a notification requirement
152 as regards accidents at the facility?

153 A. Yes.

154 Q. What does the licensee's present emergency plan require?



155 A. The licensee's present emergency plan requires prompt notification
156 of the county governments surrounding Diablo Canyon Nuclear
157 Facility. Governor Brown has admitted this.

158 Q. Did Governor Brown admit anything else as regards emergency
159 planning?

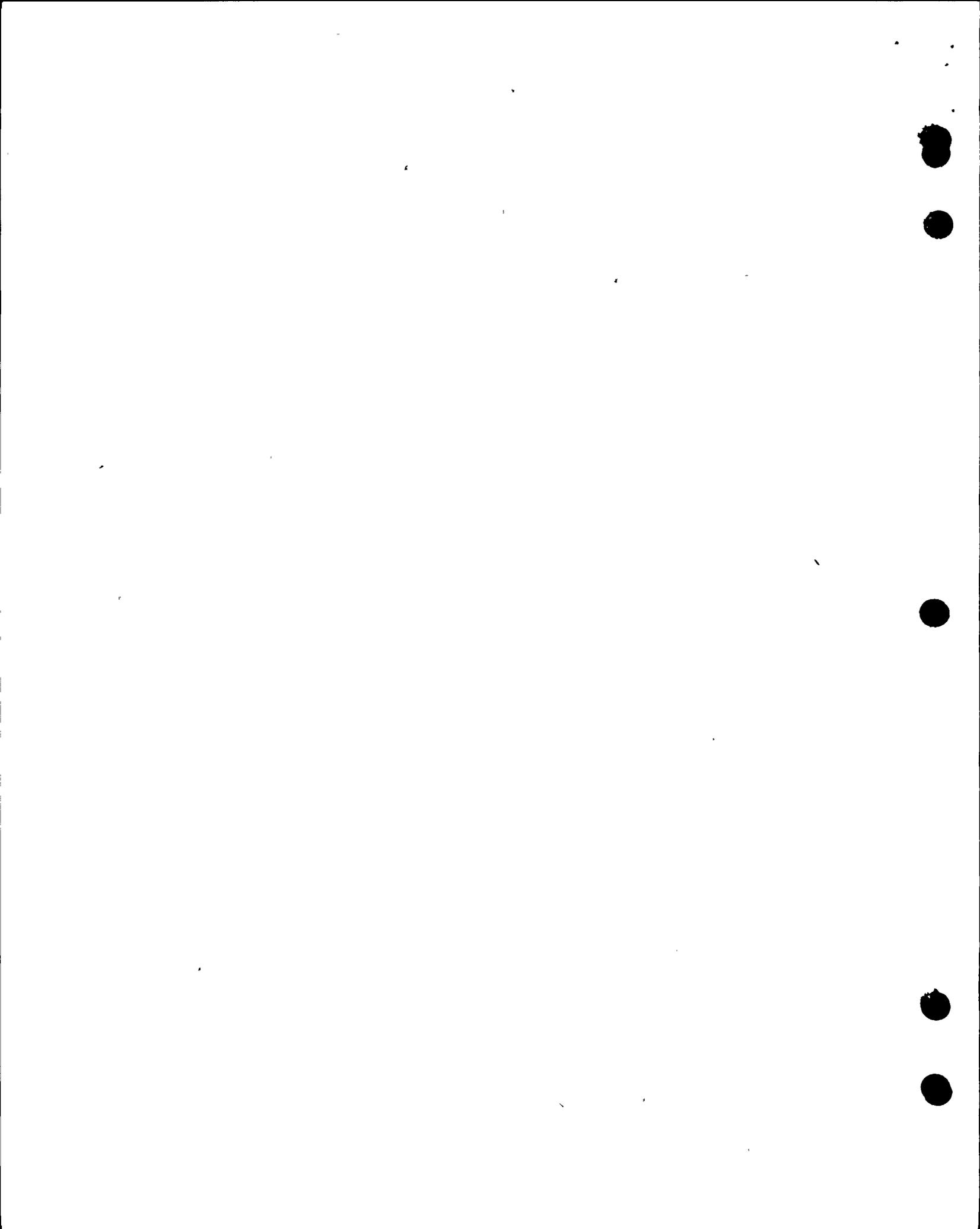
160 A. Yes, both Governor Brown and Joint Intervenors have admitted that
161 any accident occurring during low power testing would release a
162 fraction of the existing fission product inventory at the Diablo
163 Canyon Nuclear Facility.

164 Q. Are the present emergency plans in full force and effect?

165 A. Yes.

166 Q. What is your opinion about the adequacy of Diablo Canyon's combined
167 Applicant, State and local emergency response plans if an accident
168 were to occur during low power operation?

169 A. My opinion is that, if, during low power operation, an accident were
170 to occur, the combined applicant, State and local emergency response
171 plans will insure that an adequate state of emergency preparedness
172 is in place to minimize the risks of hazard to the health and safety
173 of the public during fuel loading and operation to 5% power.



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

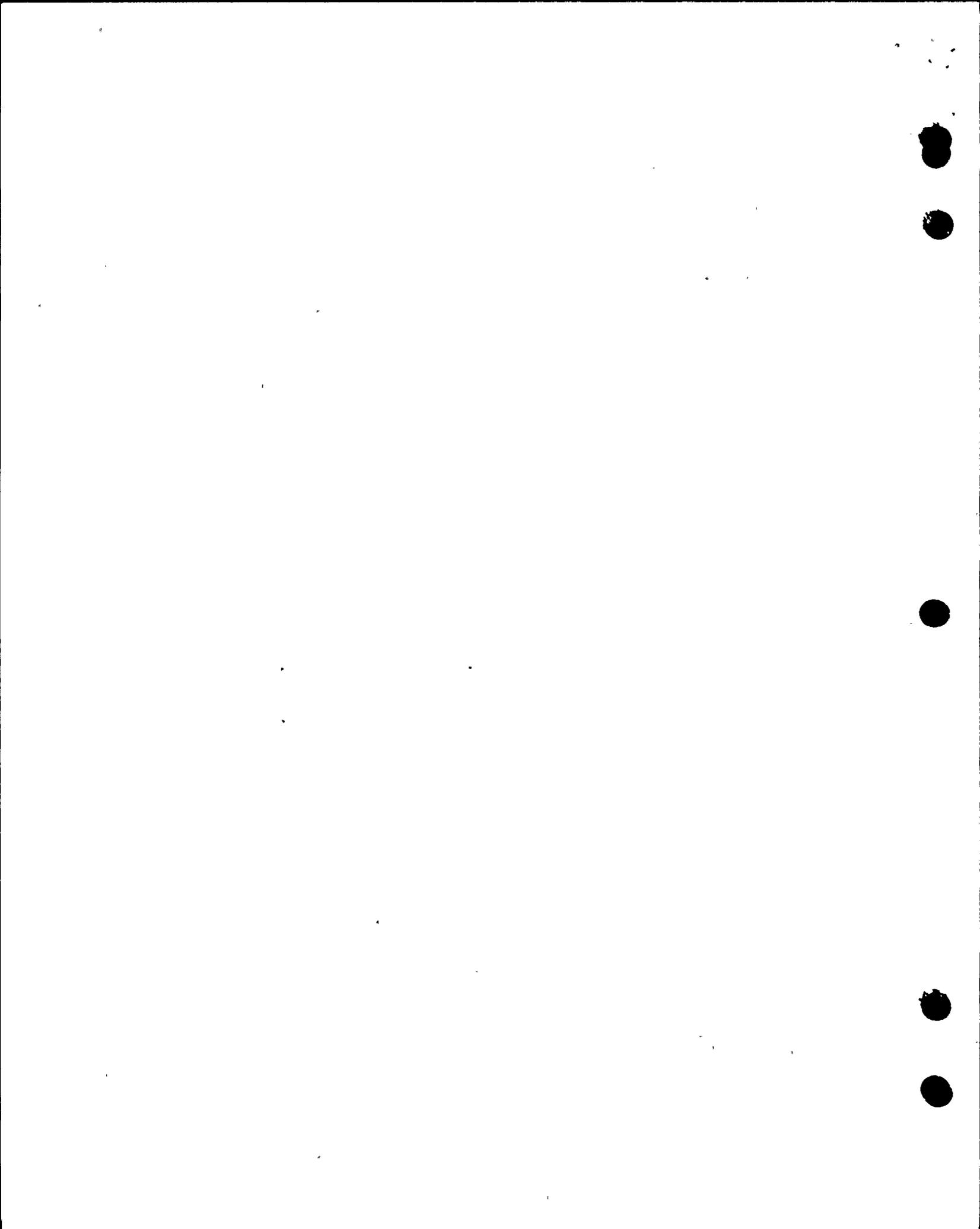
In the Matter of)	
PACIFIC GAS AND ELECTRIC COMPANY)	Docket Nos. 50-275 O.L.
(Diablo Canyon Nuclear Power Plant)	50-323 O.L.
Unit Nos. 1 and 2))	

JOHN R. SEARS

PROFESSIONAL QUALIFICATIONS

EMERGENCY PREPAREDNESS PROGRAM OFFICE

Prior to 1952, I was employed in field jobs in various aspects of mechanical engineering. In 1952, I joined Brookhaven National Laboratory as a Reactor Shift Supervisor on the Brookhaven Graphite Reactor. While at Brookhaven, I completed a series of courses given by the Nuclear Engineering Department in nuclear engineering. These courses were patterned on the ORSORT programs. In 1956, I was appointed Project Engineer on the Brookhaven Medical Research Reactor. I was a member of the design group, participated in critical design experiments, wrote specifications, coauthored the hazards report, was responsible for field inspection and contractor liaison, trained operators and loaded and started up the reactor. About three months after start-up, in 1959, following the successful completion of proof tests and demonstration of the reactor in its design operating mode for boron capture therapy of brain cancer, I accepted a position as reactor inspector with the Division of Inspection, U. S. Atomic Energy Commission. In 1960, I transferred, as a reactor inspector, to the newly-formed Division of Compliance. I was responsible for the inspection, for safety and



compliance with license requirements, of the licensed reactors and the fuel fabrication and fuel processing plants, which use more than critical amounts of special nuclear material, in the Eastern United States.

In September 1968, I transferred to the Operational Safety Branch, Directorate of Licensing. My responsibility included development of appropriate guides for evaluation of operations aspect of license applications and staff assistance in review of power reactor applicants submittals in the areas of Organization and Management. Personnel Qualifications, Training Programs, Procedures and Administrative Control, Review and Audit, Start-up Testing Programs Industrial Security and Emergency Planning.

The Branch was reorganized as the Industrial Security and Emergency Planning Branch in April 1974 to place increased emphasis and attention upon areas of physical security and emergency planning.

In 1976, I transferred to the Division of Operating Reactors as the sole reviewer responsible for review of emergency planning for all the operating reactors in the United States.

New York City College, 1950 - Mechanical Engineering

Argonne International School of Reactor Technology, 1961 - Reactor Control Course

GE BWR System Design Course, 1972

Popo-U.S. Army, 1974 - Course in Industrial Defense and Disaster Planning

Instructor at DCPA, 1976, 1977 - Course in Emergency Planning



Director, 1962 - Reactor Program, Atoms for Peace Exhibit, Bangkok,
Thailand

Director, 1966 - Atoms for Peace Exhibit, Utrecht, Holland

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DIRECT EXAMINATION (Resumed)

BY MR. OLMSTEAD:

Q. Mr. Buckley, do you have in front of you a document entitled "Testimony of Bartholomew C. Buckley?"

A (Witness Buckley) Yes, I do.

Q. And did you prepare this testimony for presentation at this proceeding?

A Yes, I did.

Q. Do you have any additions or corrections to make to it?

A No.

Q. Attached to the testimony, is there a document entitled "Barthomew C. Buckley, Professional Qualifications, Division of Licensing?"

A Right.

Q. Are those your professional qualifications?

A They are.

Q. Do you have any changes or corrections to make to those?

A No.

Q. Mr. Buckley, is the testimony and your statement of professional qualifications true and correct to the best of your knowledge and belief?

A Yes.

MR. OLMSTEAD: Mr. Chairman, I move the testimony



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of Bartholomew C. Buckley and his statement of professional qualifications into the record as if read.

JUDGE WOLF: . Any objections?

MR. REYNOLDS: No objection.

MR. BROWN: No.

MR. NORTON: No objection.

JUDGE WOLF: Without objection, the testimony of Bartholomew C. Buckley and his qualifications will be bound in the record as if read.

(Whereupon, the prepared statement of the above party was inserted into the record.)



1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION

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7) 50-323 O.L.
8 (Diablo Canyon Nuclear Power Plant)
9 Unit Nos. 1 and 2)

10 TESTIMONY OF BARTHOLOMEW C. BUCKLEY

11 Q. Please state your full name.

12 A. Bartholomew Christopher Buckley.

13 Q. By whom are you employed?

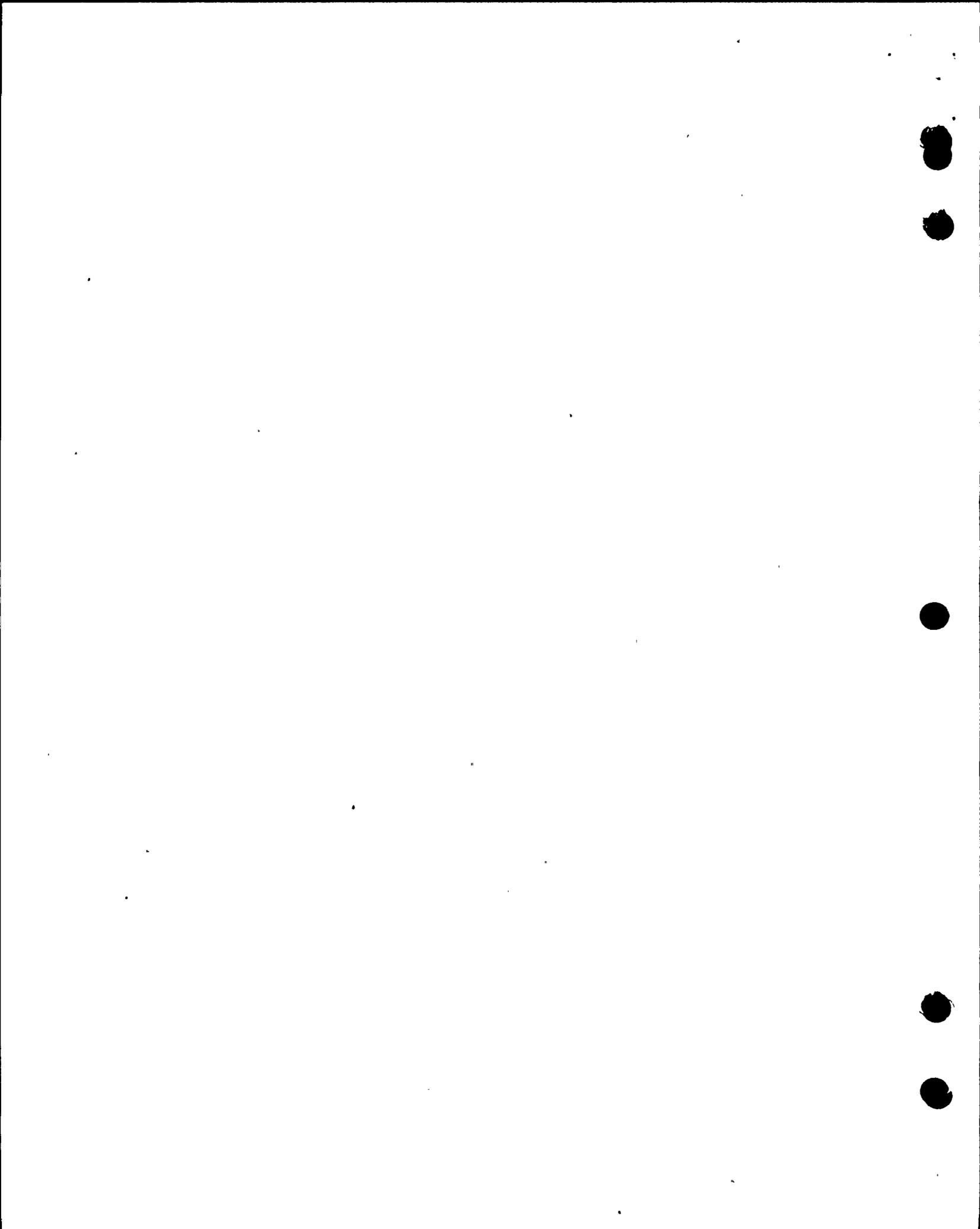
14 A. The Nuclear Regulatory Commission (NRC).

15 Q. Describe the nature of your work with respect to the Diablo Canyon
16 operating license proceeding.

17 A. Since March 11, 1979, as a Senior Licensing Project Manager, I am
18 responsible for the management of the NRC Staff's safety review and
19 the preparation of safety evaluation reports in support of the
20 issuance of operating licenses for Diablo Canyon, Units 1 & 2.

21 Q. Have you, in the course of your professional experience, had
22 occasion to act as a project manager for plants other than Diablo
23 Canyon?

24 A. Yes, the Rancho Seco and Crystal River Nuclear Power Plants.



25 Q. Would you detail your professional qualifications?

26 A. Attached is a copy of my professional qualifications.

27 Q. Are you familiar with the SER and supplements thereto which have
28 been issued for the Diablo Canyon Nuclear Facility?

29 A. Yes.

30 Q. Did you participate in the preparation of those documents?

31 A. Yes.

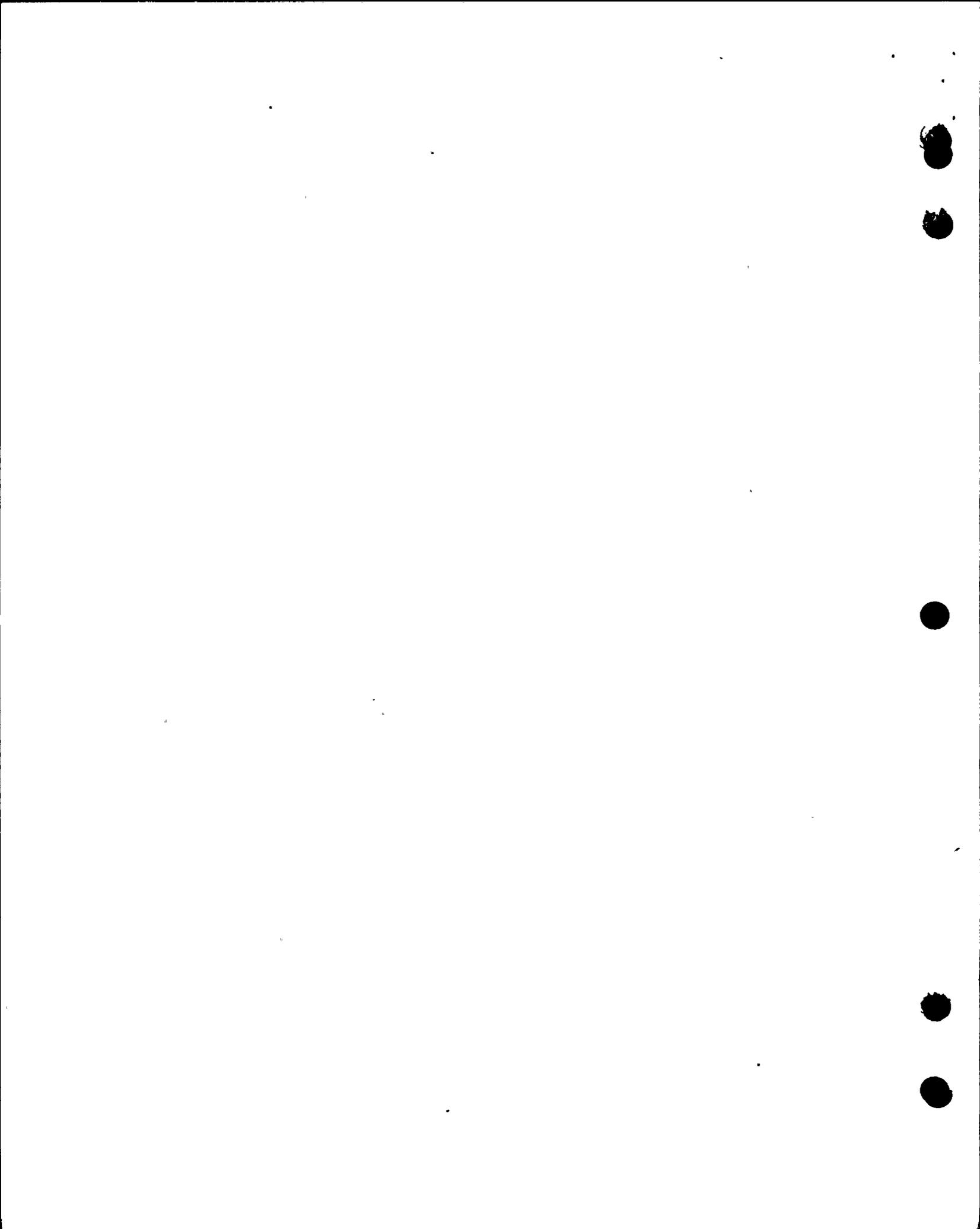
32 Q. Please detail the extent of your participation in the preparation of
33 the SER and Supplements thereto for the Diablo Canyon Nuclear
34 Facility.

35 A. After receipt of SER inputs from the various technical branches, I
36 prepared Supplements Number 9, 10, 11, 12, 13 and 14. The Safety
37 Evaluation Report, dated October 16, 1974, and Supplements 1 through
38 8 were prepared by other project managers.

39 Q. Would you please identify all the individuals who prepared the
40 sections of the SER and Supplements thereto which relate to the
41 contentions admitted in this low power proceeding?

42 A. Emergency Planning: Peter Tam (former NRC employee); Relief and
43 Safety Valves: Edgar Hemminger

44 Q. Have you reviewed the input to the SER of the above identified
45 individuals?



45 A. Yes.

47 Q. Do you agree with the analysis and conclusions reached by those
48 individuals within the limits of your professional expertise?

49 A. Yes.

50 Q. Considering that review do you, based on your professional
51 experience, have any concern that the issues raised by the admitted
52 contentions indicate any danger to the public safety and health by
53 operation of the Diablo Canyon Nuclear Facility at low power?

54 A. No.



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
PACIFIC GAS AND ELECTRIC COMPANY) Docket Nos. 50-275 O.L.
(Diablo Canyon Nuclear Power Plant) 50-323 O.L.
Unit Nos. 1 and 2)

BARTHOLOMEW C. BUCKLEY

PROFESSIONAL QUALIFICATIONS

DIVISION OF LICENSING

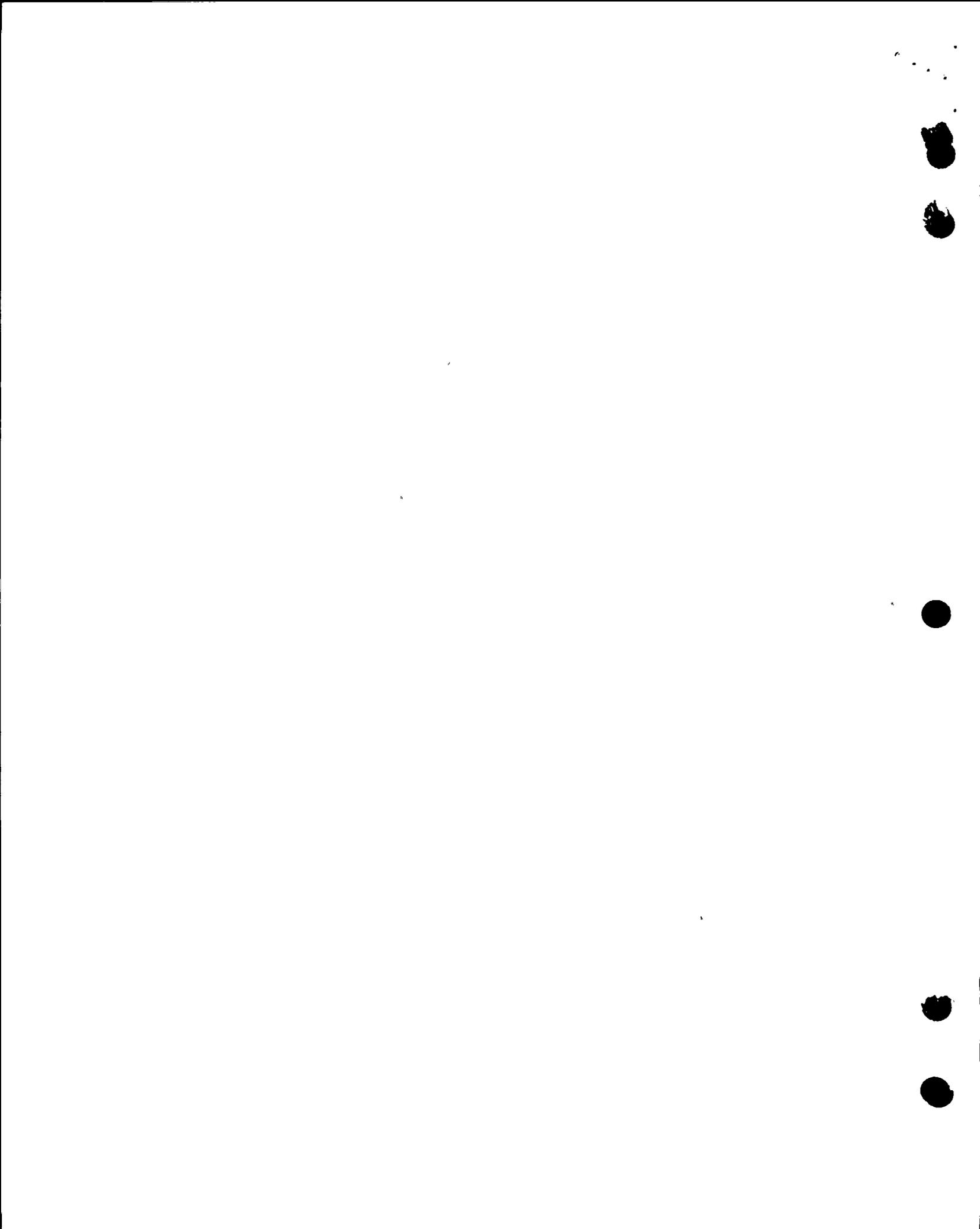
I am a Senior Project Manager of the Staff of the U. S. Nuclear Regulatory Commission. I am responsible for the management of the NRC Staff's safety review and the preparation of safety evaluation reports in support of the issuance of operating licenses for Diablo Canyon, Units 1 and 2.

I received a Bachelor of Chemical Engineering Degree at the Catholic University of America in 1958 and I studied for a Master's Degree in Nuclear Engineering at the above cited University.

I started my employment with the Regulatory staff on January 3, 1972 and have worked as a Project Manager in Operating Reactors Branch and as a Section Leader in the Division of Operating Reactors.

I was employed at the Naval Nuclear Power Unit, Fort Belvoir, Virginia from 1966 to December 1971. I worked as a chemical engineer for approximately two years, and as Director of the Engineering Department until December 1971.

From 1960 to 1966 I worked at the Atomic Energy Division of Allis Chalmers. I prepared primary system and auxiliary preoperational test



procedures and conducted and evaluated these preoperational tests at the Elk River Reactor. I also prepared a water chemistry manual and performed water chemistry analyses at the Elk River Reactor. I prepared all fluid systems preoperational test procedures for the LaCrosse Reactor and taught plant operating personnel in the design and operating aspects of certain systems.

I worked as a process control engineer at the MELPAR Co. located in Virginia from 1958 to 1960.

[The text in this section is extremely faint and illegible due to low contrast and noise. It appears to be a multi-paragraph document.]



6
1 MR. OLMSTEAD: Now, I have a preliminary matter at
2 this time in light of Mr. Buckley's testimony, Mr. Chairman,
3 and that is yesterday I -- or Tuesday, I guess it was, I
4 had identified as staff Exhibits Number 18 through 25 the
5 staff Safety Evaluation Reports, supplements 7 through 14, and
6 at this time, I would move those into the record pursuant to
7 the provisions of 10 CFR 2.743(g).

8 JUDGE WOLF: Tell me what you are moving into the
9 record?

10 MR. OLMSTEAD: The staff Exhibits, numbers 18
11 through 25, which are the Staff Safety Evaluation Supplements,
12 numbers 7 through 14.

13 JUDGE WOLF: Any objection to the motion to move
14 into the record the supplements 7 to 14 to the SER?

15 MR. REYNOLDS: Judge Wolf, before I respond to that,
16 I wonder if I could ask Mr. Buckley a few questions about the
17 SER supplements.

18 JUDGE WOLF: Yes, you may.

19 VOIR DIRE EXAMINATION

20 BY MR. REYNOLDS:

21 Q Mr. Buckley, referring to SER Sup. 10, did you
22 provide the technical input set forth at pages 2 to three
23 under the heading "Risk associated with low power testing?"

24 A Did I prepare --

25 Q Did you provide the technical input for that section?



1 A No.

2 Q Who did provide the technical inputs?

3 A Mr. Lauben.

4 Q Referring to SER Sup. 10, did you provide the
5 technical inputs set forth at pages 2.D-1 and 2.D-2 --

6 A Let me look at it, please.

7 Q -- regarding relief and safety valve testing?

8 MR. OLMSTEAD: If the witness can look at the
9 document --

10 WITNESS BUCKLEY: No, I did not.

11 BY MR. REYNOLDS:

12 Q Who did provide the technical inputs?

13 A (Witness Buckley) In this particular case, it was
14 Mr. Mike Williams who headed up a task force group.

15 Q Referring to SER Sup. 10, did you provide the
16 technical inputs set forth at pages 3.A-1 to 3.A-5, and
17 3.B-1 to 3.B-3 regarding emergency preparedness?

18 A No.

19 Q Who did provide the technical inputs?

20 A I think it was a combination of Mr. Kunihiro and
21 Mr. Peter Tam.

22 Q Referring to SER Sup. 12, did you provide the
23 technical inputs set forth at pages 3-1 to 3-3 regarding
24 emergency preparedness?

25 A I may have prepared that with the assistance from



t8 8 1 Mr. Tam, Mr. Sears, and the office of inspection and
2 enforcement.

3 Q You may have? You seem uncertain.

4 A Assist in preparing it. In other words, I got some
5 information from the Office of Inspection and Enforcement that
6 I provided to either Mr. Peter Tam or Mr. Sears.

7 Q So the inputs were provided to you by the Office
8 of Inspection and Enforcement?

9 A No,, certain portions of it was provided.

10 Q Right, and then the other portions were provided
11 by --

12 A Either Mr. Tam or Mr. Sears.

13 Q And what did Mr. Sears provide?

14 A Mr. Sears would be better able to testify.

15 Q Fine, thank you.

16 A (Witness Sears) Sir, Mr. Tam was originally the
17 reviewer on this case. Mr. Tam has resigned, and I took over
18 from him. During the period just before he left, I was
19 working with him.

20 Q So is it fair to say that Mr. Tam prepared most of
21 the inputs to this section?

22 A Well, I concurred in them, sir, for a period --
23 then -- yes, that is fair to say he prepared them.

24 Q OKay, thank you. Mr. Buckley, referring to SER
25 Sup. 14, did you provide the technical input set forth at



t8 9 1 pages 3-12 to 3-14 regarding testing of relief and safety
2 valves?

3 A (Witness Buckley) No, I did not.

4 Q Who did provide the technical inputs?

5 A Mr. Hemminger.

6 Q Referring to SER Sup. 14, did you provide the
7 technical input set forth at pages 3-23 and 3-24 regarding
8 emergency preparedness, and at Appendix B, entitled:
9 "Emergency Preparedness Evaluation?"

10 A No, I don't recall doing that.

11 Q Who did prepare the technical inputs?

12 A Either Mr. Tam or Mr. Sears or both.

13 MR. REYNOLDS: Thank you. I have no further
14 questions. Oh, yes I do have one more.

15 BY MR. REYNOLDS:

16 Q Mr. Buckley, precisely what was your role in
17 preparation of these SER Supplements?

18 A (Witness Buckley) I would receive technical
19 input, SER inputs from the various technical branches, and
20 compile the report.

21 Q Thank you.

22 MR. REYNOLDS: Thank you. I have no further
23 questions.

24 JUDGE WOLF: Thank you. Any further questions of
25 this panel?



10
1 MR. OLMSTEAD: I believe the motion pending is to
2 receive SER Supplements 7 through 14 into evidence at this
3 point.

4 MR. BROWN: Well, I have an objection to that
5 motion, Judge Wolf?

6 JUDGE WOLF: Yes?

7 MR. BROWN: Yes, I have an objection to the motion.
8 I don't know what order you want to --

9 JUDGE WOLF: You may state the objection.

10 MR. BROWN: I object to Mr. Buckley supporting and
11 standing behind or sponsoring -- I object to him sponsoring
12 those portions of the SER which he has not been involved in
13 evaluating and drafting. He just stated in response to the
14 questions asked by Mr. Olmstead that he essentially
15 collated the report.

16 MR. REYNOLDS: Excuse me, Mr. Olmstead is over
17 there.

18 MR. BROWN: It shows long lunches aren't good.

19 I think it is entirely proper for Mr. Buckley to
20 authenticate this document. Surely that is consistent with
21 what his function is, but it is not appropriate for him to
22 sponsor the document, because we can't cross-examine him on
23 that which he did not evaluate and draft, and that which he
24 has no personal knowledge in the development of. There is
25 no way to get to the basis of the words, so if the staff would --



1 It would be highly appropriate to have Mr. Buckley
2 authenticate the document, as the compilation which he
3 collated from the technical inputs given by others, and then
4 to have qualified witnesses, perhaps these, if they are
5 qualified, to be the ones to stand behind and sponsor the
6 relevant portions of the documents.

7 MR. OLMSTEAD: May I respond?

8 JUDGE WOLF: Mr. Olmstead?

9 MR. REYNOLDS: Perhaps if you want to have the last
10 word, I would like to state my objections on the record as
11 well, having asked the questions of Mr. Buckley.

12 JUDGE WOLF: Very well.

13 MR. REYNOLDS: Joint Intervenors object to Mr.
14 Buckley serving as sponsor of these SER Supps for the reasons
15 stated by Mr. Brown.

16 We also object to admission of any sections of
17 these SER Supps which are unrelated to the contentions here.
18 We object to the reference in those documents to the NRC FEMA
19 Steering Committee agreements for the reasons stated earlier
20 this morning.

21 MR. NORTON: Excuse me, again.

22 JUDGE WOLF: Mr. Norton?

23 MR. NORTON: Yes, in keeping in line with Mr.
24 Olmstead wanting the last word, perhaps we should go next.

25 This is very similar, of course, to the argument



12 1 that was made prior to the lunch recess. I find it
2 fascinating that these parties, the Joint Intervenors and
3 Governor Brown, have been in these proceedings, I think --
4 well, Joint Intervenors have been in them from the
5 beginning, and Mr. Fleischaker has been representing them for
6 a number of years, and Mr. Brown has been involved now since
7 June of 1979, and so he also has been involved in a
8 number of proceedings..

9 SER Supplements have come in in every single
10 proceeding that we have had, including security. In all
11 cases, those supplements are a compilation of many, many,
12 many technical issues, with literally hundreds of people in
13 the NRC staff and elsewhere, other outside agencies, having
14 contributed and worked on questions, et cetera, et cetera.

15 The proposition of law that they are posing to this
16 Board is that the NRC staff must bring hundreds of people to
17 each hearing so that they are all available in case these
18 people may decide they may want to question somebody, again,
19 the same principle that applied this morning.

20 Some of these documents have been around for years,
21 and they certainly have had the opportunity innumerable times
22 we even had hearings on emergency preparedness in '77, they
23 have had innumerable occasions to do discovery, to ask who
24 contributed to this portion of it, or that portion of it, or
25 if there was something they didn't understand, to find out who



1 the contributor to that portion was, or the author of that
2 portion was, interrogatories, they could have requested
3 subpoenas from this Board, and again, it is the same exact
4 principle that we discussed before lunch.

5 It is completely meritless. It is -- in fact, I am
6 kind of astounded they even make it.

7 JUDGE WOLF: Have you completed your statement?

8 MR. NORTON: Yes, I have.

9 JUDGE WOLF: I didn't understand the objection that
10 way. As I understood Mr. Brown, he doesn't object to a
11 certification by Mr. Buckley or any of this panel as to the
12 authenticity of these documents.

13 He wants to have here people that he can cross-
14 examination on the contents of them. Is that your position,
15 Mr. Brown?

16 MR. BROWN: Yes, it is, Judge Wolf, and I do have
17 to respond to one other comment, because it just has nothing
18 at all to do with this motion.

19 See, the way we engage in these hearings leaves only
20 two possibly alternative conclusions for the reasonable mind.
21 Our Counsel, staff Counsel, Mr. Olmstead, is a highly
22 professional Counsel, and therefore the fact that he would
23 come to a hearing inappropriately armed with witnesses to
24 sponsor and support and testify to something is puzzling.

25 I think it was reasonable of me to assume that he



14

1 .knew what he was doing. When we started questioning here,
2 and of course based on the qualifications, I became somewhat
3 concerned because it did not seem that we were getting the
4 right witnesses, but nevertheless, I assume that a man who
5 has shown the competence that he has, and the professional
6 ability really knew what he was doing.

7 There are only two alternatives: This time wasn't
8 competent, which I rule out completely, or this is some kind
9 of tactical maneuver, that one tries to put something over on
10 the Board.

11 Now, I know the Board would not stipulate that that
12 could be done --

13 JUDGE WOLF: I don't want to hear an argument like
14 that, Mr. Brown.

15 MR. BROWN: But there is no such thing as ulterior
16 motives on our part. I simply want to have, as you stated,
17 the opportunity to cross-examine someone with personal
18 knowledge.

19 MR. OLMSTEAD: May I respond, Mr. Chairman?

20 JUDGE WOLF: Just a moment. Do you have anything
21 you want to add to that, Mr. Reynolds?

22 MR. REYNOLDS: No, I don't.

23 JUDGE WOLF: Yes.

24 MR. REYNOLDS: Oh, one moment. Excuse me, Judge
25 Wolf. I think Mr. Fleischaker does.



1 JUDGE WOLF: I beg your pardon?

2 MR. REYNOLDS: I believe Mr. Fleischaker has a
3 comment.

4 JUDGE WOLF: Oh. Mr. Fleischaker.

5 MR. FLEISCHAKER: I am trying to put this thing in
6 perspective. We do not object to Mr. Buckley sponsoring this
7 thing so as to testify to the authenticity of the document,
8 but we join the Governor's objection to the extent that he
9 purports to support any of the substantive information in
10 that SER.

11 My recollection is different from Mr. Norton's as
12 to the past practice in this proceeding. It is my
13 recollection that when the staff wanted to present a case,
14 present substantive information that was contained in the
15 SER, they brought a witness who was directly involved in
16 preparing that.

17 Example: Appendix C to Supplement 4 of the SER
18 deals with the design criteria for seismic design. That was
19 written by Dr. Nathan Newmark, and because it was significant
20 and critical to the staff's case, they brought that man here
21 to testify about the information in the SER. I think that
22 has been the -- that has been the practice in the past. I
23 think that is the correct practice.

24 That is, if the staff wishes substantive information
25 in the SER to be subject to cross-examination, they have to



1 produce the person who was directly responsible for compiling
2 that technical information.

3 On that basis, we join the Governor in his
4 objection.

5 JUDGE WOLF: Mr. Olmstead?

6 MR. OLMSTEAD: Yes. I made this motion pursuant to
7 a specific regulation in Part 2. That regulation is 10 CFR,
8 Section 2.743(g), which states, In any proceeding involving
9 an application, there shall be offered in evidence by the
10 staff any report submitted by the ACRS in the proceeding,
11 in compliance with Section 182(b) of the Act; any safety
12 evaluation prepared by the staff, and any detailed statement
13 on environmental consideration prepared by the Director of
14 Nuclear Reactor Regulation, as appropriate, or his
15 designee in the proceeding pursuant to Part 51 of this
16 Chapter, and Mr. Buckley is that designee.

17 I am merely doing what the regulations require me
18 to do, By putting these SER Supplements in evidence, I am
19 by no means conceding that the issues in this proceeding can
20 be expanded beyond the two contentions that we are here to
21 address; the testimony the staff filed sets forth the staff's
22 position on those two contentions.

23 If somebody wants to pick up an SER and talk about
24 ECCS systems, I am going to object, because this rule clearly
25 provides that where an issue is not in contest in the



17 1 proceeding, the safety evaluation serves as the evidence of
2 record. That has been Commission practice since the Atomic
3 Energy Act was adopted in 1954, and I think the parties in
4 this proceeding know that.

5 Thank you.

6 JUDGE WOLF: You are limiting your offer, then, to
7 material in the Supplements that refer to the two contentions
8 that are in issue here, is that correct?

9 MR. OLMSTEAD: The SER is received in record
10 pursuant to this provision in Part 2 as --

11 JUDGE WOLF: I understand that, but you are making
12 an offer here in a low-power test proceeding. We aren't here
13 involved with any other issue than the two issues that --

14 MR. OLMSTEAD: Those are the only issues this
15 Board is going to decide, and those are the issues that are
16 in contest, and the SER is offered as evidence on the entire
17 case in any proceeding, pursuant to the regulations. But
18 those other issues aren't in contest, so it is irrelevant to
19 the Board's ultimate decision.

20 It is standard Commission practice.

21 JUDGE WOLF: The motion of the staff, offering
22 Supplements 7 through 14, to be identified as Staff Exhibits
23 18 through 25, in sequence, is granted.

24 MR. NORTON: Excuse me, Your Honor. Applicant. I
25 believe you misspoke. I believe you said the motion of the



1 Staff to have those Supplements identified is granted. I
2 don't believe the motion is to identify them. They were
3 identified the first day. I think the motion is to have them
4 put into evidence.

5 MR. OLMSTEAD: The motion was to put them into
6 evidence pursuant to 2.743(g).

7 JUDGE WOLF: That motion is granted.

8 MR. OLMSTEAD: Thank you.

9 (Staff Exhibits Nos. 18 through
10 25 were thereupon received
11 into evidence.)

12 MR. BROWN: Judge Wolf, may I ask for clarification
13 for the record, please?

14 JUDGE WOLF: Yes.

15 MR. BROWN: Does this mean that the sponsor of
16 these SER's is Mr. Buckley, for purposes of our cross-
17 examination.

18 JUDGE WOLF: Mr. Buckley, or any member of the
19 panel. I think Mr. Sears testified that he was the reviewer
20 on some of these.

21 MR. BROWN: Well, if the Board doesn't object, I
22 would like to have a clarification for the record, precisely
23 which of the witnesses is sponsoring the portions of the SERs
24 related to the two admitted contentions.

25 JUDGE WOLF: Will you inform us as to that, Mr.



19
1 Olmstead?

2 MR. OLMSTEAD: I believe that Mr. Buckley identified
3 Mr. Sears on the emergency planning sections of the SER, and
4 he identified Mr. Lauben on the risk assessment portions of
5 the SER.

6 MR. NORTON: Excuse me, there were also valve
7 portions of the SER that has to do with another panel.

8 MR. OLMSTEAD: Yes. He identified a man who works
9 for Mr. Cherny, who is here on the valve portions of the SER.

10 MR. NORTON: Thank you.

11 JUDGE WOLF: Very well, will you proceed then, Mr.
12 Olmstead? Do you have any --

13 MR. OLMSTEAD: Yes, sir.

14 JUDGE WOLF: Just a moment. Could we have the back
15 door of this room closed? The light, the glare is interfering
16 with my vision.

17 Thank you.

18

19 /// PLEASE CONTINUE READING NEXT NUMBERED PAGE ///

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T9

1 JUDGE WOLF: Will you proceed now, please?

2 MR. OLMSTEAD: Yes.

3 DIRECT EXAMINATION (Continued)

4 BY MR. OLMSTEAD:

5 Q Mr. Lauben, have you been present since the commence-
6 ment of these hearings on Tuesday?

7 A Yes, sir, I have.

8 Q And you have heard the testimony of the Applicant's
9 and the Governor's witnesses in this proceeding?

10 A Yes, I have.

11 Q Could you define for me in terms of technical review
12 what "risk" is?

13 A Well, in risk analysis, "risk" is generally defined
14 as the product of the probability of an event occurring, or
15 events occurring, and the consequences of those events.

16 Q Could you tell me what the term "instantaneous risk"
17 means?

18 A Well, in documents such as WASH-1400, and subsequent
19 risk analyses, the "risk" is defined as certain consequences
20 occurring per year or per unit time. So by "instantaneous
21 risk," we would mean the risk or the consequences that would
22 be expected to occur in a unit of time. Most often, that unit
23 of time is a year.

24 Q And the term that has been used, "integrated risk,"
25 can you tell me what that is?



2
1 A Well, by "integrated risk," that is defined as the
2 risk over a period of time, not necessarily being the unit
3 time defined in the instantaneous risk. That is, one could
4 consider the risk involved in operating a plant over the full
5 lifetime of that plant, in which case you would multiply the
6 instantaneous risk times the time that you would expect the
7 plant to operate in typically 30 or 40 years.

8 In addition, if you are going to operate the plant
9 in a different manner, such as at low power, you would define
10 the integrated risk as the risk, instantaneous risk, times
11 the time that you would be operating the plant at that low
12 power.

13 Q Okay. When you were looking at the Diablo Canyon
14 low-power proposal and contrasting it with the full-power
15 proposal for purposes of the relative risk assessment, what
16 type of analysis did you deem would be necessary?

17 A What has been discussed in my testimony and in the
18 SER was an instantaneous risk or, that is, a risk per unit time.

19 Q Okay.

20 MR. OLMSTEAD: I have no further questions at this
21 time.

22 JUDGE WOLF: Of the panel?

23 MR. OLMSTEAD: Right. They are available for cross-
24 examination.

25 JUDGE WOLF: Thank you. Do you have any cross-



3
1 examination?

2 MR. REYNOLDS: I believe the procedure we established
3 was that Mr. Norton would go first.

4 JUDGE WOLF: Pardon me. Do you have any cross-
5 examination?

6 MR. NORTON: Not at this time.

7 JUDGE WOLF: Well, this is the time to do it if you
8 have it.

9 MR. NORTON: That is what I said; not at this time.

10 JUDGE WOLF: There won't be another time, is what I
11 am telling you.

12 MR. NORTON: Well, Your Honor, excuse me. If they
13 bring out points and bring out issues, then I have the right
14 to cross-examine on what they bring out. I have no cross-
15 examination on the direct testimony as it stands.

16 I believe I am correct in that assumption, am I not?

17 JUDGE WOLF: Well, we will rule on that later.

18 Mr. Reynolds?

19 MR. REYNOLDS: All right. I just want to make sure
20 I understand Mr. Norton correctly.

21 What he is that if after I am finished cross-
22 examining and he has some questions, he has a right to then
23 cross-examine?

24 JUDGE WOLF: That is what he stated, yes.

25 MR. REYNOLDS: It would seem to me that would



4
1 contradict the procedure which we had established yesterday.
2 After Governor's Brown's witness testified, the Applicant was
3 to go first.

4 JUDGE WOLF: Well, I assume what he is saying is
5 that if you raise any matters that he wants to cross-examine
6 on, he may; not on the written testimony, as it now stands,
7 and the supplemental statements that have been elicited by
8 Mr. Olmstead.

9 MR. REYNOLDS: My understanding was that if he had
10 some questions based on issues, he will have an opportunity
11 to present a rebuttal case. It would seem to me, that would
12 be the appropriate time for him to submit any response.

13 JUDGE WOLF: I haven't ruled on that yet. I told
14 him that.

15 MR. REYNOLDS: All right. I just wanted to make that
16 clear.

17 MR. BROWN: I would like to make my position known,
18 too, Judge Wolfe; that cross-examination is indeed on direct
19 examination and not on cross-examination. It would be the
20 rebuttal case that would address that.

21 JUDGE WOLF: That is correct.

22 MR. NORTON: Excuse me, Your Honor. I think both
23 Mr. Brown and Mr. Reynolds, and perhaps the Board, misunderstood
24 me. I have no cross. I may have recross based on something
25 they develop. I am not talking about rebuttal at all. I am



5 1 talking about recross.

2 JUDGE WOLF: Well, we will rule on that, Mr. Norton,
3 as I told you.

4 CROSS-EXAMINATION

5 BY MR. REYNOLDS:

6 Q Mr. Buckley, I have a question for you.

7 The Staff has conceded, has it not, that the combined
8 Applicant, State and local emergency response plans for Diablo
9 Canyon as they presently exist do not comply with the
10 Commission's Revised Emergency Planning Regulations effective
11 November 3rd, 1980, is that correct?

12 A (Witness Buckley) That is correct.

13 Q Mr. Sears, on Page 2, Line 33 of your testimony, you
14 refer to two letters from PG & E to the NRC regarding the
15 Diablo Canyon on-site emergency plan. The information in
16 those letters has not been incorporated in the Plan, has it?

17 A (Witness Sears) Not as yet; no, sir.

18 Q Is it the Staff's understanding that the information
19 in those letters will not be incorporated in the Plan prior to
20 fuel loading?

21 A No, sir, it is not the Staff's position.

22 Q What is your understanding as to the time that that
23 incorporation will occur?

24 A It will be incorporated in the next revision to the
25 Emergency Plan.



6
1 Q And that would be Revision 3; is that right?

2 A Yes, sir.

3 Q On Page 2, at Line 37, you state that you partici-
4 pated in the NRC review of those documents.

5 A Yes, sir.

6 Q What exactly did you do?

7 A What exactly I did is take our NUREG document, which
8 you have heard discussed before, NUREG-0654. I went and
9 compared the document, NUREG-0654, the elements in that document,
10 against each of the statements in the Emergency Plan. In other
11 words, I used NUREG-0654 as a checklist.

12 Q Did someone else participate also in the preparation
13 of these documents?

14 A As I mentioned before, Mr. Peter Tam, before I took
15 over from him.

16 Q Page 3, at Line 53, and Page 7, beginning at the
17 top of the page, you discuss the analyses which the NRC has
18 requested that PG & E prepare regarding the effects of earth-
19 quakes on emergency planning. Isn't that correct?

20 A What I state there is that the NRC has requested
21 from the Applicant to make an analysis of earthquake effects
22 on emergency plans; yes, sir.

23 MR. REYNOLDS: I would like to have marked for
24 identification as Joint Intervenor's Exhibit 117, a document
25 entitled, "Subject: Effects of Earthquakes on Diablo Canyon,



7
1 Units 1 and 2, Emergency Plans."

2 (Whereupon, the document referred
3 to was marked for identification
4 as Joint Intervenor's Exhibit 117.)

5 BY MR. REYNOLDS:

6 Q Mr. Sears, would you please identify this document?

7 A This document is a letter from Robert L. Tedesco,
8 Assistant Director for Licensing, Division of Licensing, NRC,
9 to Mr. Malcolm Forbush, Vice President and General Counsel,
10 Pacific Gas and Electric Company. The subject of the document
11 is, "Effect of Earthquakes on Diablo Canyon, Units 1 and 2;
12 Emergency Plans," and the document is dated December 16th, 1980.

13 MR. REYNOLDS: I offer this into evidence.

14 JUDGE WOLF: Is there any objection to the offer?

15 MR. OLMSTEAD: No objection.

16 MR. BROWN: We have none.

17 MR. NORTON: Your Honor, the only objection I have
18 to it is that this does not in any way relate to low power.
19 The last sentence, the first paragraph, says, "These aspects
20 must be satisfactorily addressed prior to full-power operation."

21 I object on the basis of relevancy.

22 Your Honor, I withdraw the objection. I don't really
23 care if it comes in. I just don't, however, want to start
24 waiving objections to relevancy and get into a full-power
25 hearing here.



1 I will withdraw the objection so the Board won't
2 have to rule, and go ahead and admit it, but I am not waiving
3 that relevancy objection on whatever else they may offer
4 regarding the full-power operation.

5 JUDGE WOLF: Mr. Reynolds, would you state the purpose
6 for this offer?

7 MR. REYNOLDS: I intend to ask Mr. Sears some questions
8 on it. He referred to it in his testimony, and I would like to
9 discuss some of the comments he made about it.

10 JUDGE WOLF: Very well. All right, then without
11 objection, Joint Intervenor's Exhibit 117 will be received
12 in evidence.

13 (Whereupon, the document, having
14 previously been marked for identi-
15 fication as Joint Intervenor's
16 Exhibit 117, was received in evidence.

17 BY MR. REYNOLDS:

18 Q Mr. Sears, on Page 3, at Line 55, you state that
19 PG & E has been requested to provide analyses "specifically in
20 terms of the utilities' capabilities to insure availability
21 of personnel and equipment to the sites."

22 A Yes.

23 Q Did you mean to imply that PG & E's analysis need
24 go no further than its capabilities to insure availability of
25 its own personnel and equipment?



9
1 A No, sir. That is one of the principal things that
2 we are looking for in this response on earthquakes.

3 Q Isn't it true that the analyses must also consider
4 potential disruption of off-site communication networks and
5 transportation routes?

6 A Yes, sir.

7 Q And PG & E has not yet complied with this request
8 for analyses; is that right?

9 A We have not received PG & E's responses yet, sir.

10 Q Isn't it true that the earthquake analysis require-
11 ment which appears in this letter is based on the NRC's
12 appreciation that plants located in California are subject to
13 a greater risk of seismic activity relative to most other
14 areas in the country?

15 A Yes, sir.

16 Q Isn't it also true that the question of seismic
17 safety has been, and continues to be, a significant issue
18 in the Diablo Canyon proceeding?

19 A I understand so, sir.

20 Q To your knowledge, has FEMA reviewed the adequacy
21 of the state and local capabilities with respect to the effects
22 of an earthquake on emergency response?

23 A Not to my knowledge. I have no personal knowledge
24 of that, sir.

25 Q Has the NRC received any report of such a FEMA



10
1 review?

2 A Not as yet, sir.

3 Q At Page 3 and Line 64 of your testimony, you state
4 that the NRC Staff conclusion concerning the on-site Plan is
5 that it will meet applicable criteria "when revised in accordance
6 with the commitments made." In other words, the Plan does
7 not now meet all applicable criteria; isn't that true?

8 A I beg your pardon? What line was that, sir?

9 Q That is Line 64.

10 A No, sir. My conclusion there is that, as it states,
11 that the Diablo Canyon Emergency Plan, when revised in accord-
12 ance with these commitments made, will provide an adequate
13 planning basis for an acceptable state of emergency prepared-
14 ness, and will meet the requirements in 10 C.F.R. 50 and
15 Appendix E.

16 When I refer to 10 C.F.R. 50 and Appendix E, I am
17 referring to the former Appendix E, not the 1980 edition of
18 Appendix E.

19 Q I see. Let me see if I understand you correctly.

20 Is it your position that when the PG & E Plan is
21 revised in accordance with commitments made, it will then meet
22 the old Appendix E criteria?

23 A No. Then it will meet the new criteria. For a
24 low-power testing program license, one must meet the old
25 Appendix E, and in this proceeding, we are discussing a low-



11 1 power license, and for that, one must meet the old Appendix E.
2 For a full-power license, they must meet the new one.

3 As to the thrust of your question, you are correct.
4 My conclusion refers here, that "when revised in accordance
5 with the commitments made," it then will meet the revised
6 criteria.

7 Q So, at the present time, it does not meet the revised
8 criteria?

9 A No, sir; that is correct.

10 Q Page 4, Line 89, you conclude that a public alert
11 system is unnecessary for 5 percent operation, "because heatup
12 of the core would take up to 15 hours..."

13 Did you personally perform the LOCA analysis upon
14 which that conclusion was based?

15 A No, sir.

16 Q Isn't it true that you are relying on the analysis
17 or judgment of someone else in stating that conclusion?

18 A Yes, sir.

19 MR. REYNOLDS: Judge Wolf, I would move that that
20 testimony be stricken, on the grounds that the witness did not
21 himself prepare the basis for the conclusion.

22 MR. OLMSTEAD: Mr. Chairman, I would suggest that
23 if we are going to have that motion, that I be allowed to ask
24 Mr. Sears a couple of other questions.

25 JUDGE WOLF: You may do that.



1 MR. BROWN: Could I please hear the motion, Judge
2 Wolf? I didn't hear precisely what answer is being requested
3 to be stricken.

4 MR. REYNOLDS: The section which I am requesting be
5 stricken begins on Line 89. It says, "The requirement is not
6 necessary for operation at 5 percent power because, even if
7 a credible LOCA occurred, the resultant heat-up of the core to
8 melting point would take at least 15 hours and, consequently,
9 a fast alerting system is not required."

10 It is Line 89, Page 4, going through Page 5, Line 92.

11 MR. OLMSTEAD: Mr. Chairman, I think we are laboring
12 under the apprehension that experts can't rely upon reasonable
13 sources of other experts, but I think a couple of questions
14 will clear this up. If I may be permitted, I will ask that
15 of the witness.

16 JUDGE WOLF: You may be permitted to; yes, Mr. Olmstead.

17 DIRECT EXAMINATION (Continued)

18 BY MR. OLMSTEAD:

19 Q Mr. Sears, whose opinion were you relying on for
20 that statement?

21 A I was relying upon the calculations of my colleague,
22 Mr. Norman Lauben.

23 Q And the testimony that he prepared for this proceeding?

24 A Yes, sir.

25 MR. OLMSTEAD: Mr. Chairman, I believe that if the



1 Intervenor wants to know the basis for that statement, they
2 should just ask Mr. Lauben.

3 JUDGE WOLF: Very well.

4 MR. REYNOLDS: All right. I withdraw the motion.
5 I think we can cross-examine Mr. Lauben on his own testimony.

6 JUDGE WOLF: Yes.

7 CROSS-EXAMINATION (Continued)

8 BY MR. REYNOLDS:

9 Q Page 5, Line 94, you state that PG & E has not yet
10 disseminated its public information brochure. Has PG & E
11 demonstrated to the NRC that the residents of the EPZ know what
12 actions to take in the event of a radiological emergency at
13 Diablo Canyon?

14 A PG & E has not demonstrated that to me; no, sir.

15 Q Has PG & E demonstrated to the NRC that visitors
16 to the area know what to do in the event of a radiological
17 emergency at the facility?

18 A PG & E has not demonstrated it; no, sir.

19 Q Has PG & E demonstrated to the NRC that the public
20 knows what the evacuation routes are?

21 A In this respect, sir: In that PG & E has included
22 in its Emergency Plan, which is a public document, the emergency
23 plan of the San Luis Obispo Sheriff; yes, sir.

24 Q So, if I understand you correctly, anybody who has
25 read those Plans would have notice of the evacuation routes,



1 but anybody else, as far as you understand, would not; is that
2 correct?

3 A If you have read the Plans, you would be aware of it.
4 If you had not read the Plans, you would not be aware of it.

5 Q Has PG & E demonstrated that the public knows what
6 medical facilities in the area to contact in the event of
7 injury resulting from a radiological emergency at Diablo
8 Canyon?

9 A I have never understood, sir, and I do not under-
10 stand now, the question of medical facilities for injuries.
11 Is that what your question was?

12 Q Yes. To define the question more specifically,
13 someone who has a radiation-related injury.

14 Has PG & E demonstrated that the public knows what
15 medical facilities having the capability to treat such an
16 injury exists in the area?

17 A No, sir, and the reason is very simple; that a
18 radiation injury to the general public and PG & E is, in my
19 opinion incredible.

20 Q Why is it incredible?

21 A It is incredible, sir, because a radiation injury
22 takes first an injury at the Plant, and there is also radiation
23 involved. When you speak of "radiation injury," I simply
24 don't understand precisely what you are getting at.

25 Q Radiation exposure.



1 A Radiation exposure is a different subject, sir.

2 Q All right. Let me rephrase the question.

3 A Thank you.

4 Q Has PG & E demonstrated that the public knows what
5 medical facilities in the area to contact in the event of
6 radiation exposure resulting from an accident at the Plant?

7 A Once again, PG & E has put into its Emergency Plan
8 information about what local hospitals there are which will
9 support the Emergency Plan and the facilities at these hospitals.

10 Q And the fact that that has been placed in the Plan
11 and submitted to you, does that satisfy you that the public
12 has been adequately notified?

13 A It satisfies me, from the point of a low-power testing
14 program, sir.

15 Q Has PG & E demonstrated that backpackers and other
16 persons in the Montana De Oro State Park can be promptly
17 notified in the event of a radiological emergency at Diablo
18 Canyon?

19 MR. OLMSTEAD: Mr. Chairman, I am going to object
20 here. I haven't objected up to now, because I thought we
21 would get through this line of questioning rather quickly.
22 But the question is being repeated in a half a dozen different
23 ways: Does PG & E comply with 5047 of the Regulations.

24 The first question put to him was: Does it comply
25 with 5047 of the Commission's Regulations, and the answer was



1 no, so we don't need to go through line by line every single
2 one of the items, because we have already said that we will
3 admit Joint Intervenor's Exhibit 111 as an accurate assessment
4 of those matters for which compliance remains to be affected.

5 MR. REYNOLDS: Fine. Let me just withdraw the
6 question. It was my last one in that series, anyway.

7 BY MR. REYNOLDS:

8 Q If I understand you correctly then, Mr. Sears, it
9 is your position that, for purposes of low-power testing,
10 an adequate public notification program is simply PG & E
11 preparing its plan and submitting it to the NRC; is that
12 correct?

13 A For a low-power testing program, yes, sir.

14 MR. OLMSTEAD: Mr. Chairman, I would ask you to
15 remind the audience that hissing is not permitted in this
16 hearing room.

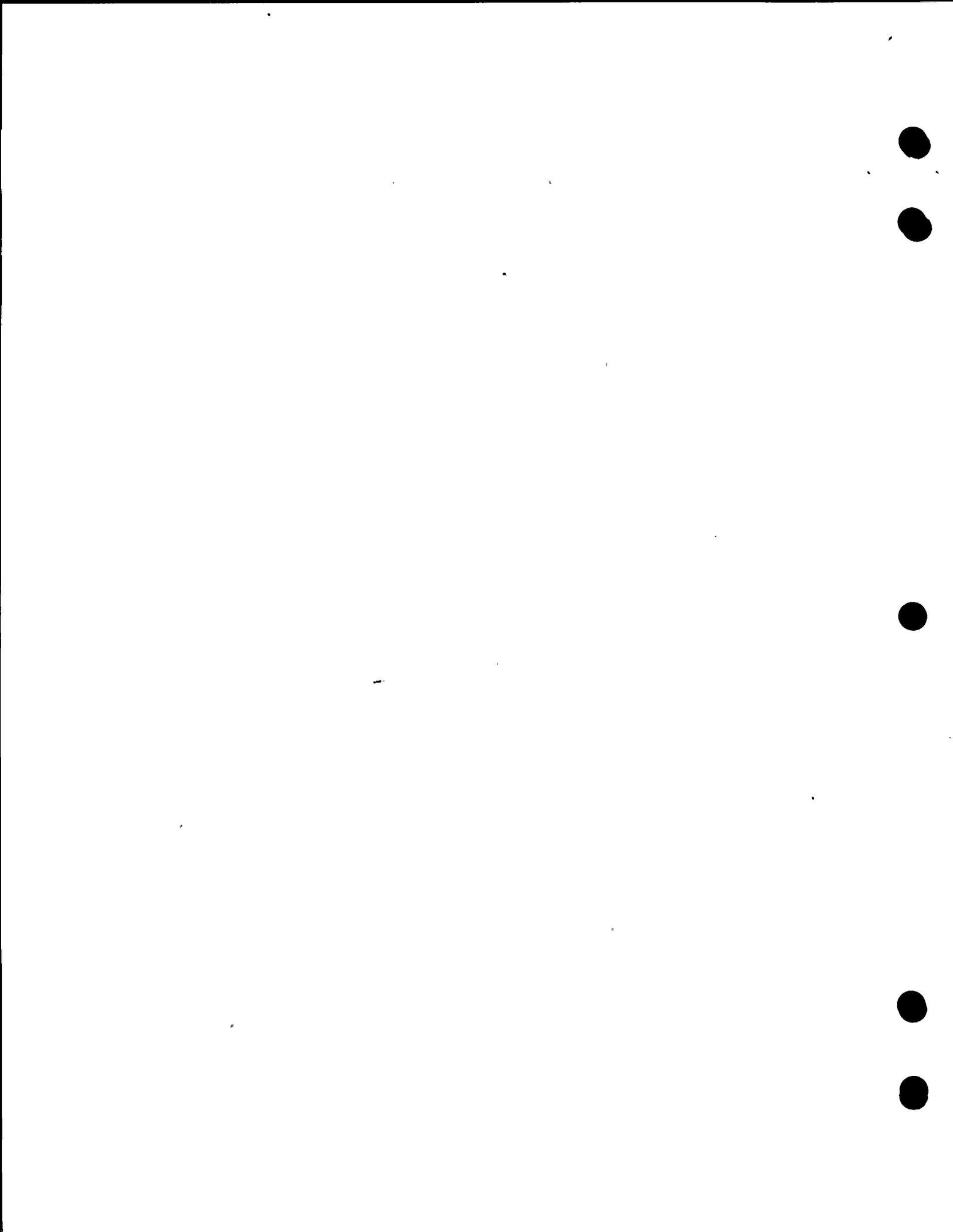
17 JUDGE WOLF: It certainly is not. I didn't hear any.

18 BY MR. REYNOLDS:

19 Q How far away is Montana De Oro State Park from the
20 Plant?

21 A About four miles north, sir; three to four miles north.

22 Q Assuming an accident with exposure within the LPZ
23 resulting from an accident at the Plant, is it your position
24 that there is no obligation to notify persons who may be in
25 remote areas of the Montana De Oro State Park?



1 A Absolutely not, sir.

2 Q Has PG & E demonstrated an ability to notify such
3 persons?

4 A They have to me; yes, sir.

5 Q And in what way?

6 A In what way? Because PG & E's Plan and the plan of
7 the San Luis Obispo Sheriff specify that a PG & E operator
8 will call the Sheriff's Office. The Sheriff's Office has an
9 agreement with Hunter Liggett Air Force Base for the use of
10 a helicopter.

11 A helicopter could be down in this area within about
12 half an hour. Bullhorns from the helicopter could warn anybody
13 in that area.

14 Q Has that capability ever been demonstrated?

15 A That sort of capability --

16 Q Has that been demonstrated, to your knowledge?

17 A That capability has been demonstrated very often
18 in all kinds of situations, sir; specifically here, for those
19 hills, by a specific helicopter from that Air Force Base, no,
20 sir.

21 Q Have you verified that capability?

22 A I have verified that capability by reading of it
23 in the Plans of both PG & E and the Sheriff.

24 / / / /

25 (Please continue reading to the next numbered page.)



t10

1 Q Have you independently contacted the Air Force
2 base?

3 A No, sir.

4 Q On page 6, line 119, you refer to a supplement to
5 the emergency preparedness evaluation report which will con-
6 tain FEMA's findings for full power.

7 A Yes, sir.

8 Q That will issue after the state and local emergency
9 plans have been revised and FEMA has reviewed them, is that
10 correct?

11 A Yes, sir.

12 Q On page 6, line 132, you refer to two documents
13 of the FEMA NRC steering committee. You stated earlier that
14 you were not a member of that committee. Is it also true
15 that you were not at the meetings at which those documents,
16 the FEMA NRC Steering Committee meetings at which those
17 documents were discussed?

18 A That is correct.

19 Q Then you don't personally know whether or not
20 FEMA actually reviewed the specific Diablo Canyon off-site
21 plan for adequacy prior to the issuance of those two documents,
22 is that right?

23 A Would you repeat that question, sir?

24 Q You don't personally know whether or not FEMA
25 actually reviewed specific Diablo Canyon off-site plans for



1 adequacy prior to issuance of those two documents?

2 A That's correct.

3 Q You don't personally know whether or not FEMA
4 considered the specific low power testing program proposed
5 for Diablo Canyon prior to issuance of those two documents,
6 isn't that right?

7 A Would you repeat the question? You are going a
8 little quickly.

9 Q I'm sorry. I'll slow down. Is it or is it not the
10 case that you do not personally know whether or not FEMA
11 considered the specific low power test program proposed for
12 Diablo Canyon prior to issuance of these two documents?

13 MR. NORTON: Excuse me. I hate to interrupt and
14 object, but the question started out is it or is it not true
15 that you did not and I think that either a yes or a no answer
16 you wouldn't know which way it was going.

17 MR. REYNOLDS: Let me rephrase it if it is confusing
18 Mr. Norton.

19 BY MR. REYNOLDS:

20 Q Do you personally know whether or not FEMA con-
21 sidered the specific low power testing program proposed for
22 Diablo Canyon prior to issuance of these two documents?

23 A When you say do I personally know, sir, I was not
24 at the meetings where these were discussed. I discussed this
25 whole situation with my superiors in the NRC and I was informed



1 that these things were discussed.

2 Q You do not personally know?

3 A I do not personally know. I was not at the
4 meeting.

5 Q Isn't it a fact that these two documents were
6 issued prior to the adoption by the NRC of its revised
7 emergency planning regulations?

8 MR. OLMSTEAD: Excuse me, Mr. Chairman. Do you
9 mean prior to the adoption or prior to the effective date?

10 BY MR. REYNOLDS:

11 Q Excuse me. Prior to the effective date.

12 MR. OLMSTEAD: The effective date, for the
13 witness' benefit, was November, 1980.

14 THE WITNESS: I don't recall, sir. I don't recall
15 those kinds of dates. I'm sorry.

16 BY MR. REYNOLDS:

17 Q So you don't have any idea what the date of these
18 two FEMA documents --

19 A I don't have them in front of me. The dates are
20 available on the documents. I don't have the -- that's
21 simply a question of before and after.

22 MR. REYNOLDS: One moment.

23 (Pause)

24 THE WITNESS: Let me clarify it. Mr. Buckley has
25 clarified it for me. The effective date of the new rule is



1 November, I believe, 1980.

2 BY MR. REYNOLDS:

3 Q November 3, 1980. Is that correct?

4 A Yeah. And this supplement, No. 10, was issued in
5 August and the supplement references these two letters, so
6 clearly these two letters were before the publication of the
7 new rule -- the effective date of the new rule.

8 Q When were these two documents issued?

9 A I don't recall the exact date of those documents.
10 It must have been prior to August, 1980.

11 Q Does anyone on the panel know what the date of
12 these two documents are?

13 (Pause)

14 A I think you have a copy of the document.

15 MR. BROWN: Judge Wolf, perhaps Mr. Olmstead could
16 just make the documents available to everyone now.

17 MR. REYNOLDS: I have a copy which I can give you.
18 The problem as I see it is there is no apparent date on the
19 documents.

20 MR. OLMSTEAD: The dates on the document, as I
21 recall, is in a light rubber stamp. It didn't come through
22 on the copies. What I can tell you is that it was after
23 February of 1980 and prior to August of 1980. But we'll
24 have to get the precise date from the discovery room.

25 MR. REYNOLDS: You don't have a copy with you that



1 actually has the date on it?

2 MR. OLMSTEAD: I have the same copies with me that
3 you have with you.

4 MR. BROWN: Well, I do know what it is. This
5 whole thing is preposterous. I wish I didn't have to get
6 into this.

7 MR. OLMSTEAD: Well, tell us what the date is,
8 then.

9 MR. BROWN: But I got it from you, Mr. Olmstead.
10 That's why listening to this is becoming quite disturbing to
11 me.

12 MR. OLMSTEAD: You didn't get it from me here.

13 MR. BROWN: I got it from you Tuesday at about
14 11:00 in the morning. I really don't like hearing some of
15 the things. I have here the documents and I guess I could,
16 if the Board wished, I could distribute them now so everyone
17 will know what we're talking about. But the date is March 12.
18 It was an attachment to a memorandum. This entire package
19 was given to me by Mr. Olmstead on Tuesday.

20 MR. OLMSTEAD: Mr. Chairman, I have ignored Mr.
21 Brown's personal aspersions every single time they have
22 occurred and they are foundless. I don't appreciate them.
23 And I ask that they stop.

24 MR. BROWN: Well, I would like to make --

25 JUDGE WOLF: I agree. There is no reason for that



1 kind of interchange here.

2 MR. BROWN: I apologize for that.

3 JUDGE WOLF: I beg your pardon?

4 MR. BROWN: I say I apologize to the extent to
5 which someone is interpreting it as an aspersion, because
6 it is not intended as such. But I do have the documents,
7 if the Board would like them, and I got them from Mr. Olmstead
8 on Tuesday and they say March 12.

9 JUDGE WOLF: Well, I would suggest you show them
10 to Mr. Reynolds and see if we can clear the matter up.

11 MR. BROWN: Perhaps if there were a break counsel
12 could just look at them.

13 JUDGE WOLF: I beg your pardon?

14 MR. BROWN: If you would like, we could take a
15 break and I could provide them to all counsel.

16 MR. OLMSTEAD: I will stipulate that it's March
17 12 if it is March 12.

18 THE WITNESS: The question was did I know the
19 date. I said I didn't know what the date was.

20 JUDGE WOLF: Is that agreeable with you, Mr.
21 Olmstead?

22 MR. OLMSTEAD: Yes, it is.

23 BY MR. REYNOLDS:

24 Q So the date, as I understand it, is March 12, 1980,
25 is that correct?



1 JUDGE WOLF: I think the parties have agreed to
2 that.

3 MR. REYNOLDS: All right.

4 MR. NORTON: May I ask for a clarification? Which
5 of the two documents is dated March 12 or are they both dated
6 March 12?

7 MR. REYNOLDS: The two documents referred to in
8 Mr. Sears' testimony, are they both March 12?

9 MR. BROWN: Am I on the stand now?

10 MR. REYNOLDS: I think we are arranging a stipula-
11 tion.

12 MR. BROWN: Oh. Actually what it is, there is a
13 memorandum of March 12 from John McConnell of FEMA, Assistant
14 Associate Director of Population Preparedness, FEMA, to John
15 W. Macy, Jr., Director of FEMA. Attached to that are two
16 documents, one is -- neither of which of these documents has
17 the date. It is the covering letter with the two attachments
18 that has it. The first one is to Harold Denton, Director and
19 so on, from McConnell, which I think is one of the documents
20 that --

21 MR. OLNSTEAD: Mr. Chairman, let the record show
22 that he doesn't have the date either.

23 MR. NORTON: I'll join in that.

24 (Laughter)

25 MR. BROWN: There are the two attachments to the



1 March 12 memo.

2 MR. OLMSTEAD: But it's the date of one of those
3 that he is trying to find out about.

4 MR. BROWN: I stand corrected to that extent.
5 So if I can address him personally. Bill, I apologize
6 there.

7 MR. NORTON: I'd request that the only stipulation
8 between Gov. Brown and the NRC staff that we have agreed at
9 be withdrawn.

10 (Laughter)

11 MR. NORTON: And that Mr. Brown start relying on
12 facts.

13 MR. BROWN: I told you I didn't take an oath. I
14 shouldn't be testifying. The cover memo, though, which has
15 the two attachments is March 12. The first one is the memo
16 to Denton from the FEMA NRC Steering Committee, which I think
17 is the one that Mr. Sears is addressing. And the second is
18 the other one I believe he's addressing, which is entitled
19 FEMA NRC Interim Agreement on Criteria for Low Power Testing
20 at New Commercial Nuclear Facilities.

21 MR. OLMSTEAD: Mr. Chairman, I'm going to have my
22 associate go to the telephone and call back and get the date
23 and we'll provide it as soon as we have it.

24 MR. REYNOLDS: Could I suggest we take a 5 to 10
25 minute break and see if we can straighten this out and get



1 some agreement as to what the dates are?

2 JUDGE WOLF: Well, wouldn't it be wise to wait
3 until Mr. Olmstead gets his call through and we will take a
4 break then?

5 MR. REYNOLDS: It would. The only problem I have
6 with that is I have a series of questions based on the date.
7 I have a rough understanding of what the date is myself, but
8 obviously we have to have it established in evidence here.
9 So that's why I'd like to have it straightened out.

10 I could perhaps move on to another line, if you
11 would prefer that.

12 JUDGE WOLF: Would you do that? I think it would
13 be more satisfactory.

14 MR. NORTON: Excuse me, Your Honor. In terms of
15 the time and in terms of having to take a break later, it
16 might be appropriate to take a break now so they can make the
17 phone call and then we can proceed. It is almost three o'clock
18 anyway. I assume you are going to take a break in 15 or 20
19 minutes or a half hour.

20 JUDGE WOLF: I hadn't intended to, Mr. Norton,
21 because we have had so many breaks today and it doesn't seem
22 to be necessary.

23 MR. NORTON: Fine.

24 (Pause)

25 MR. BROWN: Pardon me. These documents are avail-



1 able, if any of the parties would like to mark them as their
2 exhibits at this point. Or I could even do it as our exhibit
3 if it's not out of order.

4 JUDGE WOLF: No. You may go ahead.

5 MR. BROWN: Would there be an objection if we were
6 to make it Gov. Brown's exhibit?

7 MR. REYNOLDS: No objection.

8 JUDGE WOLF: Mr. Olmstead, do you have an objection
9 to that?

10 MR. OLMSTEAD: No, sir.

11 JUDGE WOLF: Mr. Norton?

12 MR. NORTON: No.

13 JUDGE WOLF: Without objection, a memorandum for
14 John. W. Macy, Jr., Director, from John W. McConnell, Assistant
15 Associate Director for Population Preparedness, dealing with
16 the subject of off-site emergency planning requirements for
17 low power testing, dated March 12, 1980, will be received in
18 evidence as Gov. Brown's Exhibit No. 1.

19 (The document was marked
20 and received in evidence
21 as Gov. Brown's Exhibit
22 No. 1.)

23 (Pause)

24 JUDGE WOLF: Mr. Reynolds, can you proceed along
25 some other line until we get the results of that phone call?



1 MR. REYNOLDS: Yes.

2 BY MR. REYNOLDS:

3 Q Isn't it true, Mr. Sears, that the two documents
4 referred to in your testimony contain no reference to any
5 evaluation by FEMA of the specific Diablo Canyon off-site
6 plans?

7 (Pause)

8 MR. NORTON: May I have a repeat of the question,
9 please?

10 BY MR. REYNOLDS:

11 Q Isn't it true that neither of the documents cited
12 by you in your testimony contains any reference to an evalua-
13 tion by FEMA of the specific Diablo Canyon off-site plans?

14 A I would not say that's true.

15 Q Could you please read for the record the section
16 of the letter which you contend demonstrates that there has
17 been a FEMA evaluation of the Diablo Canyon site-specific
18 -- the Diablo Canyon off-site plan?

19 (Pause)

20 A Not in the documents I have here, sir. But you
21 see, these documents refer to two other letters which I have
22 seen and those letters are dated February 14, 1980. I have
23 seen those letters and, in my judgment, those letters imply
24 that FEMA has approved this procedure in view of the fact
25 that the State of California already had a concurred-in plan



1 under the old 75111 criteria.

2 Q Perhaps you misunderstood my question. My question
3 was whether or not there was anything in those letters which
4 indicates that FEMA itself had evaluated the adequacy of the
5 Diablo Canyon off-site plans.

6 MR. OLMSTEAD: Mr. Chairman, I'm going to object.
7 That is the same question and the witness answered it.

8 MR. REYNOLDS: No, Mr. Norton. I'm sorry. It's
9 not.

10 MR. NORTON: That was Mr. Olmstead.

11 MR. REYNOLDS: --Okay... Mr. Olmstead, that is not
12 correct. If I understood Mr. Sears correctly -- and Mr.
13 Sears, correct me if I am wrong -- what you said was that
14 the two letters which you just now referred to imply that
15 FEMA had approved the procedure because the State of California
16 has a concurred-in state plan. My question was whether or not
17 there was anything in those letters which indicate that FEMA
18 itself had evaluated the Diablo Canyon off-site plans for
19 adequacy.

20 THE WITNESS: No, sir. FEMA was not in existence
21 at the time of the concurrence in the California State Plan.

22 BY MR. REYNOLDS:

23 Q All right. The two letters which you just referred
24 to, what are those two letters?

25 A I do not have them, sir. They are referenced in



1 this document.

2 Q Fine. Could you just describe what those letters
3 are? I mean, who wrote them and to whom?

4 A Yes. They are an exchange of letters between
5 Harold Denton, Director of the Nuclear Regulatory -- Reactor
6 Regulation -- and John McConnell, Assistant Director for
7 Population Preparedness of FEMA.

8 Q Isn't it true that there is no reference in that
9 exchange of letters to an evaluation by FEMA of the specific
10 Diablo Canyon off-site plan?

11 A I would have to have the letters in front of me
12 to answer that question accurately.

13 Q So you do not know, is that correct?

14 A I wouldn't say I don't know. If I had the letters
15 in front of me I could say yes or no.

16 Q You do not recall, is that right?

17 A I do not recall.

18 Q In preparing your testimony and the reference to
19 the two documents which we have been discussing, did you
20 recall at that time whether or not the two letters from --
21 the letters between Denton and McConnell -- contained such a
22 reference to such an evaluation?

23 A I don't recall.

24 Q On page 8 at line 155 of your testimony you state
25 that the on-site Diablo Canyon plan requires notification of



1 county governments. Does the plan include the precise initial
2 and follow-up messages to be sent from the plant to local
3 officials?

4 A Yes, sir.

5 MR. NORTON: Excuse me. May I ask if, again, this
6 is for purposes of low power or purposes of full power?

7 MR. REYNOLDS: For either. I mean, I asked whether
8 the plan contains the precise initial and follow-up messages
9 to be sent from the plant to local officials.

10 THE WITNESS: Yes, sir.

11 BY MR. REYNOLDS:

12 Q Could you cite where in the plan those precise
13 messages are set forth?

14 A Yes, sir. It possibly may be in answers to our
15 questions. It's either in the plan itself or in answers to
16 our questions.

17 Q Could you please -- if we could resolve this I
18 would appreciate it -- could you check the plan?

19 A Sure.

20 (Long pause)

21 THE WITNESS: In the response to our question,
22 from PG&E to NRC, dated January 13, 1981, in E.3.4, our ques-
23 tion: provide a standard format for initial and follow-up
24 emergency messages. PG&E has responded with a standard form
25 for these messages.



1 BY MR. REYNOLDS:

2 Q Now has that been incorporated into the plan?

3 A Yes, in this respect, sir, that it is -- we
4 consider it to be part of their plan.

5 Q It has not been incorporated into the plan and will
6 not be incorporated into the plan until Revision 3 is completed,
7 is that correct?

8 A No, sir. That's not correct.

9 Q Why not?

10 A Because we consider these answers to our questions
11 to be part of the plan.

12 Q All right. But if you take the existing copy of the
13 plan is there anywhere contained in it these messages which
14 you have just found in the January 13 letter from PG&E?

15 A No, sir. It is not in this bound red document.
16 That is immaterial. The point is that there is a message
17 form, PG&E has responded to our question and showed us what
18 these message forms are.

19 MR. OLMSTEAD: Mr. Chairman, if I might interrupt.
20 The word we got back from NRC on this letter is that the
21 original of the letter is not dated. The clerical people
22 have informed us that the reason is they were dispatched
23 together and the top letter, the date that has March 12, is
24 the date of the attached documents.

25 MR. REYNOLDS: So March 12 would then be the date.



1 MR. OLMSTEAD: That would be the correct date.
2 But the original does not have a date on it.

3 MR. REYNOLDS: Do we then have a stipulation as to
4 the March 12 date?

5 MR. OLMSTEAD: From me you do. You had that
6 earlier.

7 MR. BROWN: Well, I guess I was right. I guess
8 Bruce owes me an apology now.

9 MR. OLMSTEAD: Don't hold your breath.

10 (Laughter)

11 MR. BROWN: See, I never give up on my fellow man.
12 I give him one more chance.

13 (Laughter)

14 JUDGE WOLF: The stipulation will be accepted.

15 BY MR. REYNOLDS:

16 Q Mr. Sears, do you know what the date of PG&E's
17 application for a low power testing license was?

18 A I'm sorry, sir. I cannot tell you. I'm sure it
19 is on the public record.

20 Q Mr. Buckley, do you have that information?

21 A (Witness Buckley) No, I don't recall the exact
22 date. I think it was sometime in -- I can't recall the
23 exact date.

24 MR. BROWN: Well, I hate to testify again, but I
25 believe it was July 16.



1 JUDGE WOLF: I don't think you are under oath, Mr.
2 Brown.

3 MR. BROWN: Thank you.

4 MR. NORTON: Excuse me, Your Honor. I'm a little
5 puzzled. Everytime Mr. Reynolds asks a question the witness
6 doesn't know we all seem to have to answer for him. That's
7 not the way to proceed.

8 MR. REYNOLDS: I'm just a little surprised that
9 the witnesses do not know this information, particularly in
10 view of the fact that these two documents which we stipulated
11 the date of March 12 were cited in the testimony of the
12 witness. The low power testing application is the subject of
13 this hearing. I think it is extremely relevant to the meaning
14 of those two documents and their probativeness to determine
15 whether or not those documents were issued prior to the motion
16 was even filed.

17 MR. OLMSTEAD: We'll stipulate to the fact that
18 they were issued prior to the filing of the motion by PG&E.

19 MR. NORTON: We'll also stipulate to that, for
20 whatever the reason.

21 MR. REYNOLDS: Can we stipulate to the fact that
22 it was July of 1980 that the motion was made?

23 MR. NORTON: Certainly. That's when it was made.

24 BY MR. REYNOLDS:

25 Q I will read from Supp 10. This is on page 1 of



1 Supp 10, the staff's own document, which Mr. Buckley has
2 sponsored here: "The applicant, by motion to the Atomic
3 Safety and Licensing Board dated July 14, 1980, applied for
4 a low power license not to exceed 5 percent of rated power
5 for Diablo Canyon Units 1 and 2." In light of the two dates
6 which we have now established, Mr. Sears, isn't it true that
7 you were relying on two documents which were issued by FEMA
8 almost four months prior to the date PG&E even applied for
9 its low power test license?

10 (Pause)

11 Q: A: Would you mind repeating your question, sir?

12 MR. REYNOLDS: Could the reporter please play that
13 back?

14 (The question was read back.)

15 (Pause)

16 MR. BROWN: I think they are waiting for an answer.

17 WITNESS SEARS: Yes, sir.

18 BY MR. REYNOLDS:

19 Q All right. The answer to the question is yes, you
20 are relying upon two documents which were issued four months
21 before PG&E even applied for its low power test license. Is
22 that correct?

23 MR. OLMSTEAD: Objected. Asked and answered.

24 MR. REYNOLDS: I'm sorry. It was such a long time
25 between the question and the answer I just want to make sure



1 that everybody understands the information.

2 BY MR. REYNOLDS:

3 Q Is that correct, Mr. Sears?

4 A I have answered yes.

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t11 1g 1 MR. OLMSTEAD: Your Honor, my witness can use a break.

2 MR. REYNOLDS: Excuse me, I am almost finished. If
3 we could just -- I have got about three or four more
4 questions.

5 JUDGE WOLF: Let us let him finish, Mr. Olmstead.

6 BY MR. REYNOLDS:

7 Q In view of the dates of these two documents upon
8 which you rely, Mr. Sears, it would not have been possible for
9 the FEMA-NRC Steering Committee to know exactly what would be
10 included in the Diablo Canyon proposed low power test
11 program, isn't that right?

12 A (Witness Sears) No, sir.

13 Q Why not?

14 A Because the low power test program for Diablo
15 Canyon is no different than the low power test program for
16 power reactors in this country that have been going on for
17 years.

18 Q We know that now, don't we, but it would not have
19 been possible to do that until PG & E actually applied for
20 that and submitted a proposed test program, isn't that
21 correct?

22 A Would you mind repeating your question? You have a
23 number of negatives and subjunctives in there. You are not
24 very clear.

25 Q It is easy for us now to say in hindsight, perhaps,



t11.2
1 that there may be similarities between the programs, but at
2 the time those two documents --

3 MR. NORTON: Excuse me, Your Honor. I am going to
4 object to Mr. Reynolds' questions. He makes a speech with
5 each question full of -- as the witness has just said --
6 subjunctives and negatives and double negatives, instead of
7 just asking the question. I am having difficulty following
8 the questions.

9 JUDGE WOLF: I think the objection is delaying the
10 proceeding. Will you go ahead, Mr. Reynolds? Start again.

11 BY MR. REYNOLDS: :

12 Q At the time those two documents --

13 JUDGE WOLF: Pardon me. The witness doesn't seem to
14 be paying attention here, to the question. All right, let us
15 start now.

16 BY MR. REYNOLDS:

17 Q At the time the two documents were issued in March
18 of 1980, it would not have been possible for FEMA to know
19 what the precise Diablo Canyon low power test program would
20 consist of, isn't that right?

21 A (Witness Sears) No, sir.

22 Q Why not?

23 A Because on the FEMA-NRC Steering Committee, there
24 are people from NRC who are thoroughly acquainted with the
25 testing programs for nuclear reactors, and furthermore, this



t11 3
1 situation for Diablo Canyon followed the same pattern as the
2 situation for other reactors which have been issued low power
3 licenses.

4 Q In March of 1980, had PG & E submitted a proposed
5 low power test program to the NRC?

6 A (Witness Buckley) I would have to check the date.
7 There have been six supplements put out in the last two years,
8 so it is hard for me to recall exact dates.

9 Q Is the answer that you don't know?

10 A The answer is I don't know the date.

11 Q Okay, would you please check the date?

12 MR. OLMSTEAD: Mr. Chairman, I think we would speed
13 things along if Mr. Reynolds knows the date. I don't think
14 we will have much problem --

15 MR. REYNOLDS: Perhaps we can take a break now and
16 he can find the date, and I will finish after the break.

17 JUDGE WOLF: Very well. We will take a short five-
18 minute break. Off the record.

19 (Brief recess.)

20 JUDGE WOLF: On the record. Are we ready?

21 MR. REYNOLDS: I am ready to proceed.

22 WITNESS BUCKLEY: Mr. Reynolds?

23 BY MR. REYNOLDS:

24 Q Yes. Mr. Buckley, did you get that information?

25 A (Witness Buckley) Yes. February 7, 1980.



4
1 Q February 7, 1980?

2 A Correct, is the date that the PG & E filed for a
3 low power --

4 Q Filed for a low power test license?

5 A No; application -- I thought the question was
6 application. In other words, they submitted the low power
7 test program, which is the question I thought you asked, on
8 February 7, 1980.

9 Q All right. To your knowledge, was that test pro-
10 gram ever routed to FEMA?

11 A I am not aware of that... --

12 Q Was it ever routed to the FEMA-NRC Steering
13 Committee, to your knowledge?

14 A I cannot answer that.

15 Q Mr. Sears, on page eight of your testimony, line
16 169, you conclude that the combined Applicant's state and
17 local plans are adequate, is that right?

18 A (Witness Sears) Line 169?

19 Q The answer beginning on line 169.

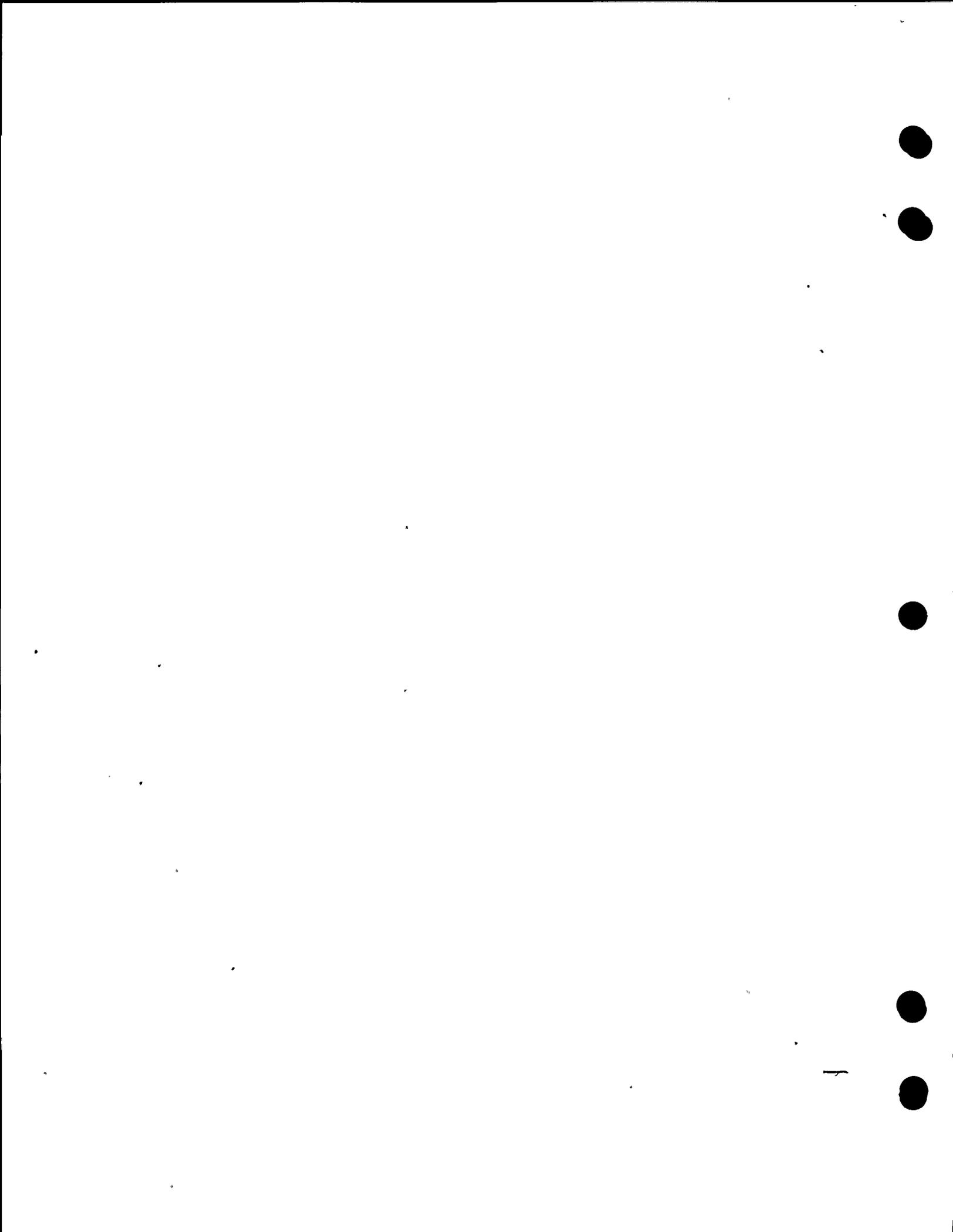
20 A Yes, sir.

21 MR. REYNOLDS: I wonder if Mr. Olmstead could give
22 the witness a copy of Joint Intervenor's Exhibit 114(a).

23 BY MR. REYNOLDS:

24 Q Do you have that, Mr. Sears?

25 A (Witness Sears) Yes, sir.



1 Q Could you please turn to page 39? For the record,
2 or for the people in the room, this is the Report of the
3 President's Commission on the accident at Three Mile Island,
4 page 39.

5 Mr. Sears, would you please read finding 6?

6 A Item 6 states, at all levels of government, planning
7 for the off-site consequences of radiological emergencies at
8 nuclear power plants has been characterized by a lack of
9 coordination and urgency.

10 That is the first sentence.. Do you want more?

11 Q Yes, please continue.

12 A For example, a federal response plan in preparation
13 since 1974 by federal emergency preparedness agencies was
14 unfinished at the time of the accident, because of an
15 interagency jurisdictional dispute and lack of communication.

16 Pennsylvania did not begin to develop a
17 radiological emergency plan until 1975, even though nuclear
18 power plants had been operating within its borders for at
19 least a year prior to that time.

20 Q Please continue to the end of the paragraph.

21 A People who attempted to generate interest in
22 radiological emergency planning at the local level near TMI
23 found local officials apathetic. Part of the reasons for
24 this was the attitude fostered by the NRC regulatory
25 approach, and by Met Ed at the local level, that



6 1 radiological accidents having off-site consequences beyond the
2 LPZ were so unlikely as not to be of serious concern.

3 Q Now, Mr. Sears, at page two of your testimony, line
4 27, isn't it true that you state, quote --

5 A Just a moment, sir. May I get page 2, line 27?

6 Q Isn't it true that you state, quote, "Prior to the
7 Summer of 1979, I was responsible for review of the
8 emergency plans for all operating reactors."

9 A That is correct.

10 Q And was TMI II an operating reactor in early March,
11 1979?

12 A Yes, sir.

13 MR. REYNOLDS: I have no further questions for Mr.
14 Sears.

15 BY MR. REYNOLDS:

16 Q Mr. Lauben, at page 2, line 33 of your testimony,
17 you state that Sup. 10 addressed the risk of low power testing
18 and you described the discussion contained in it briefly.

19 You stated on voir dire that you wrote that section,
20 isn't that correct?

21 A (Witness Lauben) Yes, sir.

22 Q Did you personally prepare that risk analysis?

23 A Yes, sir.

24 Q Did you depend on inputs from others?

25 A Yes, sir.



7
1 Q Precisely what did the others provide?

2 A Well, in particular, I had discussions with members
3 of the probabilistic analysis staff about what were the
4 major contributors to risk, and how they would be affected by
5 low power, and in addition, whether or not other factors
6 needed to be considered during low power, and in addition,
7 what their belief was of what the risk was at full power.

8 Q And what did -- what did -- what exactly did you
9 do?

10 A I then did the -- I then used that information and
11 mathematically manipulated it to come up with a relative
12 risk at low power.

13 Q Now, in arriving at that conclusion, I take it that
14 no Diablo Canyon site-specific fault-tree event tree
15 probability analysis was performed for the entire plant, is
16 that correct?

17 A No. As I stated before, it wasn't required. The
18 atmosphere, the population characteristics are not going to
19 be affected by full power or low power operation. They are
20 going to be the same at full power or low power.

21 Q Okay, I guess my question was -- let me ask the
22 question directly. Was a Diablo Canyon site-specific fault
23 tree event tree probability analysis performed for the entire
24 plant, in arriving at the conclusions?

25 A It was not from our relative risk assessment, and



8 1 it wasn't needed. There was Diablo Canyon site-specific
2 analysis done in the Zion Indian Point study.

3 Q Now, you stated on voir dire that the risk analysis
4 contained in Sup. 10 is in part an extrapolation from WASH-
5 1400, isn't that right?

6 A To the degree that WASH-1400 was the starting point
7 for most risk assessments that have been done by the NRC, as
8 better numbers are generated, and things are improved, that
9 is factored in, but to the -- it was not -- WASH-1400 was not
10 the starting point for my assessment.

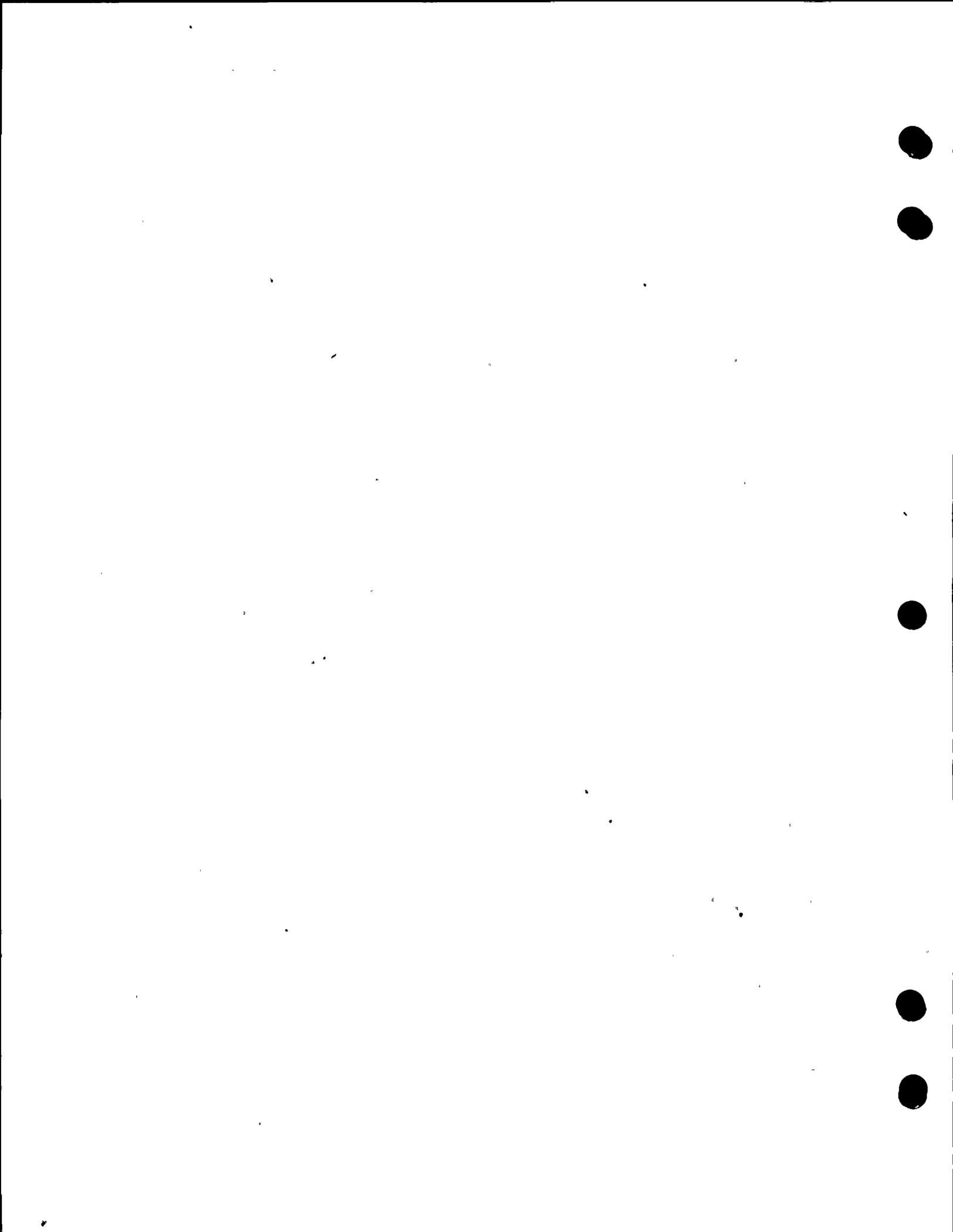
11 Q You also stated on voir dire that you had
12 further extrapolated an analysis based on the Indian Point
13 and Zion probabilistic risk assessment, is that right?

14 A Yes.

15 Q And then you took these three analyses for other
16 PWRs and further extrapolated their conclusions as
17 representing the probabilities for major accidents at Diablo
18 Canyon under full power conditions, is that right?

19 A Well, first of all, I think it is important to
20 understand that there can be great differences in site, but
21 the characteristics of various pressurized water reactors are
22 similar.

23 For instance, a four-loop pressurized water reactor
24 of the same power level as Diablo Canyon would be fairly
25 similar to another one, and there are some differences that



1 can go to affecting event trees, but in general, they are
2 similar.

3 Q Have you compared every system in Diablo with every
4 system in -- every safety-related system, excuse me, in
5 Indian Point or in Zion?

6 A I haven't -- I have not compared every system. I
7 have compared what I and the members of the probabilistic
8 analysis staff believe to be the relevant systems that would
9 dominate the risk associated with low power testing.

10 Q You are relying on the probabilistic risk
11 assessment, then, to pick the dominant accident sequence, is
12 that right?

13 A In part, yes. I would say in discussions with them.

14 Q So if I understand you correctly, in preparing the
15 risk analysis for Sup. 10, you start with WASH-1400, which
16 is extrapolated to Indian Point and the Zion studies, which
17 is then again extrapolated to Diablo Canyon for full power,
18 is that right?

19 A That is part of it, but when one does a relative
20 risk assessment, there are many things that one doesn't need
21 to be concerned about. That is, in doing the relative risk
22 assessment, and the reason is that the operating
23 characteristics for the analysis would be the same, at full
24 power or at low power.

25 For instance, the population characteristics



10 1 aren't going to change, the meteorology is not going to
2 change. Certain other factors that go into determining
3 probability are also not going to change.

4 What one has to do is look at those steps in the
5 chain that are affected by the differences in power, and then
6 factor those into the risk assessment, and see how much the
7 risk is reduced from full power to low power.

8 Q So after extrapolating from those three other
9 studies, you arrived at the accident probability estimates
10 for Diablo Canyon at full power. Based on that, you then
11 extrapolated once again to obtain the relative accident
12 probabilities for the proposed Diablo Canyon low power test
13 program, is that right?

14 A Yes. In essence that is correct.

15 Q Would it be fair to say that each of these
16 extrapolations was based on your judgment alone, or did other
17 persons assist you with that judgment?

18 A No, other persons assisted me in that judgment.

19 Q Would you please define a fault tree analysis?

20 A Well, in laymen's language, if you -- if one
21 considers events that can eventually lead to unacceptable
22 consequences or whatever consequences you are looking at, you
23 can start with a certain event, and it can either go
24 favorably or unfavorably, and you can construct a graph that
25 looks sort of like a tree with a trunk on it. If that event



1 goes in one direction, then you say, well, what event can
2 happen next.

3 And you can see that depending on how many possible
4 events can occur, you can construct graphically what looks
5 like a tree. Eventually, you look at the ultimate end of
6 that analysis, and it will be a series of consequences, that
7 if this would have happened, then the consequence would have
8 been this, and if there may be, say, a five possible things
9 that one might consider in the tree, you would have a tree
10 that would end up with a certain number of possible
11 consequences, and then you evaluate the consequences
12 associated with the end of each one of those considerations.

13 Q Could you please now define how an event tree
14 analysis differs from what you have just described?

15 A Well, as far as I know, that is what it is.

16 Q So, are you aware if there is any difference between
17 an event tree or a fault tree analysis?

18 A No. I don't know.

19 Q Do you know if the WASH-1400 system failure
20 probabilities are medians or means of distribution?

21 A I don't know. That wasn't important in my analysis.

22 Q All right. On page three, at line 56, you state
23 that the event scenarios dominating accident risks are
24 generally the same for different PWR designs, and you cite
25 NRC studies. What studies are you referring to?



12

1 A Pardon me, what page and line was that?

2 Q Yes, page three, line 56.

3 A Yes, those were -- those that I have mentioned
4 earlier, the Zion Indian Point study, a study on one of the
5 B & W plants done by Battelle Columbus for the probabilistic
6 analysis staff, an assessment that was done for an upper head
7 injection plant, but there have been several of these studies
8 done by the probabilistic analysis staff.

9 I am not familiar with them, but they informed me
10 that this was the case.

11 Q Were you involved in any of those studies?

12 A No, I was not.

13 Q Are you familiar with an NRC probabilistic study
14 of auxiliary feedwater systems in operating PWRs that was
15 conducted subsequent to the TMI accident?

16 A I am aware of it, but I am not familiar with it.

17 Q Didn't that study conclude that the failure
18 probability of the auxiliary feedwater system differed by a
19 factor of over 1,000 from plant to plant?

20 MR. NORTON: Object. The witness said he is not
21 familiar with the study. Now he is asking the witness what --

22 MR. REYNOLDS: He may be -- excuse me -- I am --
23 I am asking the witness.--

24 MR. NORTON: Excuse me. Excuse me, Your Honor. I
25 am making an objection, and I would like to finish it.



13 1 He has asked the witness if he is familiar with the
2 study. The witness has said he has heard of it, he is not
3 familiar with it, and now he is asking him what the study
4 concluded. Clearly this witness cannot answer that question.

5 MR. REYNOLDS: If the witness cannot answer the
6 question, he can say, I don't know. He said he has heard of
7 the study. Perhaps he has also heard of the conclusion.

8 JUDGE WOLF: Will you answer the question?

9 WITNESS LAUBEN: I don't know.

10 MR. REYNOLDS: Thank you.

11 JUDGE WOLF : : Let us move on. Next question.

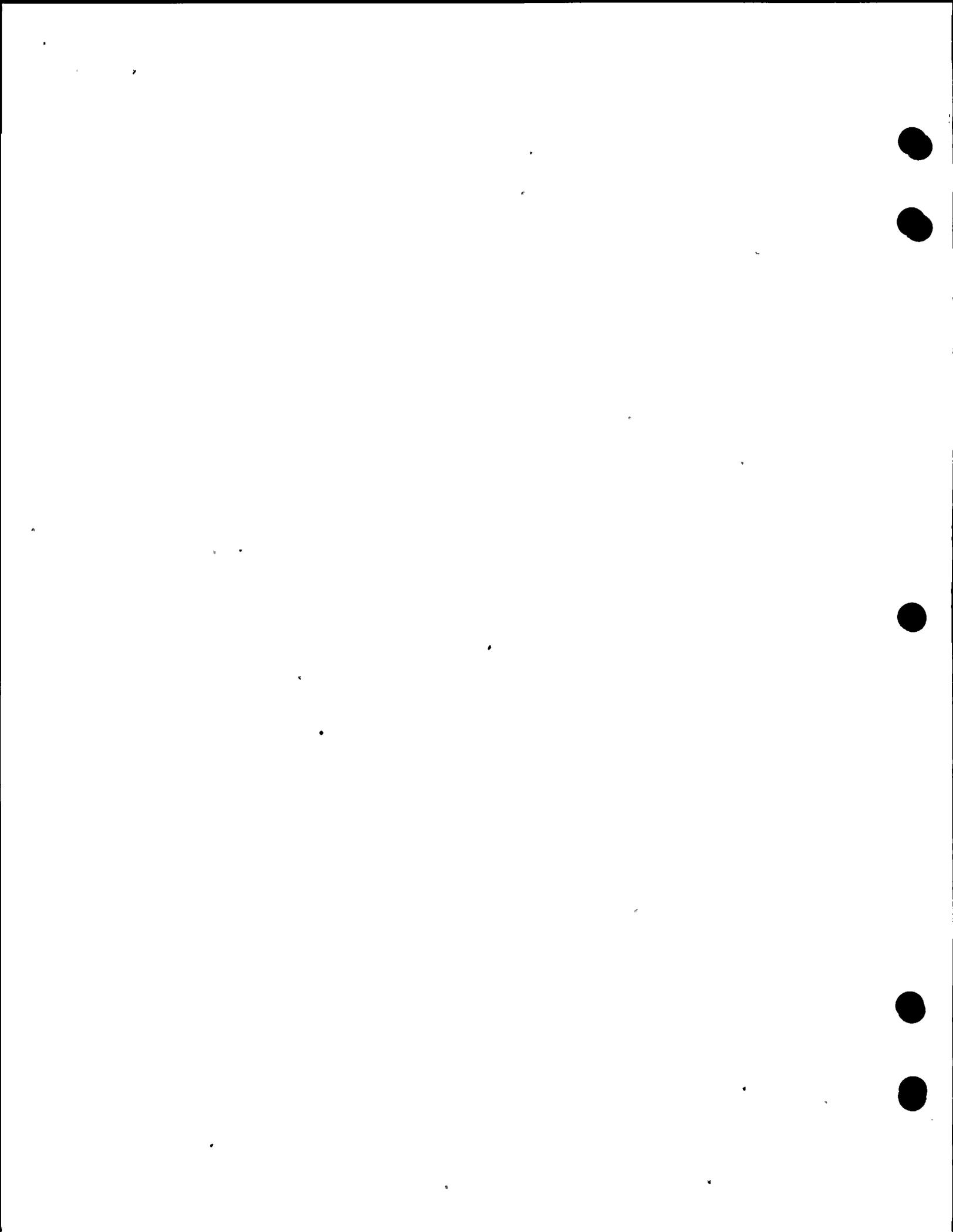
12 BY MR. REYNOLDS:

13 Q Isn't it true that subsequent reviews of WASH-1400.
14 have concluded that there are great uncertainties in its
15 estimate of absolute probabilities?

16 A (Witness Lauben) Yes, that is true.

17 Q In fact, the Commission has withdrawn its
18 endorsement of WASH-1400 for generic use, isn't that correct?

19 A Well, for relative risk, I don't care what the
20 absolute magnitudes are. All I am trying to make a comparison
21 is, between the risk at full power, and the risk at low power.
22 If indeed there is a factor of plus or minus 100, or more,
23 and the uncertainty in the absolute numbers that were generated
24 in WASH-1400, that is -- that would be carried over if one
25 were looking for the absolute number at low power --



14 1 Q Excuse me --

2 A -- but since we are just looking at the relative
3 risk, whatever uncertainty is carried over is carried over,
4 and that wasn't the subject of my analysis.

5 Q All right, but are you familiar with whether or not
6 the Commission has withdrawn its endorsement of WASH-1400 for
7 generic use?

8 A Well, I am not sure if that is exactly how it was
9 stated, but I knew -- I do know that they have withdrawn
10 their support of the use of some of the numbers that were
11 concluded in WASH-1400, but I will tell you that it would be --
12 I am certain they haven't withdrawn the use of WASH-1400 as
13 a methodology on which to build for assessing risk of nuclear
14 power plants or any other activity.

15 Q You are familiar with the Lewis Committee Report,
16 entitled "Risk Assessment Review Group Report," are you not?

17 A I have some time ago read the conclusions of the
18 Lewis Committee report.

19 Q Is it recognized as the most authoritative review
20 of WASH-1400 to date?

21 A As far as I know, I would consider it so.

22 MR. REYNOLDS: One moment. I would like to have
23 marked for identification as Joint Intervenor's Exhibit 118,
24 I believe, a document entitled "Risk Assessment Review Group
25 Report to the U.S. Nuclear Regulatory Commission," pages



1 Roman Numeral viii through Roman Numeral X.

2 (Whereupon, the above-mentioned
3 document was marked as Joint
4 Intervenor's Exhibit No. 118
5 for identification.)

6 BY MR. REYNOLDS:

7 Q Mr. Lauben, can you identify this document marked
8 Joint Intervenor's Exhibit 118?

9 MR. OLMSTEAD: Excuse me. Mr. Chairman, I have
10 lost track of Intervenor's Exhibit 117. What was that?

11 MR. REYNOLDS: Oh; that was the -- I think it was
12 the letter from the NRC on earthquakes.

13 JUDGE WOLF: Yes.

14 WITNESS LAUBEN: I have marked it.

15 BY MR. REYNOLDS:

16 Q Can you identify that document?

17 A (Witness Lauben) It is entitled "Risk Assessment
18 Review Group Report to the U.S. Nuclear Regulatory
19 Commission, NUREG/CR-0400."

20 Q And is it indeed the findings of that study?

21 MR. OLMSTEAD: Mr. Chairman, I am not sure my
22 witness is going to know whether they are or they aren't
23 because this isn't the whole document. I would be glad to
24 stipulate that they are the findings of that study.

25 JUDGE WOLF: That they are findings in the document



16 1 that is on the cover page?

2 MR. OLMSTEAD: Yes, based on Mr. Reynolds'
3 representation. However, since this is not the complete
4 document, there is no way that my witness would know
5 independently that these came from that document.

6 JUDGE WOLF: Anyone have any objection to the
7 admission of this document identified by Mr. Reynolds and
8 marked Joint Intervenor's Exhibit 118, containing pages
9 marked Roman viii through Roman X of the document?

10 MR. OLMSTEAD: I didn't know we were talking about --
11 are you moving the admission of this?

12 MR. REYNOLDS: Yes. I move this for admission.

13 MR. OLMSTEAD: Mr. Chairman, I do have some
14 problem with the relevance, since we went through this whole
15 business this morning on whether a probabilistic study was
16 being done versus a relative risk analysis, and whether one
17 uses the study in some way.

18 I don't have any problem, because the Board can
19 take official notice on what the Commission has said on this
20 subject, both as to the Lewis Committee findings and as to
21 the use of WASH-1400, but I don't think that I can agree to
22 the admission based on testimony of my witnesses who have
23 not testified that they are currently familiar with the
24 contents of the document.

25 MR. REYNOLDS: I believe Mr. Lauben testified that



1 the analysis which is contained in Sup. 10 is in part
2 extrapolated from WASH-1400. To that extent, I believe that
3 this Exhibit is relevant to the analysis which he has done.

4 MR. NORTON: Excuse me, Your Honor.

5 MR. OLMSTEAD: I don't think that is a correct
6 characterization of the testimony, and I object to it.

7 JUDGE WOLF: Well, let us ask the witness. Did you
8 testify to that?

9 WITNESS LAUBEN: Well, I tried to explain how the
10 work in WASH-1400 was used. If it is trying to be
11 asserted that it was a direct extrapolation of the work from
12 WASH-1400, the answer to that is no.

13 If by extrapolation you mean did we avail ourselves
14 of the methodologies that were used of the determinations of
15 what were the major risk contributors, then the answer to that
16 is yes.

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18 /// PLEASE CONTINUE READING NEXT NUMBERED PAGE ///

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1 MR. NORTON: Your Honor, I would like to make an
2 objection to the offering of the document also on the basis
3 of the way it's being sponsored. He asked this gentleman if
4 he had ever seen this document and he said some time ago he
5 had read a portion of it. So they take some pages, have them
6 marked and then move it into evidence. That is not sufficient
7 foundation to move the document into evidence. I could ask
8 one of these gentlemen if they have ever read Time magazine
9 and they say yes, I have it marked and ask to have it moved
10 into evidence. That's not a proper foundation for the docu-
11 ment to go into evidence. That is the basis on which I object.
12 It has nothing to do with relevancy. There has been no
13 foundation for this document to go into evidence.

14 JUDGE WOLF: Mr. Brown, do you have any enlightening
15 thoughts on it?

16 (Pause) . . .

17 MR. LANPHER: I'd just like to make an observation.
18 I started out this morning or early afternoon, I guess it
19 was, with voir dire. My concern was that this gentleman was
20 proffering testimony on probabilistic risk assessment and
21 relative risk assessment. It is astounding to me that now,
22 when he acknowledges this is probably the most widely respected
23 review of WASH 1400, a document that he acknowledges was a
24 starting point, he's not even familiar with it. I think it
25 establishes conclusively that he is not competent to testify



1 on these matters.

2 I am renewing my motion, that's right, that I made
3 at one o'clock this afternoon, Mr. Chairman.

4 JUDGE WOLF: Well, I will overrule the motion.

5 MR. REYNOLDS: Can we have a ruling on the admis-
6 sion?

7 JUDGE WOLF: I beg your pardon?

8 MR. REYNOLDS: Can we have a ruling on -- oh, I'm
9 sorry.

10 JUDGE WOLF: No, I haven't.

11 MR. REYNOLDS: We have a copy of the full report
12 which we can supply to Mr. Norton, if he's concerned. In view
13 of the recognized importance of this document and the fact that
14 Mr. Olmstead agrees that the Board can take judicial notice
15 it would seem to me that admission of this document is entirely
16 appropriate, perhaps even unnecessary in view of the fact that
17 the Board can take notice of it.

18 The point that I am concerned about is being able
19 to cite the findings here. Mr. Lauben has stated that WASH
20 1400 -- excuse me -- that the Supplement 10 risk analysis
21 was in part extrapolated from WASH 1400. Again, I think that
22 it is clearly relevant.

23 JUDGE WOLF: I didn't understand the purport of
24 your testimony to be that. Am I wrong in that? The statement
25 just made by counsel, do you agree with that statement?



1 WITNESS LAUBEN: No, I don't entirely agree with
2 that statement. There was a lot of valuable information
3 generated in WASH 1400. It is -- certainly there are some
4 very significant questions about the numbers generated that
5 have been generated in WASH 1400. But I didn't rely on those
6 numbers. Certainly the work that was done to establish the
7 broad categories of accidents that affect risks was valuable
8 work and I don't see where anyone has questioned that.

9 In general, when I do a relative risk assessment
10 and the factors turn out to be fairly large in the relative
11 risk assessment it doesn't make too much difference mathe-
12 matically whether the numbers in WASH 1400 are terribly
13 accurate or not. What matters most of all is the assessment
14 of the numbers that go into establishing the relative risk.

15 BY MR. REYNOLDS:

16 Q Isn't it true, though, that in establishing --
17 one moment.

18 (Pause)

19 JUDGE WOLF: Mr. Reynolds, for what it is worth,
20 we will accept Joint Intervenors' Exhibit 118.

21 (The document marked as
22 Joint Intervenor's Exhibit
23 No. 118 was received in
24 evidence.)

25 JUDGE WOLF: Let's move on, now, please.



1 BY MR. REYNOLDS:

2 Q I noticed that all of your risk factors discussed
3 in your testimony were risk increase factors -- excuse me --
4 risk reduction factors for low power operation. Are you now
5 aware of any factors which might increase risks during low
6 power testing?

7 A Well, I have discussed factors which could increase
8 risk and there are other factors which could also decrease
9 risk. But after discussing this with the probabilistic analy-
10 sis staff sometime before this hearing, we concluded that
11 they were far outweighed in either direction by the major
12 risk reduction factors and in fact their uncertainty that is
13 discussed in the testimony. So it was my opinion that we need
14 not -- in my opinion, we need not consider small factors in
15 either direction.

16 Q In preparing your analysis, did you prior to con-
17 ducting a relative analysis to arrive at the low power
18 accident probabilities, did you correct for any of the errors
19 in WASH 1400 which were noted by the Lewis Committee?

20 A I --

21 MR. OLMSTEAD: Mr. Chairman, I want to interpose
22 an objection now because counsel continues to use the assump-
23 tion that the witness has said three times now is not a correct
24 assumption, and that is that it makes a difference what the
25 value is in WASH 1400 to a relative risk assessment. The



1 witness has testified that the number in WASH 1400 is not the
2 important consideration. You can call it 'x'.

3 BY MR. REYNOLDS:

4 Q Mr. Lauben, would you say that the full power value
5 for Diablo Canyon which was extrapolated from the WASH 1400
6 design and the Indian Point studies, was that not at all based
7 on any of the numerical assumptions or conclusions in WASH
8 1400?

9 A Well, to the degree that work in a particular field
10 will build on work previously done, I would imagine that that's
11 the case; although I personally don't know. I rather doubt
12 that every single factor that went into WASH 1400 was modified
13 since WASH 1400. Maybe most -- and I'm quite sure that many
14 significant factors have been.

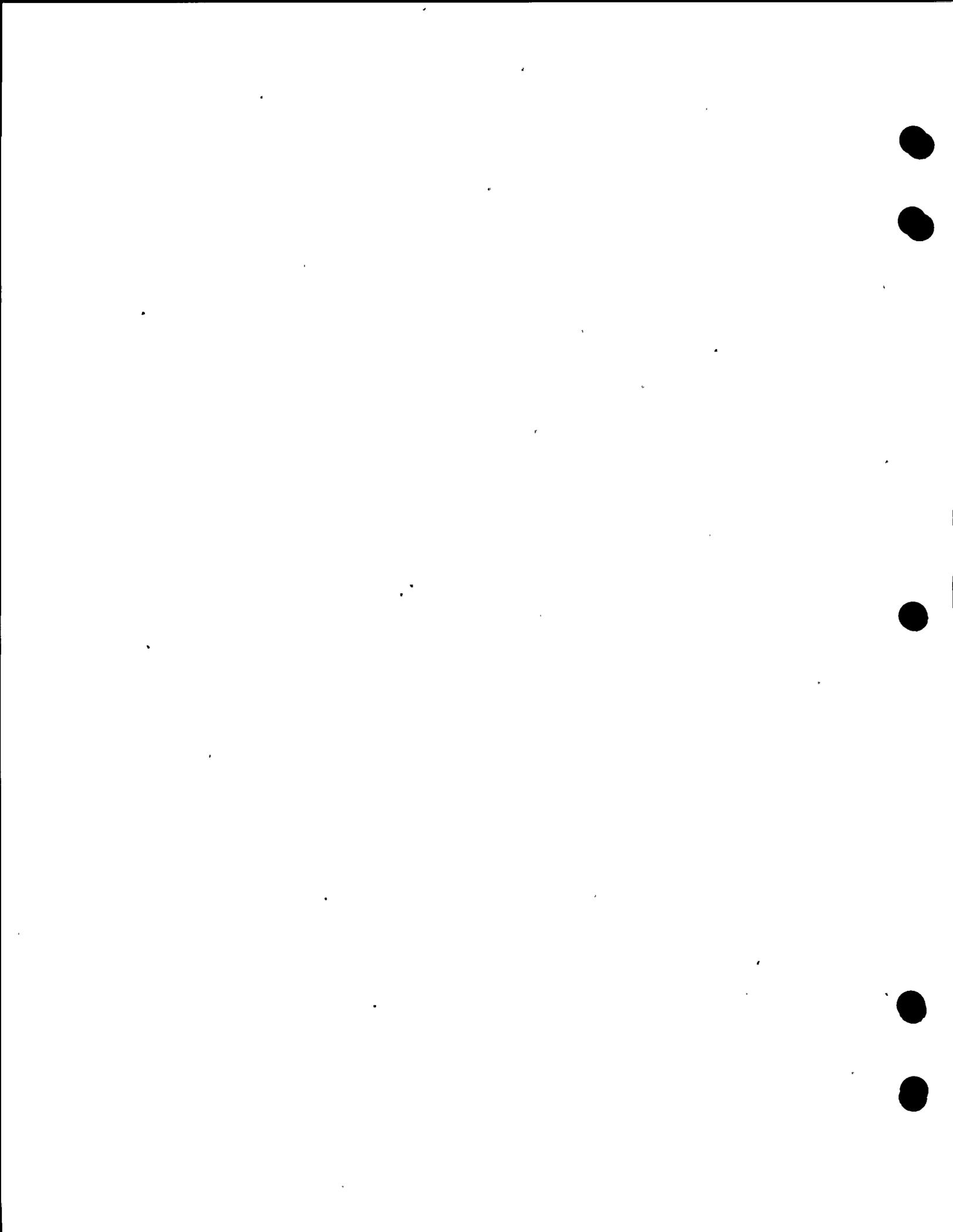
15 Q I'm sorry. Have been what?

16 A Modified.

17 Q But in preparing your analysis prior to preparing
18 a relative analysis to determine the low power value, you
19 did not yourself attempt to determine whether or not the
20 errors found by the Lewis Committee had been corrected in
21 arriving at the full power value for Diablo Canyon, is that
22 right.

23 A I didn't have to.

24 Q In your analysis, did you allow for increased risk
25 due to earthquake?



1 A I didn't have to because that risk would be there
2 whether it was at low power or high power.

3 Q Isn't it true that in WASH 1400 they had determined
4 the earthquakes were negligible?

5 A It was not important to my analysis. The relative
6 risk of low power versus high power is not dependent on earth-
7 quakes. The earthquake isn't going to know whether the reactor
8 is at high power or low power.

9 MR. REYNOLDS: Judge Wolf, could I have a five-
10 minute break, please? I think it would probably speed up the
11 cross examination and I am almost finished.

12 JUDGE WOLF: You may have five minutes.

13 (A brief recess)

14 JUDGE WOLF: Mr. Reynolds, are you ready?

15 MR. REYNOLDS: Yes. Let's try it again.

16 BY MR. REYNOLDS:

17 Q Mr. Lauben, if I understand you correctly, what
18 you have stated is that the absolute number of the accident
19 probabilities is not important in your analysis for full power,
20 is that right?

21 A Generally speaking, when one applies relative
22 risk factors to the dominant events it turns out that the
23 absolute numbers can vary pretty widely and the relative
24 risk is not going to change very much.

25 Q It's actually the reduction factor which is more



1 important, isn't that right?

2 A That's right. The factors that go into the reduc-
3 tion.

4 Q I wonder if we could take a hypothetical example
5 just to see if I do actually understand that. Assume that
6 the possibility of a core melt accident is 1 in 100,000 and
7 the reduction factor is 20. What would the risk -- what would
8 the accident probability be after the reduction factor is
9 applied?

10 A Absolute risk would be -- the absolute risk would
11 be 2 million.

12 Q All right. Now I believe you stated earlier that
13 there could be some variation of about 100; an uncertainty
14 of about 100 in the absolute number, is that correct?

15 A Yes. My understanding is that when one is talking
16 about the total uncertainty of numbers generated for the
17 assessment of absolute risk that the uncertainty could be
18 about a factor of 100.

19 Q All right. Now --

20 A But let me say one thing, because let me go back
21 to your original hypothetical. You said and suppose the
22 reduction in risk is 20. Well, that's all I've been talking
23 about, the relative reduction from full power to low power,
24 and my factor of 20 is not going to be affected by any un-
25 certainty in that first number. The factor of 20 has to stand



1 on its own merits.

2 Q I understand. Now if we take your example of the
3 uncertainty and divide the 100,000 -- you had 1 in 100,000
4 for the possibility of a core melt -- you divide that by 100
5 it is 1 in 1,000, is that right?

6 MR. NORTON: Object, Your Honor. We didn't have
7 1 in 100,000 as a possibility for a core melt.

8 MR. REYNOLDS: This is a hypothetical example.

9 MR. NORTON: And I will object to the hypothetical.
10 There is no foundation and no evidence whatsoever for that
11 hypothetical.

12 JUDGE WOLF: You may pose the hypothetical. Let's
13 move on.

14 BY MR. REYNOLDS:

15 Q If we use your number of 100 we then have an
16 accident probability of full power of 1 in a thousand, is
17 that right?

18 A Would you please restate the hypothetical?

19 Q Yes. If we take an accident probability figure of
20 1 in 100,000 for a core melt accident and a reduction factor
21 of 20 -- the reduction factor for low power is 20. At low
22 power, the accident probability is 1 in 2 million. Isn't
23 that what you just stated?

24 A Yes. That's what it would be if one were looking
25 to determine what the absolute probability would be at low



1 power. But that's not what I did.

2 Q If I can complete the hypothetical we can just move
3 along. Using your uncertainty number of 100, the accident
4 probability for a core melt would be 1 in 1,000, is that
5 right?

6 A If you are just going to take the uncertainty in
7 one direction, that is true. But the uncertainty, as has
8 been related to me by the probabilistic analysis staff, could
9 also go in the other direction. It could also mean that it
10 was 1 in 10,000,000, or 1 in 1,000.

11 ~~proposed~~ That's right. But taking the most conservative
12 approach and using your number, it would be 1 in 1,000, is
13 that right?

14 A In the conservative direction, yes.

15 Q All right. And the reduction factor of 20, what
16 is the accident probability at low power?

17 A One in 50 on an absolute basis.

18 Q I think it would be 1 in 20,000, isn't that right?

19 A I beg your pardon. Yes. One in 20,000.

20 Q Okay. So is it your position, then, that there
21 is no significant difference from a safety standpoint between
22 a possibility of a core melt accident in 1 in 20,000 and the
23 possibility in 1 in 2 million?

24 MR. OLMSTEAD: Mr. Chairman, I will let the witness
25 answer but I am going to interpose an objection that this does



1 not reflect the testimony the witness has given up to now.

2 JUDGE WOLF: Very well. Can you answer the question?

3 WITNESS LAUBEN: Would you please state that again?

4 BY MR. REYNOLDS:

5 Q You said that conservatively applying the uncer-
6 tainty number of 100 you came to an accident probability
7 number at low power of 1 in 20,000, did you not?

8 MR. OLMSTEAD: He didn't state that. That was
9 your hypothetical.

10 BY MR. REYNOLDS:

11 Q Right. Your answer to my hypothetical.

12 A That's true. But you have to -- I believe that
13 what you have done is you've taken a lot of hypothetical
14 numbers here, including the factor 20, which was not any
15 number that I generated. The number that I generated for
16 relative risk was 400 to 1600. That's not the same as a
17 factor of 20.

18 Q What is your understanding of the number for core
19 melt frequency in WASH 1400 -- core melt probability in WASH
20 1400?

21 MR. OLMSTEAD: Mr. Chairman, I'm going to interpose
22 an objection on the relevance. We have been over this. He
23 has testified he didn't use numbers in WASH 1400. I don't
24 understand what it has to do with this witness' testimony.

25 JUDGE WOLF: Yes. I don't see the relevance of



1 that, Mr. Reynolds.

2 MR. REYNOLDS: All right.

3 BY MR. REYNOLDS:

4 Q Let's go on to something else. At page 4, line
5 80, of your testimony you refer to the reduced risk from the
6 proposed power profile of the low power test program. Isn't
7 it true that the proposed forms of license authorize operations
8 to 5 percent power?

9 A Yes, sir.

10 Q Page 4, line 91. You refer to a small break LOCA's.
11 Isn't it true that a "small break" LOCA analysis has been pre-
12 pared by Westinghouse?

13 A Every applicant is required to do the full spectrum
14 of breaks in their safety analysis report, including small
15 break LOCA's. In addition, the NRC required Westinghouse, as
16 a reactor vendor, to perform small break analyses in support
17 of post-TMI requirements for operator training and for small
18 break assessment.

19 Q And did Westinghouse submit such an analysis?

20 A Westinghouse has submitted small break analyses in
21 support of Diablo Canyon -- pardon me. The applicant has
22 submitted analyses performed by Westinghouse in support of
23 the Diablo Canyon application and, in addition, Westinghouse
24 submitted numerous small break calculations in WCAP 9600 in
25 support of the post-TMI effort.



1 Q Has the NRC reviewed the post-TMI revisions of that
2 analysis?

3 A The NRC has completed their review of WCAP 9600.
4 The review is contained in two safety evaluations. The final
5 report of the Task Force on Bulletins and Orders and the report
6 on the Westinghouse WCAP -- unfortunately, I don't have either
7 one of those NUREG numbers.

8 Q Is there any outstanding small break LOCA analysis
9 from Westinghouse which is still being reviewed?

10 A There is a result of the WCAP 9600 review by the
11 Bulletins and Orders Task Force: a requirement that every holder
12 of approved evaluation models in compliance with Appendix K
13 are to submit further analyses for our review to determine
14 whether further revisions are needed to those models. That
15 in no way affects -- and I believe it is stated in the SER
16 Bulletins and Orders final report and the report on the West-
17 ingshouse effort -- that this does not affect the operator
18 training nor was there sufficient reason to believe that any
19 problems with those analyses would affect the operation of
20 the plant.

21 Q On page 6, at line 137, you refer to the low power
22 test program at Sequoia. Do you know what were the maximum
23 power levels and the duration of low power testing at Salem
24 and North Hannah?

25 A No, I do not. But they were similar to Sequoia.



1 That I know from speaking to people who reviewed those pro-
2 cedures. But I don't know exactly what their power history
3 was.

4 Q On page 5 at line 109 you describe the regulatory
5 requirements governing ECCS performance and specifically you
6 cite the limitation of core-wide metal water reaction to 1
7 percent even at full power. This same regulation applied
8 to ECCS performance analysis for the TMI II reactor, isn't
9 that true?

10 A Yes.

11 Q Was the specified core-wide metal water reaction
12 exceeded during the TMI accident?

13 A Yes.

14 Q In fact, the percentage of such a reaction at TMI
15 II was not 1 percent but has been estimated at between 30 and
16 50 percent, isn't that correct?

17 A Yes. There are also some analyses that suggest it
18 might have been as low as 9 and some that suggest that it might
19 have been as high as 60. So I will expand upon your bounds.
20 It might have been as low as 9 and as high as 60.

21 Q Thank you.

22 MR. REYNOLDS: I have no further questions.

23 JUDGE WOLF: Of this panel?

24 MR. REYNOLDS: Of this panel at this time.

25 JUDGE WOLF: Thank you. Mr. Lanpher?



1 MR. LANPHER: As I explained before, I will address
2 my questions to Mr. Lauben and then my colleague will address
3 the other two members of the panel.

4 CROSS EXAMINATION

5 BY MR. LANPHER:

6 Q Mr. Lauben, a number of times you have referenced
7 discussions you have had I guess to get technical inputs or
8 to discuss ideas with the probabilistic risk analysis staff.
9 Is that the right division or group?

10 A I believe they have changed their name now. They
11 are part of the Office of Research. I think it may be Office
12 of -- I'm really not sure what their name is now, but it used
13 to be Probabilistic Analysis Staff.

14 Q You are not a member of that staff, is that
15 correct?

16 A No, sir.

17 Q I don't want to belabor a point that Mr. Reynolds
18 was going on in his hypothetical, but I'm a little bit con-
19 fused still by the interchange that went on and the use of
20 relative risk and your statement that the uncertainty, for
21 instance, in the WASH 1400 numbers, the absolute risk -- and
22 they could be incorrect by a factor of 100, I believe -- you
23 said that that did not matter in terms of your relative risk
24 analysis, is that correct?

25 A That's correct. They were of little importance.



1 Q Okay. I stand corrected. As I understand your
2 testimony, it's because what you are comparing is the reduc-
3 tion in risk at full power versus full power, whatever that
4 risk factor at full power might be.

5 A Yes.

6 Q And you are not providing any opinion as to what
7 that risk at full power is, is that correct?

8 A I am not.

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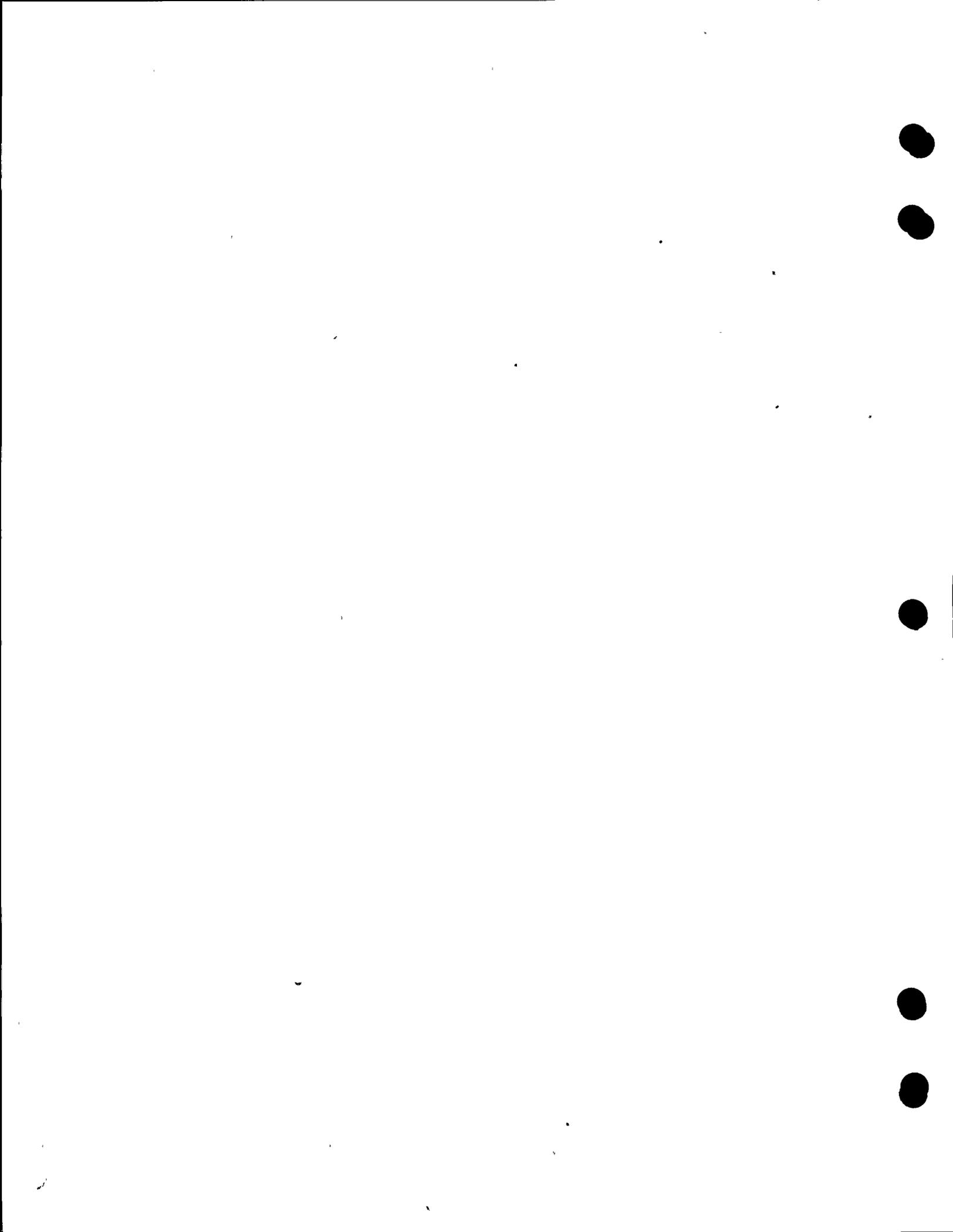
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T13

1 Q And the reason for that would be that you have not
2 performed any detailed site-specific risk assessment for
3 Diablo Canyon; correct?

4 A (Witness Lauben) It is true that I didn't do that.

5 Q Maybe I was imprecise.

6 A Probabilistic fault tree and event tree analysis
7 for Diablo Canyon, you didn't perform that? You didn't need
8 to perform that, in fact?

9 A No.

10 Q I am sorry if I am repeating myself on this question,
11 but let me just do that, for my own thought process.

12 So you didn't come up with an absolute risk factor
13 for Diablo Canyon or error bounds for risk factors for Diablo
14 Canyon; correct?

15 A For absolute risk, no.

16 Q Thank you; for absolute risk.

17 I would like you to turn to the last page of your
18 testimony, please. Excuse me, the next-to-the-last page,
19 Page 9, sir. Your conclusion, the sentence on Lines 214 and
20 215, it says, "Under these conditions, the risk is so small
21 that there is virtually no need for a qualified emergency plan."

22 It is correct that, by "conditions," you mean low-
23 power test conditions; is that correct?

24 A Yes.

25 Q That conclusion in that sentence is not a relative



2
1 risk conclusion, is it, sir? That is an absolute risk con-
2 clusion, isn't it?

3 A No. I think there is one other factor that could
4 be brought in here on relative risk, and that is, the expected
5 time that one would propose to run the low-power test program
6 versus the time that one would expect to operate the plant
7 over its lifetime.

8 Of course, for the low-power test program, as the
9 PG & E testified yesterday, they would expect to run this at
10 powers not to exceed 4 percent, for a period not to exceed 18
11 days.

12 So one has to consider that even on a relative basis,
13 the time that you would be at low power would be very much
14 smaller than the time that you would be at full power.

15 Q Does that complete your answer, sir?

16 A Well, if you then consider --

17 Q I just don't want to cut you off. I am not asking
18 for you to necessarily expand, but you had hesitated a couple
19 of times.

20 A Well, I will continue, then.

21 Q Fine.

22 A I can take it either way, but I will continue.

23 If you then consider the fact that 30 years is some-
24 thing like 10,000 days, and that they were expecting to run
25 for a maximum of 18 days, but based on the Sequoia history, it



3
1 was more like four days -- I beg your pardon, eight days, if
2 you just in round numbers said it was 10 days versus 10,000
3 days, that is a factor of 1,000 longer for full-power operation
4 than for the low-power test program.

5 If then you are concerned about the integrated total
6 risk, and you said that in round numbers it was a factor of
7 1,000 difference in time, and considering that the reduction
8 in power was taken into account in the relative risk number
9 generated in my testimony, say the average of that was approxi-
10 mately 1,000 -- I think it is 400 to 4,000, something like
11 that; just take 1,000, that would mean that the total integrated
12 relative risk is reduced by a factor of over a million for
13 low-power testing.

14 That being the case, it seems to me that if the
15 WASH-1400 numbers, or the numbers that were used to start with
16 are wrong by a factor of 100, it is still not going to matter.
17 The risk of low-power operation for a short period of time is
18 so much less that I can't see how it is going to make much
19 difference.

20 Q I understand -- I think I understand that answer that
21 you just gave me. I want to go back to my previous question,
22 though, that prompted that answer. And let me break it down.

23 You have not performed an absolute probabilistic
24 risk assessment for Diablo Canyon?

25 MR. OLMSTEAD: Objection; asked and answered.



4
1 MR. LANPHER: Well, Mr. Chairman, I just got a long
2 speech. I didn't want to cut the witness off. I want to get
3 back into the train; I want to create a record on this issue,
4 and I would like to have it a unified record, so that we will
5 have some findings that we can make.

6 MR. OLMSTEAD: Mr. Chairman, that question has been
7 asked and answered about a half a dozen times.

8 JUDGE WOLF: It seemed to me it has been.

9 Can you give a short answer?

10 WITNESS LAUBEN: Yes. The answer is no.

11 MR. LANPHER: Thank you.

12 BY MR. LANPHER:

13 Q Then you cannot give a precise risk factor for low-
14 power testing at Diablo Canyon, an absolute risk factor also;
15 isn't that true?

16 A That is right. I would not attempt to do that,
17 because I haven't looked into the details of it enough that I
18 would want to do that, nor did I think it was necessary to do
19 that.

20 Q Mr. Lauben, could you please turn to Page 4 of your
21 testimony? Right in the middle of that page, Mr. Lauben,
22 you changed the period of time from 10 days to 20 days for
23 maximum power level at low power; correct?

24 A Yes.

25 Q Did that change your risk reduction factor?



5
1 A No, it doesn't. The risk reduction factor to it
2 would still apply, because the 10 days was based on 10 days
3 at 4 percent power.

4 When I discussed the proposed program with PG & E,
5 they said that only for a couple of days would they plan to be
6 at 4 percent power, and that most of the time they would only
7 be in the range of 2 to 3 percent power.

8 So the fact that it has now increased to 20, the
9 power level is also down somewhat from the precise plan that
10 was -- the record of power that I got from Sequoia. So, over-
11 all, the factor of 2 is still about the same.

12 Q But it is true, is it not, that the license that
13 PG & E is seeking is for 5 percent for one year; correct?

14 A Well, I really don't know what -- I haven't seen the
15 license, but based on the testimony that I have heard here,
16 I would presume that that is the case.

17 Q I am referring to the form of license.

18 A From the testimony that I have heard the last couple
19 of days, I would presume that that is the case.

20 Q Now, Mr. Lauben, you testified before that in order
21 to come up with your risk reduction factors, you had conversa-
22 tions with members of that other Staff, that Probabilistic
23 Risk Staff, or whatever their name is today.

24 A Analysis.

25 Q And I think these were the exact words; that you



6

1 "mathematically manipulated the data." Okay?

2 A Yes.

3 Q Now, I have a couple of questions, because I would
4 like to understand your methodology.

5 First of all, do you have SER Sup. 10 in front of
6 you, sir?

7 A Yes, sir.

8 Q If you could turn to Page 3, the first full paragraph
9 on that page, please. The first sentence says, "The risk
10 reduction factor for the total loss of feedwater at 5 percent
11 power is about a factor of 1,000 to 10,000." The risk reduction
12 factor is that.

13 A Yes.

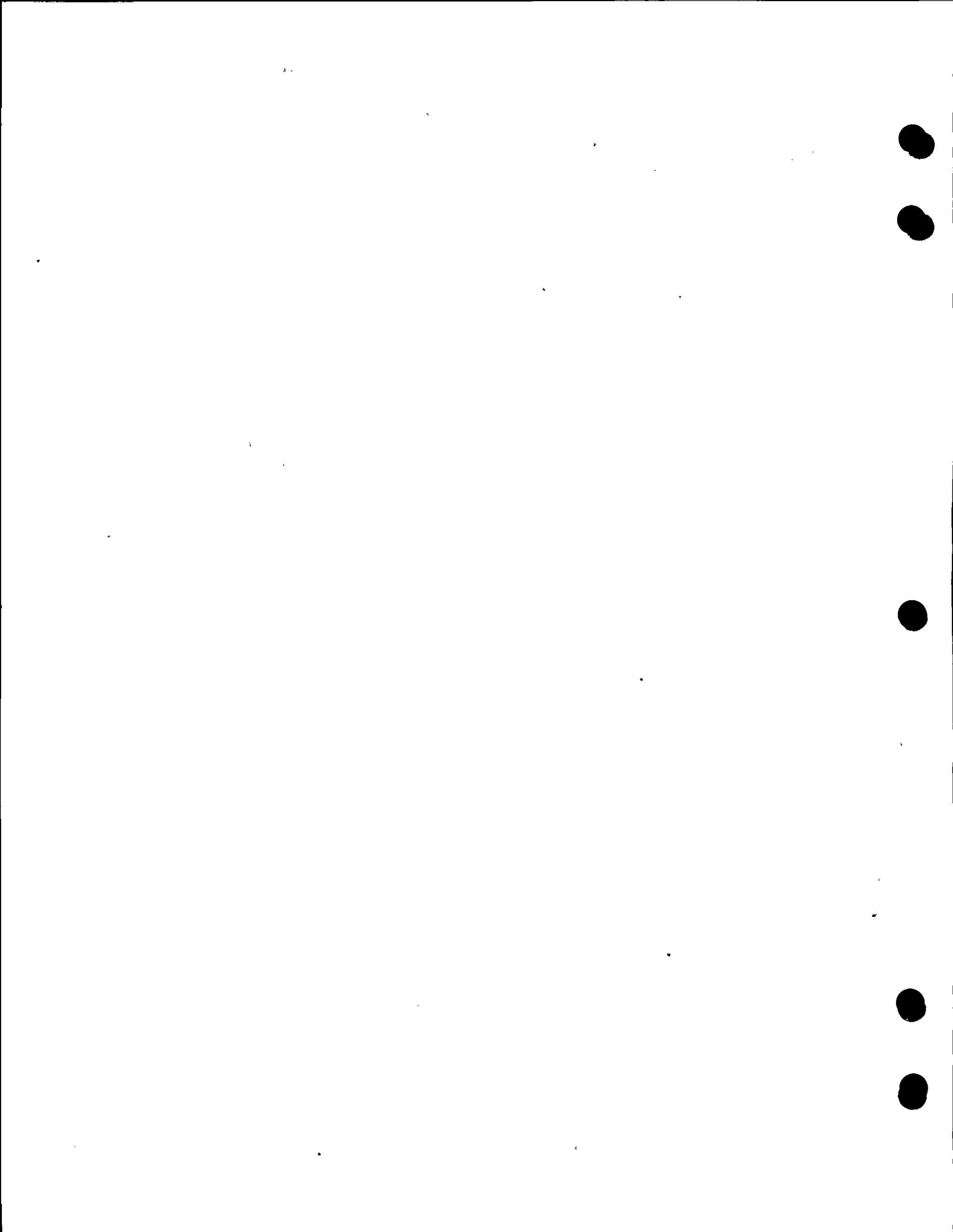
14 Q Now, at Page 8 of your testimony, I believe you have
15 changed that SER value to be a factor of 1,000 to 20,000; is
16 that correct? Is there a typo somewhere? It is Page 8,
17 Line 180, sir. Or maybe you are talking about different events.
18 I am just a little confused.

19 A Oh. Where was that?

20 Q Excuse me, Line 180 of the testimony.

21 A Okay. There is a difference, really, in what was
22 being discussed -- let me check that. I believe there is a
23 difference in the numbers for a reason.

24 Q Yes. Please take an opportunity to review the
25 context of the SER document and your testimony.



7
1 A. Yes. After assessing boil-off for feedwater events,
2 from the time that I wrote the SER until the time I wrote the
3 testimony, I reassessed boil-off time; I reassessed passive
4 system heat losses and came to the conclusion that the risk
5 reduction of 10,000 was not enough, and it should be, in fact,
6 a risk reduction of at least 20,000.

7 Q Now, clearly, you performed a re-analysis then between
8 the time that you prepared SER Sup. 10 and your testimony.
9 Was this re-analysis an event tree and fault tree analysis, or --

10 A No, no. Simply, it was a heat balance comparison.

11 One knows what the volume and mass of water is in a steam
12 generator. One knows what the decay heat would be. And you
13 can determine at what time you would expect not to have any
14 more heat sink available to you.

15 It looked as though the two and-a-half days -- even
16 though I have kept two and-a-half days in here, it actually
17 may turn out to be substantially longer than that. You may
18 never boil the steam generators dry. And, based on that, I
19 thought it was quite appropriate to increase that factor from
20 10,000 to 20,000.

21 Q Now, is that factor of 20,000 based on a very
22 precise mathematical determination, or is that a factor which
23 involves the exercise of judgment?

24 You have recalculated boil-off time, I think you
25 stated. Did that recalculation, through the use of a formula,



1 lead to the number 20,000 or 20,001, or what?

2 A Well, no. It doesn't work that way.

3 If I find, for instance, that at two days, my decay
4 heat is less than the natural passive system heat losses, I
5 may never lose water completely in the steam generators at
6 5 percent power. That being the case, I felt that there was a
7 chance -- that the chances were even greater than 20,000
8 reduction; that there wouldn't be any concern about feedwater
9 events at 5 percent power.

10 It is really a simple first law of thermodynamics
11 heat balance calculation, and one can conclude that you don't
12 lose heat sink; that passive system heat losses are enough to
13 take the decay heat away in such instances; and that the risk
14 is therefore going to be reduced even more significantly.

15 Q Well, why didn't you come up with a factor of 100,000
16 or 50,000 or 5,000? Why 20,000? I guess that is what I am
17 confused about. I don't know how you came up with that number.
18 It sounds to me as if you performed these thermodynamic --

19 A Heat balances.

20 Q -- heat balance analyses. Then you said, well, based
21 on this, I am going to estimate that it is 20,000, not 10,000,
22 the reduction factor. Would that be fair?

23 A Yes, that is not an unfair characterization.

24 If I analyzed it further, it is possible that the
25 number could go up even further.



9

1 It is also possible, although I don't think likely,
2 that the number could get reduced if something else were to
3 happen that I wasn't aware of in this heat balance calculation.
4 But I checked it with a number of people, and it appears to me
5 to be a reasonable assessment.

6 Q You say it is a reasonable assessment, but it is an
7 estimate? You say it could vary? These factors are not some-
8 thing that someone should focus on and say it is a factor of
9 20,000, and that is a very precise number? There is a range
10 in there within -- I mean, there is an uncertainty in there,
11 just as there are uncertainties in absolute risk factors.

12 A Yes, and that is why the numbers --

13 MR. OLMSTEAD: Objection.

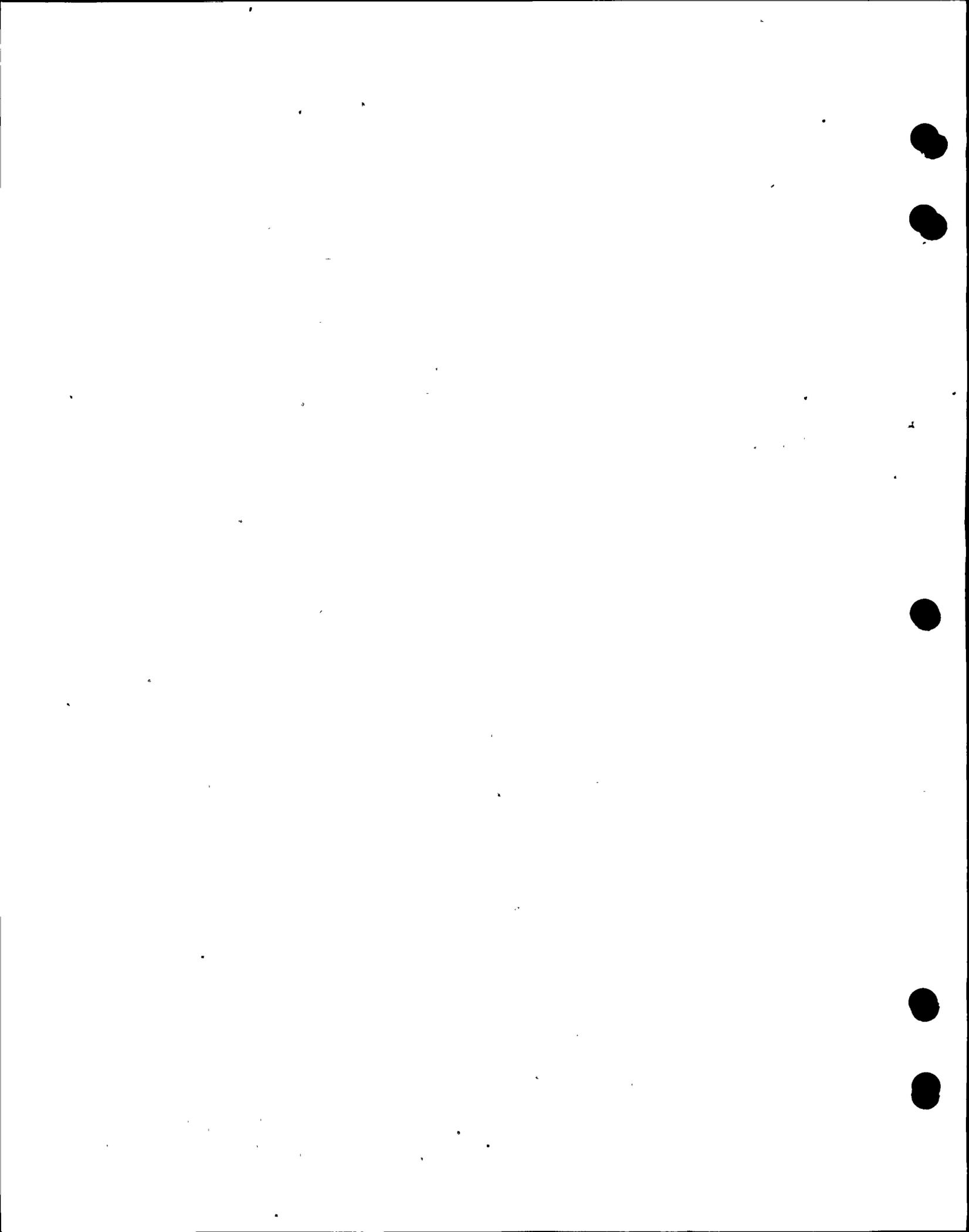
14 Mr. Chairman, the testimony is being characterized
15 as though there is only one number there, and there are two
16 numbers there. It is 1,000 to 20,000, and so I think that
17 Mr. Lanpher ought to keep that accurate, if he is going to
18 ask that type of question.

19 MR. LANPHER: Thank you, Mr. Olmstead.

20 Could he answer the question? I am just focusing
21 on the one number. I thought it would be a lot less confusing
22 than to try to talk in terms of a whole range of numbers.

23 MR. OLMSTEAD: But you were implying that he didn't
24 consider a range of numbers. That is my objection.

25 MR. LANPHER: Well, why isn't there a range at the



10

1 top, then?

2 But I would like to go back to my earlier question,
3 and if the Reporter could read it back, I think the witness
4 was about to answer it.

5 (Whereupon, the previous questions was played back
6 by the Reporter.)

7 JUDGE WOLF: Mr. Lanpher, your question ought to be
8 premised by a statement to the effect that the witness did
9 use a range of numbers, and I think it would be more relevant
10 to the problem here if you did that.

11 ~~just as Mr. Lanpher:~~ Let me rephrase the question,
12 Mr. Chairman.

13 BY MR. LANPHER:

14 Q Recognizing that you have a range of 1 to 20,000 in
15 your testimony for feedwater transients --

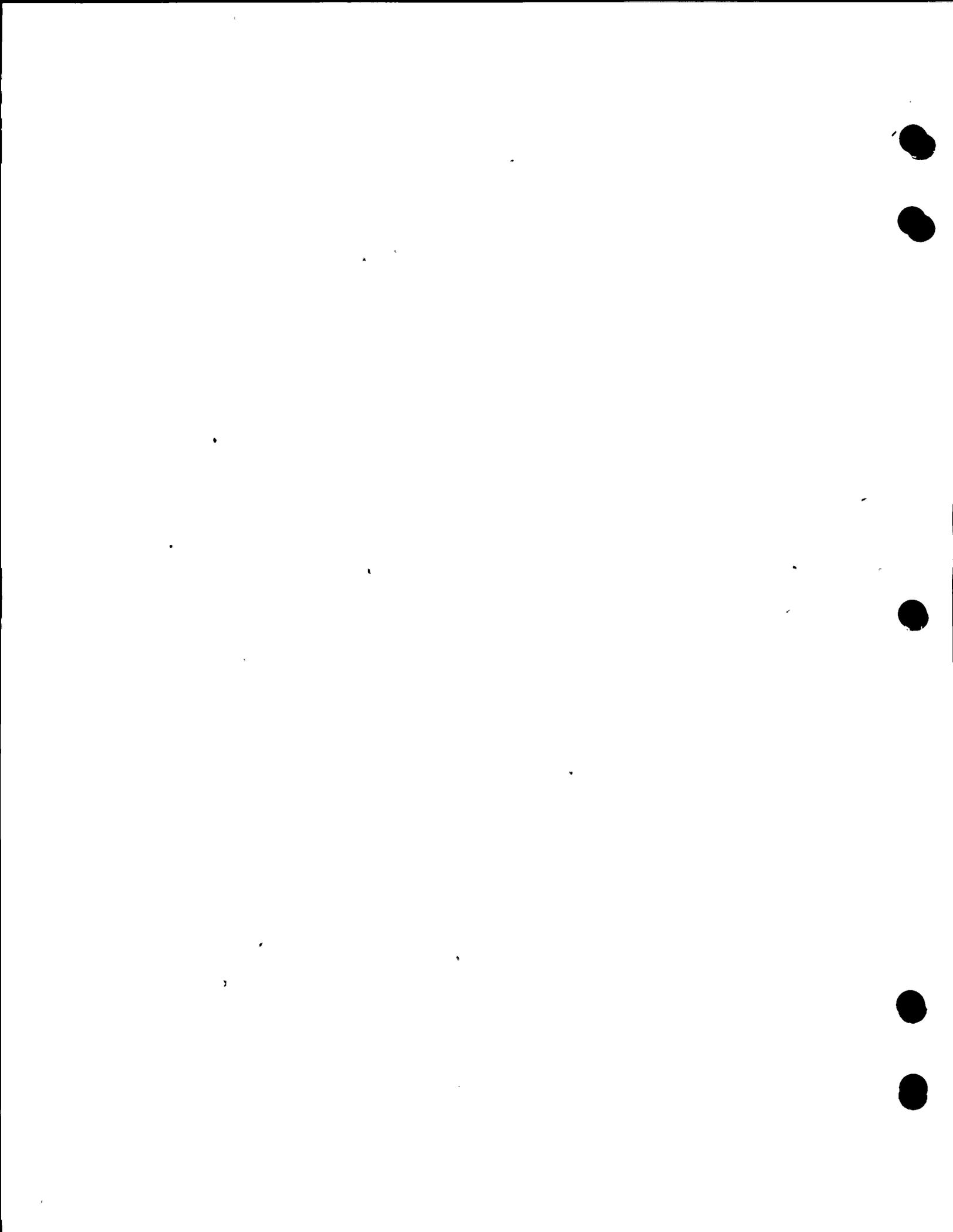
16 JUDGE WOLF: Is that 1,000?

17 MR. LANPHER: 1,000; thank you, Mr. Chairman.

18 BY MR. LANPHER:

19 Q Just as there are substantial uncertainties in the
20 absolute risk numbers that we were discussing before -- you
21 were discussing in cross-examination by Mr. Reynolds -- is it
22 not true that there are also uncertainties in both your 1,000
23 reduction factor number and your 20,000 reduction factor
24 number?

25 A Well, the purpose of stating a range is to state an



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1 uncertainty, and if you are trying to suggest that there is
2 an uncertainty on the uncertainty, I am not sure what that
3 means, but if you believe that perhaps this range could be
4 wider, I guess it is possible.

5 I guess I am conservative, by nature, and I didn't
6 really want to expand the 20,000 number to something a lot
7 larger than that.

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10 (Please continue reading to the next numbered page.)

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BY MR. LANPHER:

Q Can you tell us how many standard deviations your range, and we are talking about the 1,000 to 20,000 range, covers from the mean value? The median value?

A (Witness Lauben) No, I did not do a probabilistic analysis to determine the standard deviation on those numbers.

Q Then would it be fair to state that it is your professional or engineering judgment that that is the appropriate range?

A Yes.

Q Now, Mr. Lauben, I want to go back to one of your statements in the prior cross-examination. I believe that you testified that you began with an assumption that the dominant accident sequences from WASH-1400 were also the dominant accident sequences applicable to Diablo Canyon, is that correct?

A I believe it says in my testimony that since the publication of WASH-1400, probabilistic analyses have been done, risk assessment has been done, and my assumption was not that WASH-1400 was the correct answer.

Q No, I think you misunderstood me, Mr. Lauben. I am going to try to be more precise. I am not talking about absolute risk numbers from WASH-1400, but the dominant accident sequences --



2
1 A Yes.

2 Q -- from WASH-1400 also would be applicable to Diablo
3 Canyon?

4 A I believe it also says in the -- I don't know if it
5 says it in the testimony, but it says it in the supplement
6 that review since WASH-1400 has confirmed that the dominant
7 scenarios are still the same.

8 Q Did any of those -- now, WASH-1400 was a generic
9 analysis, I believe, involving the Surry PWR, is that correct?

10 A Well, the PWR that was used in WASH-1400 was Surry..

11 Q Thank you. Now, the subsequent analyses that you
12 have just referenced, none of those was of Diablo Canyon,
13 correct?

14 A Well, the Zion Indian Point study used as a basis
15 the Zion plant, and the Indian Point plant, both of which are
16 similar in design to Diablo Canyon, and it also evaluated the
17 effect -- the siting effects, and it included Diablo Canyon
18 site as one of the sites evaluated in that study, so even
19 though a precise -- I am not aware of a precise assessment
20 that would have used a Diablo Canyon as-built reactor and its
21 systems. The Zion Indian Point study comes fairly close to
22 that.

23 Q Isn't it true that they used Diablo Canyon site-
24 specific numbers on the consequence side, once a relief is
25 postulated, so for consequence modeling purposes, they used



1 Diablo Canyon, correct?

2 A That is correct.

3 Q And I want to be clear so you understand me, I am
4 talking about accident probabilities at this point, all
5 right?

6 A Well, the whole -- as was discussed earlier, risk
7 is a product of consequences times probabilities of
8 occurrence. What I am suggesting is that although the
9 probabilities were those that were evaluated for Zion and
10 Indian Point, and not specifically Diablo Canyon, I would
11 submit that to a large degree, although certainly not
12 completely, but to a large degree the design of Diablo Canyon
13 is similar enough to those two reactors that the
14 extrapolation should not be too far in error.

15 Q Mr. Lauben, are you familiar in detail with the
16 Diablo Canyon -- excuse me -- safety systems? Have you
17 reviewed those?

18 A I have done some review, but I was not the
19 primary reviewer for those safety systems.

20 Q So it is not your testimony that Diablo Canyon is
21 precisely the same as these other plants? It is your
22 judgment that it being a PWR and those being PWR's, they are
23 probably similar?

24 A No, it is that they are both -- they are all three,
25 Zion, Indian Point, Diablo Canyon, are four-loop



4 1 pressurized water reactors designed by Westinghouse and
2 operated at approximately the same power level.

3 They use safety systems that are similar in design,
4 and accumulator capacities, pump capacities that are very
5 close.

6 Q Now, these other risk assessment analyses, Zion,
7 Indian Point, as well as WASH-1400, all of those analyzed
8 the risk in terms of full power operation, correct?

9 A Yes.

10 Q Have you performed any analyses to determine whether
11 the dominant scenarios at low power, accident scenarios at
12 low power, will be the same as at full power?

13 A Yes, to the degree that was spoken about in the
14 testimony. We looked at what the dominant scenarios were
15 for full power, assessed risk reduction for those
16 scenarios, and then when it appeared that feed water
17 transients in particular, because of their large risk
18 reduction factor from full power to low power, became much
19 less significant at low power, we -- and in this case, I
20 will have to say collectively, because it wasn't just myself,
21 looked at others, transients, as stated in the testimony, and
22 it was determined that these transients had a similar risk
23 reduction to the -- to the feedwater transients, and they
24 therefore would not become the dominant scenarios at low
25 power.



5
1 Q But you didn't perform, you or your colleagues,
2 didn't perform event tree and fault tree analyses for low
3 power operation, isn't that correct?

4 MR. OLMSTEAD: Objection. This question has been
5 asked and answered before.

6 MR. LANPHER: I think it is a yes or no answer. I
7 forget what his answer was. I think it was no, but I would
8 like that on the record.

9 WITNESS LAUBEN: Well, I would be happy to answer
10 it again no.

11 MR. LANPHER: Thank you. Let me just refer to my
12 notes for a moment.

13 BY MR. LANPHER:

14 Q Mr. Lauben, we spoke a few minutes ago regarding
15 consequences and consequence modeling. Could you provide a
16 definition for what consequence modeling is?

17 A (Witness Lauben) Well, not precisely, but in the --

18 Q Well, let me -- let me --

19 A -- analysis -- the relative -- I could not, but in
20 the relative risk analysis that I did, the predominant
21 feature of the consequence model is the source term, and I
22 did not have to analyze or concern myself with atmospheric
23 conditions, population things, or things that would
24 contribute to exposure once the release has occurred.

25 Because risk -- because consequences are going to



6

1 be proportional to the source term.

2 Q Consequences are also proportional to many other
3 factors, right?

4 A Yes, they are.

5 Q For instance, meteorology or the --

6 A Yes.

7 Q -- weather conditions, and the nature of the plume
8 release?

9 A Yes.

10 Q Whether it goes up very high very fast, or whether
11 it spreads out low, depending on the energy, wouldn't that be
12 another factor that would affect it?

13 A All these things would be factors.

14 Q And the deposition velocity of the plume?

15 A Yes. But I must say that I personally don't -- I
16 personally have not involved myself in these kind of things,
17 but what you say is true.

18 Q Would it be fair to say, then, that you have a
19 passing knowledge of that, but that is not within your
20 responsibilities at the NRC?

21 A That is correct.

22 Q Even -- well, as I understand it, your normal
23 responsibilities are not as a member of the probabilistic
24 group, whatever that name is?

25 A Yes.



1 Q How was it --

2 MR. OLMSTEAD: Mr. Chairman, that line of
3 questioning has been pursued over and over today, and I think
4 that we ought to cut it off. It has been asked 15 or 20
5 times.

6 MR. LANPHER: That is a huge misstatement, Mr.
7 Chairman.

8 JUDGE WOLF: Mr. Lanpher, you may ask the question.

9 MR. LANPHER: Thank you.

10 BY MR. LANPHER:

11 Q In fact, you don't consider yourself an expert at
12 all in consequence modeling, correct?

13 A (Witness Lauben) Nor do I think that I had to be
14 to do this assessment.

15 JUDGE WOLF: Now, do we have any new ground to
16 plow, or --

17 MR. LANPHER: Mr. Chairman, I do have a couple of
18 more questions.

19 JUDGE WOLF: All right.

20 BY MR. LANPHER:

21 Q Mr. Lauben, you were present during earlier
22 testimony by the PG & E panel, and do you recall them stating
23 that Diablo Canyon when operating at low power, will be at
24 approximately 170 megawatts thermal?

25 A (Witness Lauben) Yes. Excuse me, that would be, I



1 believe that would be the maximum power.

2 Q The maximum?

3 A Yeah.

4 Q The maximum power level. If they are operating
5 at five percent power, it would be approximately 170 or --

6 A Right, five percent of 3400 is 170 megawatts.

7 Q Fine. Approximately that when they are right at
8 the top of their license condition.

9 Now, you have concluded -- I would like to go back
10 to your conclusion at the bottom of page nine that there is
11 ~~virtually no need for a qualified emergency plan at Diablo,~~
12 all right?

13 Now, are you familiar with NUREG 0654?

14 A I Am not familiar with NUREG 0654 by having read it,
15 that is true. I am familiar with the things that would --
16 well, let me just leave it at that. I am not familiar with
17 NUREG 0654.

18 Q Are you aware that on page eleven, footnote six
19 of NUREG 0654 --

20 MR. NORTON: Excuse me, Your Honor. I am going to
21 object to Mr. Lanpher putting into the record, reading from
22 a document that this witness has just stated he is not
23 familiar with. That is not the way you put evidence in the
24 record, by reading from the document after the witness has
25 told you he is not familiar with it.



1 MR. LANPHER: Well, I am going to test his
2 conclusion on page nine, Mr. Chairman, that you don't need a
3 qualified emergency plan, and this document, in my opinion,
4 directly contradicts his statement.

5 MR. NORTON: Then Your Honor, I suggest he put a
6 witness on the stand that is qualified to get that document
7 into evidence or however else.

8 JUDGE WOLF: This is cross-examination --

9 MR. LANPHER: Thank you, Mr. Chairman.

10 BY MR. LANPHER:

11 Q Do you have a copy of that document, Mr. Lauben?
12 I don't mean to read from something that you can't see. I
13 would like you to turn to page eleven.

14 JUDGE WOLF: Well, let us move on now.

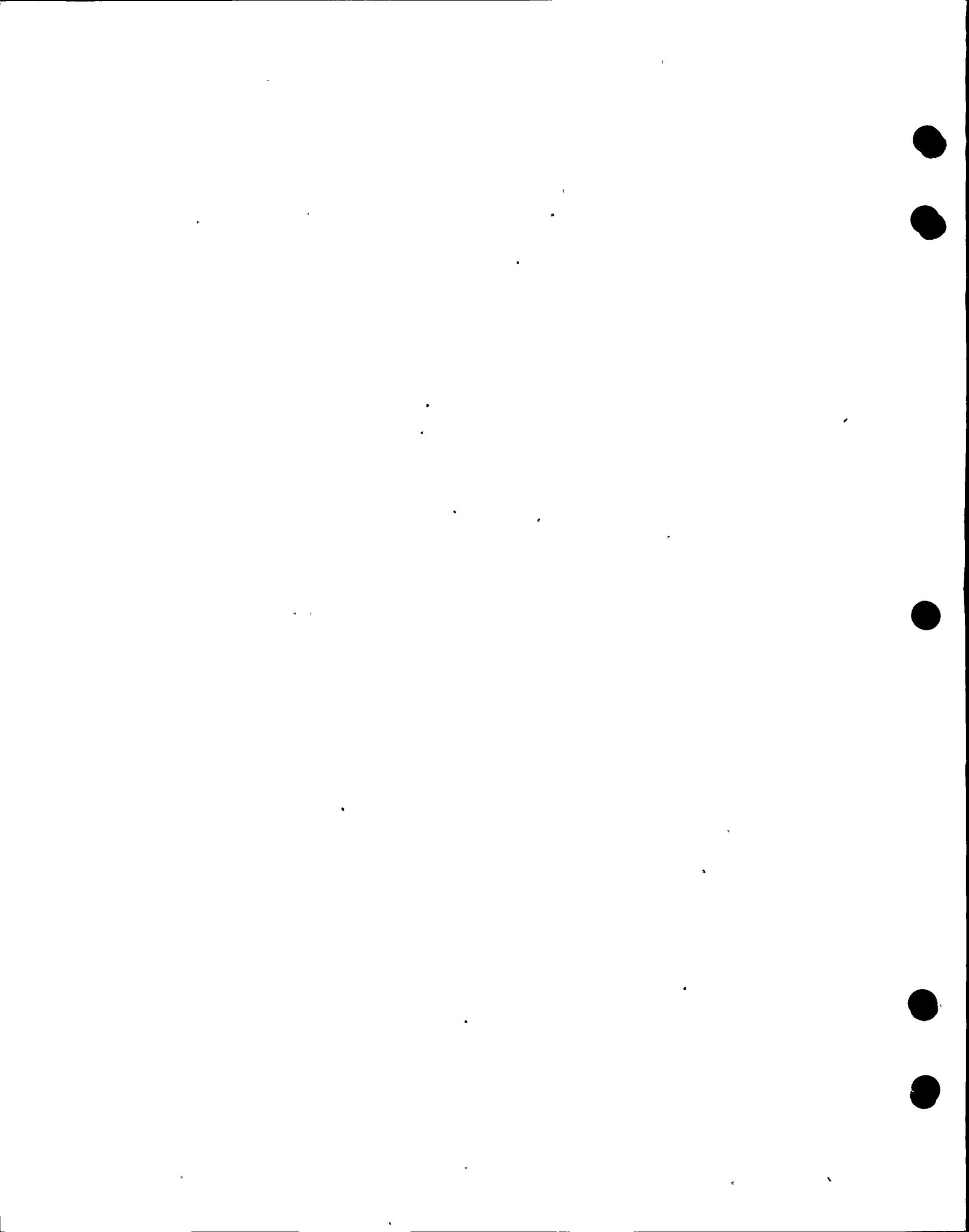
15 MR. LANPHER: Well, I am waiting until he gets there,
16 Mr. Chairman. I am almost done with this line of
17 questioning.

18 WITNESS LAUBEN: I have the document, and I have
19 page eleven.

20 BY MR. LANPHER:

21 Q Thank you, sir. Now, I am going to read the second
22 sentence of that footnote. It says, the FEMA -- well, I
23 am going to read -- let me read the first sentence, too.

24 It is referring to the text about emergency planning
25 zones, and it says that the emergency planning zones --



1 and the text, "are applicable to light water nuclear power
2 plants, rated at 250 megawatts or greater. The FEMA/NRC
3 Steering Committee has concluded that small water cooled
4 power reactors (less than 250 Megawatt thermal), and the
5 Fort St. Vrain gas cooled reactor may use a plume exposure
6 emergency planning zone of about 5 miles in radius, and an
7 ingestion pathway emergency planning zone of about 30 miles
8 in radius."

9 "In addition, the requirements for the alerting and
10 notification system (Appendix 3) will be scaled on a case-by-
11 case basis. ~~This conclusion is based on the lower potential~~
12 from these facilities (lower radionuclide inventory and
13 longer times to release significant amounts of activity for
14 many accident scenarios)."

15 Now, Mr. Lauben, do you have any reason to disagree
16 with those conclusions of the FEMA/NRC Steering Committee
17 that those are appropriate emergency planning zones for
18 power reactors less than 250 megawatts thermal?

19 MR. NORTON: Excuse me, Your Honor. I would like
20 to object, because that does not assume the full facts, and
21 that fact, that this footnote doesn't include, is that those
22 reactors are operating at full power over periods of time.

23 MR. LANPHER: Mr. Norton can cross-examine the
24 witness, or recross when it is his turn. I would like my
25 question answered, please.



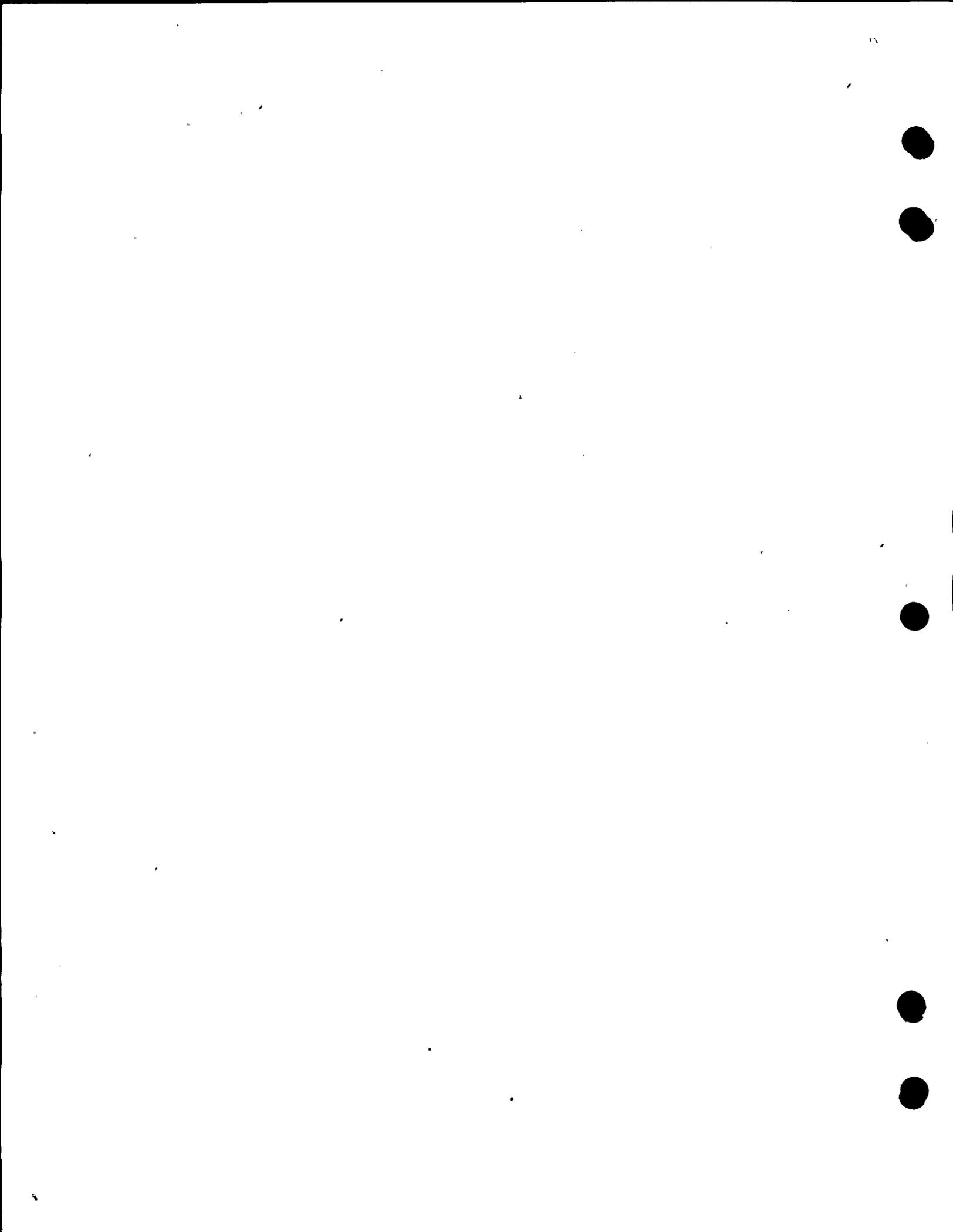
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MR. NORTON: I have a right to object, Mr. Lanpher.

JUDGE WOLF: I think the witness can understand that, Mr. Norton.

MR. NORTON: Not if it isn't read to him, Your Honor.

///. PLEASE CONTINUE READING NEXT NUMBERED PAGE ///



T15
1 A Well, the determination of radii, I am sure, has a
2 number of factors that goes into it, and I don't think I would
3 be qualified to discuss the appropriateness for this low-power
4 zone or not. I don't think that would be within the scope of
5 what I would testify about.

6 Q Thank you.

7 MR. LANPHER: I have no further questions for this
8 witness.

9 JUDGE WOLF: Thank you.

10 Mr. Brown, do you have any questions of this panel?

11 MR. BROWN: Yes, actually I have an extensive -- not
12 for this particular witness, but for Messrs. Buckley and Sears.

13 JUDGE WOLF: And as I understand it, you won't
14 examine this witness further; is that correct?

15 MR. LANPHER: We are through with our examination
16 of Mr. Lauben. I am going to turn it over to Mr. Brown for
17 his examination of Mr. Buckley and Mr. Sears.

18 JUDGE WOLF: All right.

19 MR. BROWN: I have an extensive amount; a couple of
20 hours, I guess. I would make a proposal, if the Board agrees,
21 that I think would be expeditious.

22 Mr. Reynolds did his cross-examination. If I had
23 the opportunity and spent some time, to make sure I don't
24 duplicate what he does, and we commenced with Messrs. Buckley
25 and Sears first thing in the morning, I think the total amount



2
1 of time is, we would end up at an earlier hour tomorrow
2 morning than we would if I start now, and then have to shuffle
3 through all this, trying to figure out what to say and not say,
4 and I do note it is roughly five minutes to 5:00 or so.

5 MR. NORTON: Excuse me, Your Honor. I don't see how
6 we are going to cut short anything tomorrow by not doing it
7 today. I can understand how, this evening, he will be able to
8 consolidate what he has tomorrow, but I can't see how that is
9 going to save us time, by him not doing any examination tonight.

10 MR. BROWN: Well, I have got all kinds of papers
11 here. I would prefer to consolidate it, make it terse, and
12 I know it will be a lot quicker, because there won't be pauses
13 between these questions. I have got piles of papers, as you
14 can see here, and much of it was covered, and there was some
15 discourse that covered other things, and so I would propose
16 just to commence in the morning and go systematically through
17 it, Judge Wolf.

18 JUDGE WOLF: Well, on your word that you can cut
19 down the time. I think that we have spent an awful lot of
20 time here this afternoon without as much productive evidence
21 in the record as I would like to see.

22 We can adjourn now until 9:00 o'clock in the morning,
23 and we will meet in this room at that time.

24 (Whereupon, at 4:57 p.m., the hearing was adjourned
25 and was scheduled to resume at 9:00 a.m. the following day,

Friday, May 22, 1981.)



This is to certify that the attached proceedings before the

Nuclear Regulatory Commission

in the matter of:

Date of Proceeding: May 21, 1981

Docket Number: 50-275/323

Place of Proceeding: San Luis Obispo, California

were held as herein appears, and that this is the original transcript thereof for the file of the Commission.

Horace W. Briggs

Official Reporter (Typed)

Horace W. Briggs

Official Reporter (Signature)

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