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## NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF:

PACIFIC GAS & ELECTRIC COMPANY

(Diablo Canyon Units 1 and 2)

Docket Nos. 50-275  
50-323

Place -

Avila Beach, California

Date -

8 January 1979

Pages

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the matter of:

PACIFIC GAS &amp; ELECTRIC COMPANY

(Diablo Canyon Units 1 and 2)

Docket Nos. 50-275  
50-323Cavalier Room,  
San Luis Rey Inn,  
Avila Beach, California.

Monday, January 8, 1979.

The hearing in the above-entitled matter was  
reconvened, pursuant to adjournment at 8:30 a.m.

BEFORE:

ELIZABETH BOWERS, Esq., Chairman,  
Atomic Safety and Licensing Board.

DR. WILLIAM E. MARTIN, Member.

GLENN O. BRIGHT, Member.

APPEARANCES:

On behalf of Applicant, Pacific Gas &amp; Electric Company:

BRUCE NORTON, Esq., 3216 No. Third Street,  
Phoenix, Arizona 85012.MALCOLM H. FURBUSH, Esq. and PHILIP CRANE, Esq.,  
Legal Department, Pacific Gas & Electric Company,  
77 Beale Street, San Francisco, California 94106.





wb

On behalf of the Joint Intervenors:

DAVID S. FLEISCHAKER, Esq., Suite 602,  
1025 15th Street N.W., Washington, D. C.

STEPHEN KRISTOVICH, Esq., Center for Law in  
the Public Interest, 10203 Santa Monica Boulevard,  
Los Angeles, California 90067.

On behalf of the Regulatory Staff:

JAMES R. TOURTELLOTT, Esq., MARC STAENBERG, Esq.  
and EDWARD KETCHEN, Esq., Office of Executive  
Legal Director, U. S. Nuclear Regulatory  
Commission, Washington, D. C. 20555.



C O N T E N T S

EXAM CX  
BY CH VOIR  
BD. BD.DIRE

WITNESS:

DIRECT CROSS REDIRECT RECROSS

Richard B. Hubbard 7703 7842

7855 7856 7708

EXHIBITS:

FOR IDENTIFICATION IN EVIDENCE

Joint Intervenors 65 7704  
(Hubbard testimony and  
professional qualifications)  
Board 4 (Nuclear Info. & Design 35 7736  
(1975) 327-333)  
Staff 10 (Equation 9 NB3652) 7752



1A 1  
WRB/agbl

P R O C E E D I N G S

2 MRS. BOWERS: We'd like to begin.

3 Are there any preliminary matters before we  
4 start with Mr. Hubbard?

5 MR. NORTON: Yes, Mrs. Bowers, we have one and  
6 that is there was some confusion in my mind, if no one else's,  
7 about how you ruled on Friday regarding how the Board would  
8 have ruled should there have been a stipulation among all  
9 the parties to have the subpoenas issued.

10 MRS. BOWERS: Well if there had been a stipulation  
11 that recited exceptional circumstances that the parties agreed  
12 to, then the Board would have accepted it without reservation.  
13 If there was a stipulation that did not recite exceptional  
14 circumstances, the majority of the Board would not have  
15 accepted it. I mentioned that I would have been dissenting  
16 in that case. It doesn't matter, though.

17 MR. NORTON: Okay.

18 MR. TOURTELLOTT: The majority of the Board  
19 would not have accepted the stipulation and the subpoenas  
20 would not have issued?

21 MRS. BOWERS: That's right, unless the stipulation  
22 were citing exceptional circumstances.

23 MR. TOURTELLOTT: And you would have dissented  
24 from that?

25 MRS. BOWERS: Yes, if there had been a stipulation



WRB/agb2

1 that was silent. I probably shouldn't have volunteered that,  
2 but for future guidance....

3 I believe that if the parties enter into a stipula-  
4 tion, even though it doesn't recite exceptional circumstances,  
5 that it's appropriate for the Board to accept it. The other  
6 board members do not agree with that.

7 MR. TOURTELLOTTE: I take it inherent in that  
8 ruling also is a rejection of the Staff's position that the  
9 exceptional circumstances are there to protect the Staff,  
10 and the Staff is in a position of waiving those, the right  
11 to insist upon that.

12 MRS. BOWERS: Well, it would have that effect  
13 because the other Board members felt that exceptional cir-  
14 cumstances had to be established.

15 Now, Mr. Fleischaker called Saturday afternoon  
16 and said with the approval of Mr. Tourtellotte and Mr. Norton  
17 that he had been able to get in touch with Dr. Brune and that,  
18 if the Board wanted Dr. Brune here tomorrow to testify that,  
19 if he could get plane reservations, that he would be here.

20 Do you have any more information on that?

21 MR. KRISTOVICH: Dr. Brune will be here.

22 MRS. BOWERS: Fine. Well, the meeting was at the  
23 Shamrock Hilton but I understand he was staying with relatives.

24 Is there any other preliminary matter?

25 (No response.)





WRB/agb3

1 MRS. BOWERS: Well Mr. Kristovich, are you ready  
2 to proceed with Mr. Hubbard?

3 MR. KRISTOVICH: Yes.

4 MRS. BOWERS: Now, in order for us to get our  
5 paperwork in line, I have two pieces of testimony prepared  
6 by Richard B. Hubbard, one dealing with Contention 4 and the  
7 other dealing with Contentions 5, 6 and 7. Are we covering  
8 both of those?

9 MR. KRISTOVICH: Yes, we are.

10 MRS. BOWERS: Fine.

11 Whereupon,

12 RICHARD B. HUBBARD

13 was called as a witness on behalf of the Joint Intervenor,  
14 and, having been first duly sworn, was examined and testified  
15 as follows;

16 DIRECT EXAMINATION

17 BY MR. KRISTOVICH:

18 Q Mr. Hubbard, would you please state your full  
19 name for the record?

20 A Richard B. Hubbard.

21 Q Mr. Hubbard, have you prepared testimony for this  
22 proceeding?

23 A Yes, I have, two separate pieces of testimony.

24 Q Have you also prepared a statement of your  
25 professional and educational background?



WRB/agb4

1 A Yes, I have and it's attached to my testimony on  
2 Contention 4 entitled, "Operating Basis Earthquake."

3 Q I believe you have before you what has been marked  
4 as Joint Intervenor's Exhibit Number 65. Does this document  
5 contain the testimony that you have prepared and a copy  
6 of the professional statement that you're submitting?

7 MRS. BOWERS: Wait a minute. The last Joint  
8 Intervenor's exhibit I have is 64, which is a hand-written  
9 document. You're labeling part of the testimony?

10 MR. KRISTOVICH: I'd like to mark for identification  
11 Mr. Hubbard's testimony and Professional Qualifications as  
12 Joint Intervenor's Exhibit Number 65.

13 MRS. BOWERS: Is there a separate piece of paper?  
14 He recites his qualifications in the document dealing with  
15 Contention 4.

16 MR. KRISTOVICH: Correct.

17 MRS. BOWERS: So that is what will be Intervenor's  
18 65, is that correct.

19 MR. KRISTOVICH: His professional qualifications  
20 and his testimony which is all in one document.

21 DR. MARTIN: His testimony and several attachments?

22 MR. KRISTOVICH: Correct.

23 (Whereupon, the document previously  
24 referred to as Joint Intervenor's  
25 Exhibit 65 was marked for identification.)



WRB/agb5

1 BY MR. KRISTOVICH:

2 Q Mr. Hubbard, are there any typographical errors  
3 or corrections to your testimony or to your prepared Statement  
4 of Professional Qualifications?

5 A Yes, there are.

6 Shall we take the first piece of testimony,  
7 Contention 4?

8 Q Yes.

9 MR. TOURTELLOTT: Excuse me, Mrs. Bowers.

10 Are both Contention 4 and Contentions 5, 6 and 7  
11 a part of Exhibit 65, or is it just Contention 4?

12 MR. KRISTOVICH: It's all Exhibit 65.

13 MR. TOURTELLOTT: Okay.

14 BY MR. KRISTOVICH:

15 Q Mr. Hubbard, can you give us your corrections?

16 A Yes.

17 On the contention addressed in the Operating  
18 Basis Earthquake, the testimony addressed to Contention 4,  
19 there are the following changes:

20 On 4-6, underneath the contention, the fourth  
21 sentence, the fourth word in is "controlling." Add another  
22 "1" to controlling.

23 Then on the following line, the sentence beginning  
24 with "Two," it starts: "Two examples to illustrate where,"  
25 I would strike from that point all the way through 4-7, and



WRB/agb6

1 on 4-8 --

2 MRS. BOWERS: Wait a minute. What are you doing?  
3 You have a sentence beginning: "Two examples," and what are  
4 you striking?

5 THE WITNESS: From that point, "Two examples" --  
6 beginning with "Two examples," all the way over to, on Page  
7 4-8.

8 MRS. BOWERS: To what point on 4-8?

9 THE WITNESS: The word "design," which ends the  
10 paragraph right above the bottom paragraph. It's a complete  
11 reference to the work of Dr. Stephenson.

12 MRS. BOWERS: So on Page 8, you striking everything  
13 down to the beginning of the last paragraph, is that correct?

14 THE WITNESS: Yes, Ma'am.

15 And in essence, what that is, it's all addressed.  
16 to the work of Dr. Stephenson.

17 Then on 4-11, the bottom paragraph starts, "as  
18 stated in Attachment C," and right above that I would put  
19 a title, and the title would be "3.5," and then "Difficult  
20 to Upgrade Design for Increased OBE."

21 Then on Page 4-13, in the second sentence I'd  
22 put an asterisk after the word "high seismicity," and the  
23 asterisk would refer to a footnote, and the footnote would  
24 be "Gawthrop, G-a-w-t-h-r-o-p, William H., and then a title  
25 in quotations: "Seismicity and Tectonics of the Central





WRB/ggb7

1 California Coastal Region," CDM Report 137. That's the  
2 California Division of Mines Report 137.

3 Then on the second testimony entitled "Contentions  
4 5, 6 and 7, Seismic Re-analysis of Structures, Systems and  
5 Components," on Page Three, the third line up from the bottom --

6 DR. MARTIN: How do you recognize Page Three?

7 THE WITNESS: 5, 6 and 7-3.

8 The third line up from the bottom where it  
9 says: "Reactor Site Criteria," "site" should be s-i-t-e. A  
10 misspelling.

11 Continuing on that set of testimony to Page 5,  
12 at the bottom of the first paragraph where there is one  
13 asterisk, there should be two asterisks. And the two  
14 asterisks then refer to a footnote below, which would be:  
15 "FSAR Page 3.2-6."

16 Then on Page 10, another misspelling. In the  
17 first paragraph, the third line up from the bottom of the  
18 paragraph, it says: "in contract," and it should be "in  
19 contrast." Change the "c" to an "s."

20 I believe that's all the changes.

21 BY MR. KRISTOVICH:

22 Q Mr. Hubbard, will you at this time please summarize  
23 the written testimony that you have profiled in this proceeding?

24 MR. TOURTELLOTT: Mrs. Bowers,--

25 MRS. BOWERS: Just a minute, please.



WRB/agb8<sup>1</sup>

Mr. Tourtellotte?

MR. TOURTELLOTTE: Before the summary is made, I would like to conduct Voir Dire and make motions to strike.

MRS. BOWERS: Do you want to proceed?

MR. KRISTOVICH: Mrs. Bowers, it just seems inappropriate at this time to conduct Voir Dire. I believe Mr. Hubbard should be allowed a chance to begin his summary, and if he reaches certain points in his summary where Mr. Tourtellotte has trouble with what he has said, then it would be appropriate to have Voir Dire and make motions to strike.

MRS. BOWERS: Voir Dire normally comes at the beginning.

Mr. Norton, do you have a position on this?

MR. NORTON: That's what Voir Dire is.

MRS. BOWERS: We'd like Mr. Tourtellotte to proceed.

#### VOIR DIRE EXAMINATION

BY MR. TOURTELLOTTE:

Q Mr. Hubbard, the statement of qualifications set out in Contention 4, is that the sum total of your professional qualifications?

A Why I'm sure there are other items, but that is essence, yes, sir.

Q But if there are other items, what are the other



WRB/agb9

1 items?

2 A Well I've testified in other proceedings than  
3 are listed there. There's a short summary of the work I did  
4 at GE. You know, if you had specific areas, I'm sure I could  
5 address them.

6 Q What other proceedings have you testified in?

7 A For example, the Black Fox proceedings. That's  
8 not listed there.

9 Q What other proceeding? Just Black Fox, other  
10 than those mentioned in your statement of qualifications?

11 A Well that would be one example.

12 Another example would be before the Public Utility  
13 Commission in Baton Rouge, Louisiana on the River Bend Plant.

14 Another example might be before -- testimony  
15 before the German Government's Department of Research and  
16 Technology on their reactor safety program, including  
17 specifically on risk assessment. That was in Germany, in Bonn,  
18 on August 31st and September 1st of this year.

19 Before the Oregon Facility Siting Council  
20 in Portland, Oregon on the Pebble Springs application that  
21 is presently pending before the Oregon Facility Siting  
22 Council.

23 Those are examples that come to mind.

24 This is not a complete list, but these basically  
25 happened in the last three months.



1B

WRB/wbl

1 Q You are a licensed professional engineer?

2 A A licensed quality engineer in the State of  
3 California.

4 Q A licensed quality engineer.

5 A That's right.

6 Q ---in the State of California.

7 A That's right.

8 Q Are you professing any expertise in the field of  
9 geology today?

10 A In a system standpoint would be the only part;  
11 and by that I mean it's clear I'm not a geologist: I've not  
12 had courses in geology. However, for the last two years I  
13 have participated as an observer at the proceedings on Diablo  
14 Canyon, you know, attending the ACRS meetings, you know,  
15 reviewing the information included in the FSAR and the Hosgri  
16 amendment, and participating in discussions for the Center  
17 for Law with geologists, recruiting them and also obtaining  
18 their views.

19 So while I do not have direct educational back-  
20 ground in geology I do have some familiarity with views of  
21 geologists relevant to the Diablo Canyon facility.

22 Q Do you consider yourself an expert in geology?

23 A I think the previous answer would pretty much  
24 say what I am. I've not had educational background in geology.  
25 From a system standpoint, an overall view of what; you know,





1 people --

2 Q Well, maybe--

3 A --what has been going on in this proceeding.

4 Q Let me ask you this: I read that answer as saying  
5 No, I'm not an expert. Am I wrong in that?

6 A I think it's a combination of yes and no. By  
7 purely definition, am I an expert geologist; No, I'm not.  
8 But from a systems standpoint, to talk about, you know,  
9 general views of geology as expressed by geologists for the  
10 Diablo Canyon facility, yes, I am aware and familiar with  
11 their views.

12 Q Are you an expert in seismology?

13 A I think the previous answer would again apply.

14 Q Your previous answer isn't very clear to me.

15 A Well, I would have no training in seismology.

16 However I have attended the hearings and reviewed the inputs  
17 by the seismologists and met with people who are seismologists  
18 to discuss the issues that are being discussed here, and  
19 have, you know, reviewed their opinions with them.

20 Q It's very interesting. I guess not that it makes  
21 a lot of difference, I've attended all those meetings, too;  
22 do you think I'm an expert?

23 MR. KRISTOVICH: Objection, Mrs. Bowers. That's  
24 irrelevant, what our witness thinks Mr. Tourtellotte's quali-  
25 fications are in seismology and geology.



AB/wb3

1 MR. TOURTELLOTTE: I'm trying to figure out what  
2 he believes are the standards for an expert. He just told  
3 me what he considers the standards for his own expertise.  
4 I'm telling him that the same standards apply in my case.  
5 I've been to the same meetings. I want to know if he thinks  
6 everybody is an expert who has attended any meetings.

7 MRS. BOWERS: Well the objection is sustained.

8 BY MR. TOURTELLOTTE:

9 Q Well I'll put it this way: Do you think that  
10 people who attend meetings and listen to what goes on about  
11 geology and seismology become instant experts? Is that your  
12 view?

13 A My view would be that much like Mr. Hoch and  
14 Mr. Bettinger from PG&E expressed opinions about geology and  
15 seismology in their capacity as, you know, more or less  
16 Project Engineer in Mr. Hoch's case, that that's basically  
17 the same sort of function I've done for the Center for Law;  
18 that I've looked at things as more or less their project  
19 engineer on Diablo Canyon.

20 I think you have a very valid point on the weight  
21 of the evidence that I might give on seismology and geology.  
22 I'm not trying to be evasive. It's quite clear I have not had  
23 courses in seismology and geology.

24 Q How about structural engineering? Are you an  
25 expert in structural engineering?



1           A       No, I am not. And the previous answer would  
2 again apply, that I have attended the hearings and listened  
3 to the discussions, I've met with people, with Trifunac and  
4 Luco and gone over their views in detail.

5           Q       Are you an expert in mechanical engineering?

6           A       At the General Electric manufacturing facility  
7 we had an ASME code stamp for both "N" and "NTT" for the --  
8 in other words to make pressure vessels and also to make  
9 appurtnances, and I was responsible for General Electric's  
10 ASME code stamp program, and was responsible in management  
11 for writing the procedures that got us the ASME code stamp  
12 renewed in both 1972 and 1975, and was responsible for the  
13 day-to-day liaison with the State of California's inspector.  
14 And I think that is, you know, stated in my qualifications.  
15 So in that regard I am familiar with the ASME code from a  
16 management standpoint and also, you know, working with the  
17 engineers in G.E. in interpretation of the ASME code.

18                   We also had a "U" and an "S" stamp for other  
19 sorts of vessels.

20           Q       Is that a yes or no? Are you an expert in  
21 mechanical engineering?

22           A       I think it would be-- Again, my degree is in  
23 electrical engineering, Mr. Tourtellotte: I think that's  
24 clear. However I am familiar with mechanical aspects, you  
25 know, as I mentioned, with the code. And also, you know, as.



RB/wb5

1 far as the quality program I was responsible for at G.E.,  
2 we built a number of the mechanical components for the  
3 reactor, like the core internals, feedwater spargers, core  
4 spargers, core spray spargers, inclined fuel transfer tubes,  
5 those sorts of things. But I do not have a degree in  
6 mechanical engineering.

7 Q No one has ever hired you for the purpose of  
8 designing anything on the basis of a mechanical engineering  
9 background?

10 A That is correct.

11 Q And you haven't designed any structures from a  
12 structural engineering background?

13 A That is correct.

14 Q And no one has asked you for your input on geology  
15 and seismology as an expert to design any structure?

16 A That is correct.

17 MR. TOURTELLOTTE: Mrs. Bowers, I don't know  
18 whether to go on with this or whether to make a motion to  
19 strike now. And I suppose I can make the motion to strike  
20 and if the ruling is adverse then I can continue with my  
21 voir dire. It may be the best way to do it.

22 MRS. BOWERS: Do you want to give a little more  
23 information as the basis for your motion?

24 MR. TOURTELLOTTE: Beg pardon?

25 MRS. BOWERS: Do you want to give more information





1 as the basis for your motion?

2 MR. TOURTELLOTTE: Yes. Actually, I just wanted  
3 to know if that was an appropriate way to proceed, as far as  
4 the other parties are concerned.

5 MRS. BOWERS: You can make your motion at any  
6 time. But I think what you're asking is: since you only  
7 get one bite at the apple, if you make a motion now and  
8 you're turned down, do you have an opportunity for further  
9 interrogation; is that correct?

10 MR. TOURTELLOTTE: Right.

11 MRS. BOWERS: Mr. Kristovich?

12 MR. KRISTOVICH: I'm just unclear: are you making  
13 a motion at this time to strike all of the testimony, or were  
14 you just asking if you could make such a motion?

15 MR. TOURTELLOTTE: Well I'll be making a motion  
16 to strike virtually all of the testimony. And it would be on  
17 two grounds: one is that this witness has not demonstrated the  
18 expertise to offer up this type of evidence in the first  
19 place, and in the second place, quite different from his  
20 expertise, is the fact that much of it is simply a recitation  
21 of legal conclusions which he is not competent to make.

22 End 1B

23 WEL fls

24

25



fls WRB  
IWEL/wel 1

1           The legal conclusion part, of course, has nothing  
2 to do with his expertise, but I think we have a statement in  
3 the record now from this witness which clearly demonstrates  
4 that he isn't an expert in any of the fields in which he is  
5 making statements, about which he is making statements in his  
6 testimony insofar as the technical part of it goes.

7           Insofar as the legal part of it goes, why, it  
8 doesn't make any difference. If he had all this expertise he  
9 still couldn't make those.

10           So that's the way it'll go.

11           I'm willing to labor at the point and demonstrate  
12 that he's not an expert when he has in fact already admitted  
13 that he isn't an expert, but I don't really see the point of  
14 that.

15           MRS. BOWERS: Mr. Kristovich?

16           MR. KRISTOVICH: Well, I guess I'm a little at a  
17 loss as to how to proceed, because it is our belief that Mr.  
18 Hubbard is qualified to make the statements that he has made  
19 in his testimony. I'm not sure what Mr. Tourtellotte is  
20 referring to when he says "recitation of legal conclusions;"  
21 I'd have to have specific references to what Mr. Tourtellotte  
22 is referring to.

23           I'm prepared to ask questions on voir dire and have  
24 Mr. Hubbard point -- well, I will ask Mr. Hubbard to point  
25 to various sections of the testimony and have him explain why



wel 2

1 he's qualified to make those statements, if you want me to  
2 proceed along those lines, right now.

3 MRS. BOWERS: Well, one bit of unfinished business  
4 with Mr. Tourtellotte, you said that the motion would go to  
5 strike almost all of the testimony.

6 Can you identify those portions that the motion  
7 does not go to?

8 MR. TOURTELLOTT: Well, I wouldn't necessarily  
9 need to strike his introduction on Contention 4, which simply  
10 is a recitation of what he has done.

11 I wouldn't strike section 2, Statement of Contention  
12 which is an accurate statement of the contention.

13 Everything on 4-3, 4-4, are legal conclusions and  
14 legal statements, which he is not capable of making, whatever  
15 his expertise is.

16 Do you want me to go on with this? I've got  
17 something on every paragraph, so I can go through the entire  
18 contention four this way if you like.

19 MR. KRISTOVICH: Mrs. Bowers --

20 MR. TOURTELLOTT: The only other thing --

21 MR. NORTON: Excuse me, Mrs. Bowers --

22 MR. TOURTELLOTT: I wouldn't necessarily strike  
23 his attachments, but everything else in between would be  
24 stricken.

25 MR. NORTON: Mrs. Bowers, I don't understand why



wel 3

1 Mr. Tourtellotte just doesn't make his motion to strike and  
2 proceed as he wants to proceed with it, and I may or may  
3 not join in, and I may or may not move to strike the things  
4 that he doesn't move to strike.

5 But we're sitting here talking about what are you  
6 going to do. Why don't we do it?

7 MRS. BOWERS: Well, I thought that's what he was  
8 doing, was identifying those parts in the document that the  
9 motion to strike went to.

10 MR. NORTON: I think he has specific arguments as  
11 to each part, as to the motion to strike, and to identify them  
12 without identifying the reason therefor is -- you know, we're  
13 going to have to go back and do it all over again, identifying  
14 the reason for the motion to strike. We might as well do it  
15 all at once, as to do it piecemeal.

16 MRS. BOWERS: Well, he was giving us a legal  
17 conclusion basis for the motion to strike 3.1. How far does  
18 that go?

19 MR. TOURTELLOTTE: I guess to get back to the  
20 original point, I was at a point in the voir dire where I  
21 was simply indicating that I thought that this witness had  
22 indicated that he did not have the expertise to offer up the  
23 testimony, and I was in a position now -- or was in a position  
24 then and am in a position now, where I can follow through on  
25 the motion to strike.





1                   However, if it should turn out that a part of my  
2 motion to strike would not be granted because of failure to  
3 show, to clearly demonstrate, that he doesn't possess that  
4 expertise, I am prepared to conduct further voir dire to  
5 demonstrate that. But I don't think that's necessary at this  
6 time.

7                   I don't want to be cut off, however, from going  
8 back, if necessary, and asking him further questions.

9                   I guess I was asking for direction from the Board  
10 as to whether I can go back and ask further questions or not  
11 after my motion to strike.

12                   MRS. BOWERS: Well, let's hear from the other  
13 parties on this particular narrow point.

14                   MR. KRISTOVICH: On whether Mr. Tourtellotte can  
15 go back and do additional voir dire?

16                   MRS. BOWERS: If his motion to strike is not  
17 granted.

18                   MR. KRISTOVICH: It would seem that he could. It  
19 would seem that the best way to proceed might be just to start  
20 at the beginning of the testimony and go section by section  
21 and have Mr. Tourtellotte do the voir dire on that section,  
22 state his reasons for the motion to strike, and then have  
23 argument on it and then proceed to my voir dire.

24                   It just seems it would be a lot more efficient  
25 than going all the way through.



wel 5

1 MR. NORTON: Excuse me, Mrs. Bowers. I understand  
2 everything that Mr. Kristovich says except "his voix dire."  
3 I never heard of voir-diring one's own witness.

4 MR. KRISTOVICH: Mrs. Bowers, I think it's  
5 appropriate that I could ask questions of the witness to  
6 elicit answers also on his professional expertise and training.

7 MR. NORTON: I believe that's called direct  
8 examination.

9 MRS. BOWERS: Does the Staff have a position on  
10 that particular point?

11 MR. TOURTELLOTTE: I think it's the responsibility  
12 of the individual who offers up an expert to show that that  
13 expert is qualified in the first instance.

14 If there is some general indication that he might  
15 be qualified, then it is a matter of voir dire to overcome  
16 whatever indication there is. Even the simple fact that  
17 someone offers themselves up as an expert, that once they  
18 have offered themselves up as an expert and have indicated  
19 that they no longer possess that expertise, it's too late for  
20 that party to establish the expertise of their individual.

21 Their expertise is either there or it isn't there,  
22 and if it isn't there the motion to strike should be granted.  
23 You can't put something there that doesn't exist.

24 MR. NORTON: I'd like to respond to that. I don't  
25 agree with Mr. Tourtellotte, and I would hate to have error on



wel 6

1 that basis.

2 I think Mr. Kristovich has the right to try to  
3 establish the qualifications of his witness. Whether he can  
4 or not remains to be seen. But I don't think he can be denied  
5 the right.

6 I was just saying that it's not voir dire; it's  
7 direct examination. But I think he has the right to try to  
8 establish the qualifications of this witness.

9 The right and the ability, however, are two  
10 different things.

11 MR. TOURTELLOTTE: Maybe I was speaking to the  
12 ability.

13 MRS. BOWERS: The Board will consider this matter.

14 (The Board conferring.)

15 MRS. BOWERS: We believing in approaching this on  
16 a first line item. Now, the first item is Mr. Tourtellotte's  
17 question to the Board:

18 If he stopped at this point in his voir dire and  
19 proceeds with his motion to strike, and the motion is denied,  
20 can he then proceed with additional voir dire?

21 Our position on that is to proceed with the  
22 complete voir dire. We're not going to go down through this  
23 piecemeal, with the motion to strike being repeated from time  
24 to time until the Staff feels at various stages that they  
25 might have enough.



wel 7

1 So, Mr. Tourtelotte, if you'll proceed with the  
2 entire voir dire that you think is necessary --

3 MR. NORTON: Excuse me, Mrs. Bowers, that, of  
4 course, does not preclude me from doing the same thing?

5 MRS. BOWERS: Right.

6 MR. NORTON: Okay.

7 VOIR-DIRE EXAMINATION (Continued)

8 BY MR. TOURTELLOTTE:

9 Q In doing your research for Contention 4, what  
10 articles did you review?

11 A I reviewed the FSAR, the SER, the Hosgri amendments,  
12 ACRS transcripts.

13 I reviewed the comments from the technical  
14 community that were initially made on Part 100, a stack of  
15 comments about this thick (indicating approximately two inches)  
16 before it became regulation.

17 And then I reviewed the comments that were given  
18 on Part 100, including specifically the OBE, when the Staff  
19 again asked the technical community in 1977, if they would  
20 like to, you know, if there were certain areas that were  
21 problem areas. For example, I reviewed the comments of  
22 Dr. Stepp on problems in interpretation of Part 100 provided  
23 to us by Dow Davis.

24 I reviewed like, oh, IEEE standards for qualifica-  
25 tion that require so many OBE excitations that I was also





wel 3

1 familiar with from the time at GE, because while I was at  
2 GE we built a seismic facility to do access multi-frequency  
3 testing there of the reactor equipment, and I was responsible  
4 from a management standpoint to provide some of the people  
5 to conduct some of the tests and review some of the test  
6 data, and particularly to review the acceptance of the cycles  
7 that would be used to test the equipment in a design review  
8 capacity.

9 That's basically what comes to mind.

10 I reviewed some FSARs for San Onofre and Trojan,  
11 to find out the values of the OBEs at these plants, and I  
12 believe a FSAR for San Onofre number 2 and 3.

13 I also called -- I believe it's Sandra Wassler of  
14 the NRC to find out if these were indeed the right values.

15 While I was at GE, IEEE-323 and 344 that are  
16 referenced here were produced by the IEEE, so I commented on  
17 them as part of the GE internal review cycle on these standards  
18 and I'm also on the IEEE Standards Committee 8. And as part  
19 of that, I have provided review of IEEE standards outside of  
20 quality assurance as they cycled them through our committee  
21 as well to get comments.

22 Once IEEE-323 and 344 were written, the '74 and '75  
23 editions, I was, I think, not at that time on the IEEE QA  
24 committee. The post-OBE inspection, I've been following  
25 generic safety items in the task action plan, so I reviewed



wel 9

1 task action plans B-49 and B-50, and the Black Fox testimony  
2 on generic items, and the ACRS presentation by the Staff on  
3 generic safety issues.

4 I reviewed a copy of the NUREG document that's  
5 referenced. As a matter of fact, it's one that's not in the  
6 public domain, but had to be obtained straight from the Staff  
7 by talking to Mr. Aycock.

8 I would say, in general, those are the sorts of  
9 documents I reviewed for the OEE, in addition to Mr. Gawthrop's  
10 paper that I have mentioned concerning seismicity.

11 Also in terms of seismicity there are like Dr.  
12 Bolt's book that shows seismic hazards. Also Dr. Bolt  
13 discusses in other parts of his book what areas of the world  
14 have high seismicity, and --

15 MR. NORTON: Excuse me, Mrs. Bowers. I believe  
16 the question was: "What have you reviewed?" Not, "What is  
17 the content of what you have reviewed?"

18 I realize a motion hasn't been made, but I think  
19 it's very clear that Mr. Hubbard doesn't have the expertise  
20 to be reciting Dr. Bolt's book and what it says off the top  
21 of his head. I just think that's wrong.

22 THE WITNESS: Then I also referred --

23 MRS. BOWERS: I think the question was, "What have  
24 you reviewed?"

25 THE WITNESS: Yes. I also reviewed papers by



1 Perkins and Algrimos, I believe of the USGS, talking about  
2 seismic hazards in the United States.

3 I think that would give a sense of the sort of  
4 things that I looked at in preparation of this piece of  
5 testimony on the OBE.

6 BY MR. TOURTELLOTTE:

7 Q When you were at GE, you dealt with quality  
8 assurance, isn't that correct?

9 A Well, that was from 1971 through 1976. Prior to  
10 that I was then manager of application engineering, where I  
11 was responsible for the day-to-day liaison, once a contract  
12 had been signed between the utility and GE on all the  
13 equipment that was manufactured in the controlled instrumenta-  
14 tion area; protection systems, reactor sensors, all the  
15 control room panels, the process computers for the plant,  
16 mechanical items like containment electrical penetrations,  
17 traversing in-core tubes, some of the vessel internals --  
18 things of that sort.

19 Q Did that work involve measuring stresses on  
20 structures?

21 A No. That was -- had to do with the equipment that  
22 was provided in the structures.

23 But part of what I would do is that I would obtain  
24 the seismic information from the utility or his architect-  
25 engineer, which we would use to qualify our equipment.



1                   So I was the conduit, then, between the utility or  
2 his architect-engineer and the GE people, who did the --

3           Q       So you got the information from the utility, and  
4 you gave it to your engineers?   Right?

5           A       Yes, and did the technical --

6           Q       You passed it on to them?

7           A       That is correct. Again, so that --

8           Q       When you were on the QA program later on --

9           MR. KRISTOVICH: Excuse me. Mrs. Bowers, I believe --

10          MRS. BOWERS: I think he wanted to add to his  
11 answers.

12          MR. KRISTOVICH: Yes. And before he does, could we  
13 have someone close the back door? I think I'm sitting in a  
14 draft, and I'm freezing.

15          THE WITNESS: I think I was through.

16          MR. TOURTELLOTTE: Thank you.

17          BY MR. TOURTELLOTTE:

18          Q       When you were in the QA program, what was the  
19 nature of that work?

20          A       Well, that was broader than the project engineering,  
21 because in the QA I was responsible for all the equipment  
22 that was manufactured in San Jose, and that included -- we  
23 had a rather large machine shop there to make special, one-of-  
24 a-kind mechanical components for the reactors, as well as to  
25 develop the new products, new control rod drives, and things





1 like that. We would build it in San Jose before it went to  
2 Wilmington, North Carolina to go into production -- you know,  
3 large production. We would build the first few, and come up  
4 with the quality plans that would eventually be used at the  
5 other manufacturing facilities.

6 Q When you say, "we would build the first few," you  
7 don't mean that you actually designed what was being built,  
8 do you?

9 A I was responsible for working with the design  
10 engineers who were located in San Jose, to provide the  
11 quality program for those items. So I had people who reported  
12 to me who did the day-to-day work to develop the quality  
13 plans and inspection programs, and to develop the vendors who  
14 would supply the material, and do receiving inspections on  
15 the material when it comes in -- all the things having to do  
16 with verifying the quality of the product and seeing that it  
17 was possible to manufacture.

18 Q Again, you were getting information and you were  
19 passing it on, weren't you?

20 A No. We did the actual -- the people that worked  
21 for me did the actual quality assurance testing and  
22 inspection.

23 Q On what?

24 A Well, let's take a new control rod drive, for  
25 example, or a feedwater sparger, or something like that. The



wel 13

1 people working for me would sit down with the design engineer  
2 who wrote the design spec, and say that material had to be  
3 purchased.

4 Well, then we would review the material specifica-  
5 tion, we would eventually approve that, give it to the  
6 purchasing department. The purchasing department would send  
7 that out for bids.

8 We would go -- I had people that would go in and  
9 inspect the qualification of the vendor, and report back to  
10 purchasing that this vendor should be on the approved vendor  
11 list.

12 When a contract was signed as part of the contract  
13 signing procedure the people working for me had to approve  
14 the contract -- the technical aspects of it, not the terms  
15 and conditions of sale, but the technical specifications.

16 Then, once the material or the component was  
17 being manufactured by the vendor, I would have inspectors who  
18 would go in and, you know, verify that the work was being  
19 done.

20 We had about 75,000 items that would come into  
21 inventory, and those would come in -- a number of them --  
22 through receiving and inspection. And I had the receiving  
23 and inspection group of about 20 people that would receive the  
24 material at the GE facility. Then we'd put it into the  
25 manufactured components and do the inspection and tests on



wel 14

1 that. And then we'd eventually do a functional test, say,  
2 like maybe for a control rod drive let's say we had to do a  
3 couple thousand cycles on it, we would actually design the  
4 test facility, have the test equipment and do the testing.

5 I personally did not do that. I was the manager  
6 in charge of all of that.

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1 Q You're talking about instrumentation, aren't you?

2 A No, I'm talking about -- in the quality program  
3 we were responsible, as I said before, for all the equipment  
4 manufactured in GE's San Jose facility. That included  
5 instrumentation, it included boiler code items, like the  
6 containment electrical penetrations, it included reactor  
7 internals, like the feedwater spargers and core spray spargers  
8 and various piping lines, like jet pump sensing lines. It  
9 included the first of new designs that were eventually going  
10 to be made at GE's Wilmington facility, like control rod  
11 drives.

12 We would do the vessel internals in San Jose and  
13 send parts of them to the Chicago Bridge and Iron Operation  
14 at Memphis, Tennessee, and they would put it inside the  
15 pressure vessel there. We did the inclined fuel transfer tube,  
16 which would be a combination of things like valves, tubes,  
17 things of that sort.

18 So they are a combination of electrical items  
19 and electrical mechanical items.

20 Q Why did you leave GE?

21 A I left GE because of a number of reasons.

22 MR. KRISTOVICH: Objection, Mrs. Bowers.

23 I don't see the relevance of the question.

24 MR. TOURTELLOTTE: Sure it's relevant.

25 MR. KRISTOVICH: It has nothing -- if we're trying





mpb2 1 to get at his professional qualifications and training, the  
2 reasons. why Mr. Hubbard left GE do not go to that issue.

3 MRS. BOWERS: Well, would you say the same thing  
4 if he had been fired for incompetency?

5 MR. KRISTOVICH: No.

6 But Mr. Tourtellotte could ask that question.

7 MR. NORTON: Excuse me, Mrs. Bowers.

8 That's what he is asking: why did you leave GE?  
9 You don't know why until you ask the question.

10 MRS. BOWERS: Well, we think it is relevant.

11 So why don't you proceed?

12 THE WITNESS: Well, there could be a long answer  
13 to that and a short answer to it.

14 I think the short answer would be that I came to  
15 GE to get into the nuclear program because, like many other  
16 people in the 1960s, I was very interested in working on  
17 something that was a new technology, a high technology, and  
18 one that I thought offered a great deal of promise. And so  
19 in 1964, when I came to work in the nuclear business, I was  
20 very proud to be there. I mean I chose to be there instead  
21 of in the defense industry working on weapons.

22 Then you'd say, Well, why, 12 years later, did  
23 you feel differently? Well, I'd say that in those 12 years  
24 there being in the management -- I was one of four managers  
25 of a department of 1000 people, and we would hear week after



mpb3

1 week after week the reports not only of the equipment that  
2 we manufactured, but of GE's nuclear business in general, how  
3 it was doing. And what I found after 12 years was that what  
4 we had hoped the way it would be in 1964, it was not turning  
5 out to be that way in 1976. And that's true in terms of  
6 technical problems, it's true in terms of economics, it's true  
7 in terms of a number of philosophical areas.

8 And so my feeling in 1976 was the promise that I  
9 had seen in 1964 had not and was not being fulfilled; and  
10 not only was that true, but that we had not really told the  
11 public what was going on. And so I then went through some-  
12 what of a procedure to decide would I tell the public; because  
13 having been in management of a large corporation, I knew that,  
14 you know, once you explained to the public some of your views  
15 or looked like you might have some dissenting views, that  
16 that made you virtually unemployable in large industry, or  
17 at least that was my impression.

18 However, after thinking about it for a while, I  
19 decided that at that moment in time it was worth, you know,  
20 explaining to the public, you know, what I had experienced  
21 in 12 years. And so that was really my reason for leaving  
22 GE.

23 And the short answer is that the promises in my  
24 opinion had not been fulfilled.

25 And, two, I felt that I had some personal experience



mpb4 1 that other people might want to hear, and then they could  
2 make their own judgment.

3 MRS. BOWERS: Did you resign voluntarily?

4 THE WITNESS: Absolutely. Yes.

5 In fact, I had recently been promoted, so....

6 BY MR. TOURTELLOTT:

7 Q Your testimony on Contention 4 today, you offered  
8 and did strike all of that testimony pertaining to a summary  
9 of an article by J. D. Stevenson, pages 4-6 through 4-8.

10 Did you strike that because you don't have the  
11 expertise to evaluate that kind of information?

12 A The major reason I struck that was because it  
13 did not appear directly applicable to Diablo Canyon. These  
14 were not the equations, you know, that we used for Diablo  
15 Canyon. And it was equations that appeared to apply in gen-  
16 eral. And so it appeared to me that it might not, you know,  
17 be relevant for the discussions we're having about the specific  
18 analyses that were done for Diablo Canyon.

19 Q You did understand everything that was in the  
20 Stevenson article, then?

21 A Well, I went back to check some of the things --

22 MR. KRISTOVICH: Objection, Mrs. Bowers.

23 That testimony has been withdrawn, and I don't  
24 think it's appropriate to ask questions on it now.

25 I also don't think it would be appropriate for



mpb5 1 Mr. Tourtellotte to bring in a stack of books of equations,  
2 a stack of books of analyses and ask Mr. Hubbard if he is  
3 familiar with this or familiar with that.

4 MRS. BOWERS: Why do you think it would not be  
5 appropriate?

6 MR. KRISTOVICH: Well, I'd have to see the  
7 particular books before I could respond.

8 MRS. BOWERS: Mr. Norton, does the Applicant have  
9 an opinion on this particular point?

10 MR. NORTON: Well, I think he just withdrew his  
11 objection with his last statement.

12 MRS. BOWERS: Is that correct, Mr. Kristovich?

13 MR. KRISTOVICH: The Board can rule on it.

14 MRS. BOWERS: I'm sorry, I didn't understand you.

15 MR. KRISTOVICH: No. The Board can rule on it.

16 (The Board conferring.)

17 MR. NORTON: Excuse me, Mrs. Bowers.

18 I really thought he had withdrawn the objection.

19 If he hasn't, I would like to comment.

20 And that is, just because he withdrew the  
21 specific portion of the testimony dealing with the Stevenson  
22 article, the Stevenson article very clearly deals with OBE.  
23 And to ask if he understands the formulae and how they work  
24 is very relevant as to whether or not he's qualified to testi-  
25 fy in the area of OBE. Whether the testimony was withdrawn





mpb6 1 or not doesn't really have anything to do with that aspect  
2 of it if he understands the formulaes and how they work.

3 So I think it's clearly a relevant area of inquiry.

4 MR. TOURTELLOTTE: And moreover, it is one of the  
5 articles that he did review, and it is an article that is  
6 written by a mechanical engineer. And while he does not --  
7 and while he says he is not a qualified expert as a mechanical  
8 engineer, he has indicated that in some vague way that he's  
9 familiar with mechanical engineering.

10 And I have the right to use any article I want,  
11 whether it's J. D. Stevenson or anybody else, to ask him  
12 questions to point up whether he does know or he doesn't know  
13 and how much he knows about mechanical engineering.

14 MRS. BOWERS: Is your point, Mr. Tourtellotte,  
15 even if this example had not appeared originally in the  
16 direct testimony that you would consider it appropriate to  
17 ask questions on the Stevenson work?

18 MR. TOURTELLOTTE: Certainly.

19 (The Board conferring.)

20 MRS. BOWERS: Well, we think it is relevant to  
21 ask questions about the Stevenson analysis, since it appar-  
22 ently is an analysis that exists in the community.

23 We happen to have a document in front of us  
24 that recites that. Dr. Martin says it's now invisible to him  
25 since it's been stricken. But I think we could manage to read



mpb7

1 it.

2 DR. MARTIN: Well, I'd like to see the whole  
3 article, if we're going to be talking about it.

4 MR. NORTON: If you'll wait just a moment, I'll  
5 give it to you.

6 (Distributing documents.)

7 MR. KRISTOVICH: Is this going to be an Applicant  
8 exhibit?

9 MR. NORTON: Or a Board exhibit. They wanted to  
10 see a copy of it.

11 MR. KRISTOVICH: Then is this a Board exhibit?

12 DR. MARTIN: I guess so. I asked for it.

13 MRS. BOWERS: If we're correct, this will be  
14 Board Exhibit number 4.

15 (Whereupon, the document  
16 referred to was marked  
17 as Board Exhibit number 4  
18 for identification.)

19 MRS. BOWERS: And to further identify it --  
20 Mr. Norton, why don't you further identify it? Is this a  
21 Nuclear Engineering and Design publication?

22 MR. NORTON: Yes.

23 Nuclear Information and Design 35 (1975) 327-333.  
24 It's an article by J. D. Stevenson, Rational Determination  
25 of the Operational Basis Earthquake and Its Impacts on Overall



mpb8

1 Safety and Cost of Nuclear Facilities.

2 MRS. BOWERS: Well, I think the page numbers are  
3 227 to 333.

4 MR. NORTON: 327 to 333.

5 BY MR. TOURTELLOTTE:

6 Q Do you have a copy of the article?

7 MR. NORTON: As Mr. Hubbard knows, Dr. Stevenson  
8 is here. And if they want his professional qualifications  
9 for the sponsoring of the article, they can be given also.

10 BY MR. TOURTELLOTTE:

11 Q Do you have a copy of the article, Mr. Hubbard?

12 A I have a copy, but not the one that Mr. Norton  
13 passed out. I assume it's the same thing, unless Dr. Stevenson  
14 made some corrections or adjustments.

15 MR. NORTON: They are the same. We've seen the  
16 one that Mr. Hubbard had at his deposition, and it's the same  
17 as this copy. It's just not published in the same place, but  
18 the words are the same.

19 (Document handed to the witness.)

20 BY MR. TOURTELLOTTE:

21 Q I hand you the copy that Mr. Norton gave me, and  
22 I ask you if that is the same copy as the one you have?

23 A It appears to be, yes.

24 Q Okay. Thank you.

25 (Document handed to Counsel.)



mob9

Q Okay.

I'll invite your attention to page 329.

In the right-hand column, about halfway down, there's a formula there:  $1.4D + 1.7L + 1.9E$ , where D equals dead load, L equals live load, E equals OBE load, and E equals SSE load.

Do the numbers 1.4, 1.7, and 1.9 have any name or term that is used to identify them?

(Pause.)

Mr. Hubbard, I'm asking this directly. I'm not asking you to read the article.

Do you know if they have any term -- any term is used to describe those numbers?

A I'm not aware of what that term might be.

Q Okay.

A I am familiar that in structural codes and standards there are factors like this that say, you know, when you're combining loads what sort of factors to use. That is also one reason why I -- another reason why I took out this particular piece of testimony, because I could not -- did not know what provision of the Standard Review Plan 3.84 that was used, and I did not have the standards that these came from that I could verify that these were indeed a true and accurate representation of what were in the standards.

And then, finally, I did not have the detailed





mpb10 1 calculations to see how PG&E did it for Diablo Canyon. So  
2 based on all of that, I looked at it and I said, Well, I  
3 don't have either the input or what they did. So I lost  
4 interest in the equations at that point.

5 And the reason that I had originally cited this  
6 article was that I thought Dr. Stevenson made an interesting  
7 point, that in both structural --

8 MR. NORTON: Excuse me.

9 Are we getting into the testimony now about what  
10 you thought this article said, or have we answered the ques-  
11 tion about what those numbers represent?

12 Mrs. Bowers, I don't want to get the testimony in  
13 through Voir Dire.

14 MRS. BOWERS: The question went to the particular  
15 numbers that Mr. Tourtellotte identified. And I think he  
16 responded to that.

17 MR. TOURTELLOTTE: Long since. He long since  
18 answered that question.

19 BY MR. TOURTELLOTTE:

20 Q Do you know what the basis for these numbers is?

21 A As I had earlier answered, I assumed that those  
22 came from -- it said up above the Standard Review Plan, and  
23 also some structural codes. And I tried to obtain those, and  
24 at that point decided that I could not verify where they came  
25 from. And so that is also part of the reason we took out that



mpb11 1 part of the testimony.

2 The equations themselves were to me not the key,  
3 but rather the conclusion.

4 Q In other words, you're telling me that you think  
5 the basis for these numbers is simply out of some other book,  
6 is that right, it may be out of some other book?

7 A Dr. Stevenson I believe said right before those  
8 numbers that the current --

9 Q I'm not asking you what Dr. Stevenson said. I'm  
10 asking you what you think.

11 Do you think they came out of the Standard Review  
12 Plan?

13 MR. KRISTOVICH: Mrs. Bowers, I believe Mr.  
14 Hubbard was trying to answer the question, and he should be  
15 allowed an opportunity to complete his answer.

16 MR. TOURTELLOTT: It becomes quite clear that  
17 he is not answering the question that I'm asking.

18 I'm asking him what he thinks, and he's telling  
19 me what Dr. Stevenson is saying. I don't care what Dr.  
20 Stevenson says. If I want to know what Dr. Stevenson says  
21 I'll ask him.

22 MRS. BOWERS: Well, the objection is overruled.  
23 You were asked a specific question.

24 THE WITNESS: Okay.

25 I have no reason not to believe Dr. Stevenson. I



mpb12 1 thought that those came from the Standard Review Plan and the  
2 structural specifications. But I went to get those and,  
3 you know, couldn't verify where this came from in there on  
4 the structural. I couldn't obtain it on 3A4. I didn't see  
5 where this particularly came out. And I didn't know which  
6 revision of 3A4.

7 BY MR. TOURTELLOTTE:

8 Q Does the information derived from the Statement  
9 1.4D + 1.7L + 1.9E have any part in the calculation of stress  
10 and structural elements?

11 A I have no reason to believe that Dr. Stevenson  
12 is either right or wrong.

13 Q I'm not asking whether he's right or wrong. I'm  
14 asking you whether they play any part in the calculation of  
15 stress and structural elements?

16 MR. NORTON: Excuse me, Mrs. Bowers.

17 I think the whole thing has now become moot, if  
18 we just look back at Mr. Hubbard's last answer. He has no  
19 reason to know whether Dr. Stevenson is right or wrong. To me,  
20 that answers the question.

21 He is not qualified. And to pursue this can only  
22 further establish that. He's just now admitted that he's  
23 not qualified to comment on this article.

24 MR. TOURTELLOTTE: I'm not asking him about the  
25 article, I'm asking him about the formula. The formula is a



mpbl3 1 formula which has some use. It's not just Dr. Stevenson's.  
2 formula, it is a formula that is recognized by mechanical  
3 engineers and it has a use. And I'm asking about the use.

4 And he either knows how it can be used, or he  
5 doesn't know how it can be used. And if he doesn't know  
6 how it can be used, then that goes to indicate further how  
7 little information he really has about being a mechanical  
8 engineer.

9 If he does know how it can be used, then maybe  
10 he's smarter than I think he is.

11 MRS. BOWERS: Mr. Kristovich, before the Board  
12 rules, do you want to comment?

13 MR. KRISTOVICH: No.

14 (The Board conferring.)

15 MR. KRISTOVICH: Mrs. Bowers, excuse me.

16 What are you ruling on before I.... I didn't  
17 realize there was ---

18 MRS. BOWERS: Well, Mr. Tourtellotte asked a  
19 question which Mr. Norton thought was inappropriate because  
20 he thought the matter had been settled. And when Mr. Hubbard  
21 testified that he had no way of knowing whether Dr. Stevenson  
22 was right or wrong in the use of this formula that's been  
23 identified -- well, the numbers that are shown in front of the  
24 (1), and Mr. Tourtellotte's point was that this is a general  
25 what he called equation that is used in the community, and





mpbl4 1 that he should be able to express an opinion to tell what he  
2 knows about it.

3 MR. NORTON: Well, if that's Mr. Tourtellotte's  
4 question, as you've rephrased it, I have no objection to it.

5 But I thought Mr. Hubbard had already admitted  
6 that he didn't have the expertise to discuss this article.  
7 And that's fine with me.

8 MRS. BOWERS: Well, Mr. Tourtellotte, did I  
9 express your question correctly?

10 MR. TOURTELLOTTE: Yes..

11 MRS. BOWERS: Will you proceed to answer the ques-  
12 tion?

13 THE WITNESS: I'm trying to think of how you  
14 introduced the question, because I have no knowledge --

15 BY MR. TOURTELLOTTE:

16 Q I'll ask the question again, if it will make it  
17 clearer for you.

18 A I have no knowledge that this is a standard  
19 equation used by mechanical engineers. Either it is or it  
20 isn't.

21 Q Or by structural engineers.

22 A Or by structural engineers.

23 Q Okay.

24 A So that, in response to your question.

25 Q Is stress mentioned in the statement? Do you



mpbl4 1 that he should be able to express an opinion to tell what he  
2 knows about it.

3 MR. NORTON: Well, if that's Mr. Tourtellotte's  
4 question, as you've rephrased it, I have no objection to it.

5 But I thought Mr. Hubbard had already admitted  
6 that he didn't have the expertise to discuss this article.  
7 And that's fine with me.

8 MRS. BOWERS: Well, Mr. Tourtellotte, did I  
9 express your question correctly?

10 MR. TOURTELLOTTE: Yes.

11 MRS. BOWERS: Will you proceed to answer the ques-  
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14 introduced the question, because I have no knowledge --

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17 clearer for you.

18 A I have no knowledge that this is a standard  
19 equation used by mechanical engineers.. Either it is or it  
20 isn't.

21 Q Or by structural engineers.

22 A Or by structural engineers.

23 Q Okay.

24 A So that, in response to your question.

25 Q Is stress mentioned in the statement? Do you



mpb15 1 know whether stress is mentioned in the statement or not?

2 A I would have to go through and actually look. I  
3 assumed that he was talking about stresses.

4 Q You don't really know? Is that correct, you don't  
5 really know right now?

6 A Well, later on when we get to the steel he does  
7 talk about  $S_h$  and  $S_m$  and calls them dead load stresses and  
8 pressure stresses.

9 Again, when we decided not to use this as part  
10 of the testimony --

11 MR. TOURTELLOTTE: Mrs. Bowers, I would like you  
12 to direct the witness to be responsive to my question.

13 My question was a simple question about what he  
14 thinks about this, about what he knows about this. About  
15 whether he knows stress is mentioned in the statement.

16 I'm not interested in what Dr. Stevenson says, or  
17 later on in the article. I want to know what he knows right  
18 now. And it's of little benefit to us to sit here and let  
19 Mr. Hubbard read Dr. Stevenson's article to determine whether  
20 or not he can answer the question.

21 That's not what the questions are for. The ques-  
22 tions are to investigate his present knowledge. I'm not  
23 sure the witness understands that.

24 MRS. BOWERS: Well, but Mr. Hubbard testified  
25 that apparently the decision was made some time ago to delete



mpb16

1 that part of the testimony. He says he simply would have to  
2 review it; that he hasn't read the article.

3 MR. NORTON: Excuse me, Mrs. Bowers. I suspect  
4 the statement you've made is a misinterpretation of Mr.  
5 Hubbard's testimony, because I don't believe that the decision  
6 to strike the testimony was quite some time ago.

7 MRS. BOWERS: The witness says he's not intimately  
8 familiar with an article, and he certainly would be entitled  
9 to an opportunity to go through it.

10 MR. TOURTELLOTT: That's not the point.

11 I'm not asking him about the article, I'm asking  
12 him about a formula. And all I'm asking him is whether he  
13 knows if the stress is mentioned in this statement. If he  
14 doesn't know whether it is or not and has to refresh his  
15 recollection by looking at the article then he ought to answer  
16 that way. But we shouldn't have to sit here with silence on  
17 the record while he's reviewing the article so that he can  
18 answer the question.

19 I'm trying to determine the level of expertise.  
20 If necessary I'm making an offer of proof that anyone who's  
21 a structural engineer can answer that question right off the  
22 bat, anyone who has any expertise at all. They don't have to  
23 review the article to answer it.

24 MRS. BOWERS: When you say "statement," what do  
25 you mean? Are you distinguishing "statement" from "article?"





mpb17 1

MR. TOURTELLOTTE: The statement is the formula.

2 The statement of  $1.4D + 1.7L + 1.9E$ . That is a statement.  
3 And anybody who is a structural engineer or probably a  
4 mechanical engineer, it's one of those areas that crosses  
5 over, could answer that question right off the top of their  
6 head. They don't have to read Mr. Stevenson's article or  
7 any textbooks.

8 MRS. BOWERS: Mr. Kristovich?

9 MR. KRISTOVICH: Well, I'm not aware that Mr.  
10 Tourtellotte is a structural engineer or a mechanical  
11 engineer. We only have his testimony that that's the case.

12 MR. TOURTELLOTTE: That's why I said I'm willing  
13 to make an offer of proof that that's what they would do.  
14 I'm not just making that as my representation; I know that's  
15 what they do.

16 DR. MARTIN: What was the foundation for that,  
17 your theory that structural engineers would immediately know  
18 what you're talking about?

19 MR. TOURTELLOTTE: It's because all of my  
20 structural engineers know and all of my mechanical engineers  
21 know.

22 DR. MARTIN: Have they testified?

23 MR. TOURTELLOTTE: They will if you want them to.

24 DR. MARTIN: Well, I'm having difficulty because  
25 I didn't understand the question either. I'm not sure the



mpbl8 1 statement you're talking about is the equation.

2 MR. TOURTELLOTT: It's the equation.

3 The question is whether that equation includes  
4 in it stress. Whether stress is mentioned in the equation.  
5 An equation stands for something, and different parts of an  
6 equation stand for something. And if you understand what the  
7 equation is, you know what each part of it is.

8 And so it's very simple to simply say whether  
9 stress is there or stress is not there.

10 DR. MARTIN: I've read it and I can't tell because  
11 I don't know the definition for 1.4, 1.7, or 1.9.

12 MR. TOURTELLOTT: That's true; and you're not a  
13 structural or mechanical engineer, and that proves the point.

14 DR. MARTIN: Well, you can't tell from this  
15 article whether it does or not, just on the face of it.

16 MR. TOURTELLOTT: You don't have to tell from the  
17 article.

18 If you're a structural or mechanical engineer  
19 you know whether stress is included in that formula by reason  
20 of your background and experience and education.

21 MRS. BOWERS: Well, we'd like the witness to answer  
22 the question.

23 Does this formula or equation or statement include  
24 stress?

25 THE WITNESS: I thought the 1.4D was stress. And



mpbl9 1 I thought that, you know, we're talking about force through  
2 an area, and, you know, that that's what we would end up  
3 with.

4 But, again, I have not reviewed this, you know, in  
5 some time. So that would be my recollection.

6 MR. NORTON: Excuse me, Mrs. Bowers.

7 I don't think that was an answer to the question  
8 at all.

9 MRS. BOWERS: Well, I thought the witness answered  
10 that he thought 1.4D included stress.

11 Is that correct?

12 MR. NORTON: The question was:

13 Do you know whether the formula includes stress  
14 or not. Mr. Hubbard's answer to that question I believe is  
15 -- he just shook his head when I repeated the question -- is  
16 no, he does not know.

17 And I'd like to have the question asked again  
18 and answered.

19 MR. TOURTELLOTTE: Do you want me to ask it again?

20 MRS. BOWERS: I guess so.

21 MR. TOURTELLOTTE: Okay.

22 BY MR. TOURTELLOTTE:

23 Q Do you know whether stress is mentioned in the  
24 statement.  $1.4D + 1.7L + 1.9E$ ?

25 A I do not know. I thought that was stress because



mpb20 1 we talk about stress later on for all the piping equipment.

2 So I thought that's what we were talking about. But I do not  
3 know.

4 Q Can you describe how a structural engineer would  
5 use the information derived from this statement:  $1.4D + 1.7L$   
6  $+ 1.9E$  in calculating the stress in a structural element?

7 A No.

and  
MADEZON  
WRBLGOM  
Elms (1C)

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1 Q I invite your attention to Page 331. Down below,  
2 the table, the third line in the left column starts: "OBE  
3 (upset condition of design) from equation nine NB-3652,  
4 that it has  $S_{all}$  equals  $1.5 S_m$ .

5 Is that  $S_{all}$  equals  $1.5 S_m$  equation nine?

6 A I thought equation nine referred to section NB  
7 of the boiler code, that that's what it said from equation  
8 nine of Section NB-3652 of the boiler code but I did not go  
9 back to the boiler code to verify that that is indeed what's  
10 there.

11 Q Well I guess the question I'm asking you is that  
12 equation nine that is stated right there,  $S_{all}$  equals  $1.5 S_m$ ?

13 A Well that, I believe, is for the upset condition  
14 of design. It says that that is -- equation nine from  
15 Section NB-3652 of the boiler code applying to upset condition  
16 of design.

17 Well equation nine for the faulted condition of  
18 design also from that NB-3652 of the boiler code says that  
19  $S_{all}$  equals  $3.0 S_m$ , but I have not gone back to the boiler  
20 code to verify that this is indeed an accurate representation  
21 of what's there.

22 Q Well is that your opinion, then?

23 You're of the opinion that these are various  
24 statements of equation nine, is that what you're telling me?

25 A When I read that, that's what I thought, that this



WRB/agb2

equation nine referred to equation nine on Part 3652 of the boiler code.

Q Okay.

You indicated that you did not go back to check that equation nine, so I take it that you can't, with any degree of certainty, state what equation nine is right now?

A That's correct.

Q Have you ever used equation nine before for anything?

A No.

MRS. BOWERS: Mr. Tourtellotte, are you looking for a standard white piece of paper?

MR. TOURTELLOTTE: Yes, Ma'am. Thank you.

It's not quite like a Big Chief tablet, but it'll do, I guess.

MRS. BOWERS: Perhaps we should recess for 10 minutes.

MR. TOURTELLOTTE: I'd rather not do that, if that's all right. This won't take but a second.

(Pause.)

I apologize to the Board, because I didn't really anticipate that this question and answering would go exactly this way, which I probably should have done.

What I'll do is, I'm having this formula copied and I'll present everybody with copies, but I'll have this



WRB/agb3

Xeroxed later on for the record, if it's all right with the Board, and I'll ask that this be -- this piece of paper be marked as Staff Exhibit Number 10.

(Whereupon, the document previously referred to as Staff Exhibit 10 was marked for identification.)

MR. TOURTELLOTT: It is entitled, "Equation Nine, NB-3652."

BY MR. TOURTELLOTT:

Q: Mr. Hubbard, I'm handing you Staff Exhibit 10, which is equation nine. I'd like to ask you if you can tell me what types of stress were considered in equation nine?

A No.

Q Can you define primary stress?

A No.

Q Can you define secondary stress?

A Not personally. That was defined last week and -- well, it's in the Hosgri amendment, the combination of primary and --

Q Do you know how to find it?

A All I would do is just look it up and read it, that would be my level of understanding.

Q In piping, are primary or secondary stresses



WRB/agb4

1 produced by earthquakes?

2 A I do not know. I would assume it is secondary.

3 Q Where in equation nine does it consider earthquake  
4 loads?

5 A I do not know.

6 Q I invite your attention to the right-hand column  
7 at the bottom of Page 331 of the article where it says:

8 "OBE condition:  $S_g$  equals  $1.5 S_m$  minus  $0.1 S_m$  minus  $0.5 S_m$   
9 equals  $0.9 S_m$ ." And then it has a couple of arrows directed  
10 from  $0.1 S_m$  to dead load stresses. Do you see that figura?

11 A Yes.

12 Q Okay.

13 Do you know where the figures  $0.1 S_m$  and  $0.5 S_m$   
14 come from?

15 A No.

16 Q Do you know whether they are applicable to Diablo  
17 Canyon?

18 A No, I do not know.

19 Q Can you describe shakedown as it applies to  
20 piping?

21 A No.

22 Q Can you define bending stress?

23 A I would define stress as force through an area,  
24 and bending stress would be that having to do with the bending.

25 Q Can you define membrane stress?





wrb/agb5

1 A No.

2 Q If bending stress is considered across the  
3 cross section of a structural element, how does it vary?

4 A I do not know.

5 Q Do you know how to compute bending stress?

6 A No.

7 Q Let me ask you this one: Is yield equivalent to  
8 failure in structures?

9 A In general, no. It might be true for something  
10 that was very brittle, but it would have to be very brittle.

11 Q How do you express stiffness of structures?

12 A I don't know.

13 Q Do you know how to draw a typical floor response  
14 spectra curve? Could you draw one right now if I gave you  
15 a piece of paper and asked you to draw one?

16 A No.

17 Q I take it, then, you also do not know at what  
18 point on the curve the maximum floor acceleration would be  
19 indicated in such a curve?

20 A Well, as I recall it would be like, you know, on  
21 one axis you would have  $g$  and on the other axis you would  
22 have period; and period, you know, one over that would be  
23 frequency, and I look at that and that would tell me the  
24 frequency at which the peak occurred.

25 Q And the maximum floor acceleration would occur



WRB/agb6

1 at the top of the curve, then, is that what you're saying?  
2 You said at the peak.

3 A Well, that would be the maximum acceleration, yes.

4 Q The maximum floor acceleration?

5 A Right.

6 Q Do you know how the maximum floor acceleration is  
7 used to analyze the design of normal piping systems?

8 A No.

9 Q Do you know how to define maximum floor accelera-  
10 tion?

11 A I don't think that's a term that we've ever  
12 defined, maximum floor acceleration.

13 Q Mr. Hubbard, you are familiar with IEEE Standard  
14 344, 1975, aren't you?

15 A I have a copy of it, yes.

16 Q I invite your attention to Page Seven, the right-  
17 hand column, the second line. Can you read what it says  
18 there?

19 A "The maximum floor acceleration can be  
20 obtained from the floor response spectrum as  
21 acceleration at high frequency in excess of  
22 33 Hz. and is sometimes referred to as the  
23 zero period acceleration."

24 And that's how we've referred to it here, we've  
25 called it the zero period acceleration. Or we call it the



WRB/agb7

1 anchor point of Dr. Newmark or Dr. Blume's floor response  
2 spectra.

3 Q Mr. Hubbard --

4 A And that's also assuming....Well, go ahead.

5 Q I'm sorry, I don't want to cut you off. Do you  
6 have something else to say about that?

7 A Well, that's going in excess of 33 which assumes  
8 it's a rigid structure, and when you asked the question before  
9 I was thinking about saying it might be a floor, you know,  
10 of less than 33 Hz.

11 Q The QA program that you conducted at GE was  
12 primarily designed -- Isn't it true that the QA people are  
13 the ones there to make sure that the job gets done, isn't  
14 that right?

15 A That it gets done in accordance with what the  
16 engineer has required in the way of codes and standards.

17 Q Somebody else designs how to get the job done,  
18 don't they?

19 A A number of somebody else's, yes.

20 Q Okay.

21 MR. TOURTELLOTT: We're ready to move on with  
22 the motion to strike.

23 Before I do, let me --

24 MR. NORTON: Excuse me, before the motion to strike  
25 is made, we would like to ask a couple of voir dire questions.



WRB/agb8

1 I think it might make it go a little quicker, because we'll  
2 be moving to strike some things that Mr. Tourtelotte is not  
3 moving to strike.

4 MR. KRISTOVICH: Before we do that, are we going  
5 to have a mid-morning break?

6 MRS. BOWERS: Yes, let's take 10 minutes.

7 (Recess.)  
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1D  
NRB/wb1

1 MRS. BOWERS: Are we ready to proceed?

2 BY MR. NORTON:

3 Q Mr. Hubbard, as an attachment to the first section  
4 of testimony you have a memorandum, it's Attachment C, it  
5 says "Meeting with NRC Staff on Diablo Canyon, November 25,  
6 1975," and consists of apparently four pages and has the  
7 signature, apparently, of R. B. Bettinger. Although this  
8 document has no numbers on it I assume you procured it through  
9 the discovery of documents; is that correct?

10 A To the best of my knowledge that's where it was  
11 obtained, during discovery of PG&E.

12 Q All right.

13 As far as you know, were any interrogatories  
14 ever sent to the author of the memo regarding its contents  
15 or anything about it whatsoever?

16 A No, I'm not aware of any.

17 Q Are you aware of any questions that were ever  
18 asked of the author of the memo in this proceeding or in any  
19 other proceeding where under oath he was asked about it?

20 A I'm unaware of any.

21 Q Are you aware of any questions of the author by  
22 anybody, formally or informally, under oath or not under oath,  
23 of the author about this memo?

24 A No, I'm not aware of any.

25 Q Have you ever discussed this memo with the author,



1 or even any of the participants at that meeting?

2 A No; though I did obtain the NRC minutes of the  
3 same meeting issued by Mr. Alison.

4 Q All right.

5 Now turning to your next section of testimony,

6 Attachment A is a letter to Stephen Hanauer -- or from  
7 Stephen Hanauer to M. J. Forester dated July 21st, 1971.

8 Did you ever have any discussion with either the  
9 recipient or the author of this article?

10 A Mr. Forester was a cohort of mine at General.  
11 Electric, and I have discussed with Mr. Forester comments  
12 from Dr. Hanauer. But I've never discussed this with  
13 Dr. Hanauer.

14 Q You never discussed it with Dr. Hanauer. You've  
15 never seen any testimony of his under oath where this letter  
16 was discussed?

17 A That's correct.

18 Q All right.

19 Attachment B, where is that taken from?

20 A That is, as shown in the list of attachments,  
21 is from PG&E Document PD-3266 that was provided during  
22 discovery.

23 Q All right.

24 And have you discussed that memo with the authors  
25 of same, or this attachment with the authors of same?



1 A No, I did not.

2 Q Have any formal discovery or informal discovery  
3 requests been made as to what these are about?

4 A I have the whole report, and that whole report  
5 was provided. And that whole report explains how these were  
6 calculated and what the meaning is.

7 Q My question, however, is: Did you discuss the  
8 report with the authors of the report, or did you direct  
9 interrogatories to the company that prepared the report,  
10 did you obtain any -- you know, any inquiry about the  
11 report; any information other than the report itself?

12 A No, we did not. As you see, it is from  
13 Earthquake Engineering Systems, which was not part of PG&E,  
14 so we did not address any questions to them or any inter-  
15 rogatories to them.

16 Q Or anybody regarding the report, the authors?  
17 Is that correct?

18 A That's correct.

19 Q And of course during this hearing no questions  
20 were asked of that report, of the authors of the report; is  
21 that correct?

22 A I'm not aware that the authors of that report  
23 offered testimony here.

24 Q All right.

25 Now the next one is Attachment C. It's a



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2 WRB/agbl  
3 flws WRB/wb3

memorandum for E.G. Case from Dr. Hanauer, August 18, 1977.

Did you have an opportunity to discuss that with Dr. Hanauer?

4 A No, I did not.

5 Q Does this relate to Diablo Canyon, do you know?

6 A Only in a peripheral sense that, in the FSAR,  
7 when Diablo is compared to other FWRs that, as I recall, Zion  
8 is one of the plants that Diablo is compared to. And also  
9 that Zion and Diablo are both designed by Westinghouse  
10 Electric, so there is that similarity.

11 Q How about Attachment D, who's the author of that?

12 A Again, that is from a report by Drs. Okrent and  
13 I don't know how to pronounce the man's name.

14 Q Tsai?

15 A Tsai, yes, on seismic risk analysis. I have that  
16 here. It's from the report on Some Probabilistic Aspects  
17 of the Seismic Risk of Nuclear Reactors.

18 Q Oh, this is not about Diablo Canyon, this  
19 Attachment D?

20 A That is correct.

21 Q It has nothing to do with Diablo Canyon?

22 A Yes, it does have to do with Diablo Canyon in  
23 the sense that it has to do with --

24 Q Excuse me, will you tell us where it has to do  
25 with Diablo Canyon, where it quotes regarding Diablo Canyon?

MRS. BOWERS: Well I think the witness intended





WRB/agb2

1 to do that, so the question stands.

2 THE WITNESS: The report is about -- is entitled,  
3 "Some Probabilistic Aspects of the Seismic Risk of Nuclear  
4 Reactors."

5 BY MR. NORTON:

6 Q And could you show in there where Attachment D  
7 is about Diablo Canyon, Attachment D to your testimony, where  
8 that is about Diablo Canyon?

9 A It is about Diablo Canyon because this particular  
10 table refers to the fact that the authors of the report say  
11 that there have been many -- there have been discussions  
12 of what safety factors are available in a seismic risk  
13 analysis, and they said that there are other factors that  
14 may reduce the safety margin. I could read the paragraph  
15 if you're interested.

16 Q Excuse me. I'm not interested in your interpreta-  
17 tion, I'm interested in where in the report it says that  
18 Attachment D -- this Table V.1, Examples of Deficiencies  
19 of Component Quality Assurance, is in reference to Diablo  
20 Canyon.

21 A You are correct, Mr. Norton, it is not in reference  
22 to Diablo Canyon. It's in reference to nuclear power plants  
23 in general.

24 Q And as a matter of fact, if I went over each and  
25 every item in here, you could not cite anything at Diablo



WRB/agb3

1 Canyon that comes under that category, could you?

2 A I believe I could.

3 Q Each and every item?

4 A Well, we'd have to go through it.

5 Q All right. Will you tell me where, at Diablo  
6 Canyon, there is improper specification of fluid? Just one  
7 example, please.

8 A I was thinking later on down, where we talk about  
9 material or component selection.

10 Q Where do you see that material or component  
11 selection? Uncertainties in material properties?

12 Can you tell me where there is uncertainty in  
13 material properties in your testimony?

14 A Well not in my testimony, but I'm familiar that,  
15 you know, approximately, oh, back in December there was a  
16 5055E violation turned in because steel had been received but  
17 the certifications that went with it were improper.

18 Q ... But that was caught, was it not?

19 A That's right.

20 Q All right.

21 How about uncertainties or use of non-standard  
22 materials or components without adequate qualification test  
23 program, can you give specific examples of that that are in  
24 your testimony regarding Diablo Canyon? Or the next one,  
25 incompatible materials, either one?



WRB/agb4

1 A Well I'm aware that there have been numerous  
2 quality deficiencies found at the site. In other words, oh,  
3 approximately 20 percent of the pipe supports were initially  
4 either the wrong size or not put in properly or one thing  
5 or another. We could go back through the I&E reports and the  
6 various 50.55-B violations, and if you then believe that this  
7 might be the tip of an iceberg, which I do -- I mean, the  
8 fact that you catch some of them later on doesn't mean  
9 that you've caught all of them, in my opinion, that that might  
10 be indicative of a more general problem.

11 Q Well excuse me, Mr. Hubbard, that was a  
12 contention, however, that was ruled not in these proceedings,  
13 isn't that correct, in Los Angeles at a prehearing conference?

14 A I believe that's true.

15 Q All right. And you're not offering this for a  
16 contention that is not in question, are you?

17 A No. But I'm really responding to your question  
18 when you say do I have an opinion that some of these might  
19 be applicable, and my opinion is some of them might be  
20 applicable.

21 Q No, no, not might be applicable, Mr. Hubbard,  
22 I think you misunderstood my question, are applicable. This  
23 is an operating license proceeding, and we're interested in  
24 what is applicable not what might be. My question to you was  
25 what is.



WRB/agb6

Now it's a fact, is it not, that this Attachment D is just taken out of an article by someone and has nothing to do with Diablo Canyon specifically, wasn't intended to relate to Diablo Canyon, isn't that correct, Mr. Hubbard?

A It applies to nuclear power plants in general and to seismic risk, yes.

Q All right.

MR. NORTON: I think that's all the voir dire I have. I wanted to go over the attachments.

MRS. BOWERS: We don't yet have the motion.

MR. TOURTELLOTTE: I'm ready to make a motion to strike.

MRS. BOWERS: Before you start that, Mr. Tourtellotte, we would ask you to consider the testimony very carefully and to be as limited as possible in your motion to strike, recognizing the difficulty that Intervenor have in obtaining witnesses.

And if any part of this can be separated out so that you're not going in a broad stroke, we would appreciate the identification of the components.

MR. NORTON: Mrs. Bowers, before the motion is made, I have a problem with the last statement of the Board.

MRS. BOWERS: Well let me try to restate it.

We recognize that the testimony which has been marked Joint Intervenor's Number 65 deals with various matters.





1  
WRB/agb7

2 And our question is, if within these various matters there  
3 can be a distinguishing between what the witness has specific  
4 knowledge of and what he doesn't, we would like for that  
5 identification to be made, rather than just a -- if that  
6 exists, rather than just a broad sweep of the whole thing,  
7 except the original qualification statement.

8 We're not saying that's true, we're just saying  
9 if that is correct, that some of the testimony is distinguish-  
10 able from other testimony as far as this witness' expertise,  
11 we would like that identification.

12 Does that help?

13 Well that may not be the case, but we're raising  
14 the point.

15 MR. TOURTELLOTT: Well, what I would first move  
16 to strike -- I don't know if you want it on as broad terms  
17 or not, in light of what you just stated, but I would move  
18 to strike everything under 3.1 in Contention 4, from the  
19 first paragraph that starts: "General Design Criterion 2....,"  
20 on Page 4-3, down through the last complete paragraph on  
21 Page 4-4, because it's all legal argument and that type of  
22 argument is better made by counsel in the findings, a statement  
23 of background.

24 And this witness is not a lawyer, he's talking  
25 about a general design criterion and quoting part of it --  
General Design Criterion 2 and quoting part of it, and also



WRB/agb8

representing what General Design Criterion 2 requires.

And he talks about Appendix A and cites that, and cites various parts of that, and then makes the statement, toward the bottom of 4-4 that:

"In addition to horizontal and vertical ground acceleration, the other factors which are required to define the CBE include the corresponding values of velocity, displacement and duration."

And that is a legal conclusion which would be drawn from the regulations, whether it's required or not required, and this witness is not in a position to make that kind of a statement in the first place.

In the second place, the values of velocity, displacement and duration may or may not be required, and that sort of information is within the expertise of someone who is a mechanical or structural engineer. And I think it has been clearly demonstrated this morning that this witness possesses neither expertise.

MRS. BOWERS: It appears it might be a more orderly proceeding, after you have identified the particular part of the testimony within your motion to strike, to hear from the other parties.

Mr. Kristovich?

MR. NORTON: Excuse me, Mrs. Bowers, I would like



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1 to add one other thing as to a way to proceed, or suggest,  
2 and that is that we have a basic argument or a basic basis  
3 for the motion to strike, and that is that it amounts to  
4 legal argument.

5 And I think that we shouldn't have to argue that  
6 legal argument each and every time we come to a piece of  
7 testimony that we say falls in that category, and perhaps we  
8 could best proceed -- because, for example, if it is the  
9 Board's ruling that legal argument by an expert witness is  
10 okay, then there's no sense of us arguing it each time for  
11 each piece of testimony, if you see what I mean.

12 Perhaps we could proceed to argue that aspect  
13 now also, and get a ruling from the Board, and that may save  
14 some time. Then later on in the testimony, the only argument  
15 would be whether or not it is a legal argument but we wouldn't  
16 have to go through the three of us talking two or three times  
17 apiece arguing the matter as to whether or not that's a  
18 basis for striking it.

19 DR. MARTIN: Could you identify for me, again,  
20 which part is a legal argument?

21 MR. TOURTELLOTT: It starts with the statement  
22 about General Design Criterion 2, and a recitation of a part  
23 of that and then citation of Appendix A and recitations of var-  
24 ious parts of that, and winds up with the conclusion based  
25 upon, solely upon legal information, that is, information which



WRB/agb10

1 is in the regulations, and comes up with the conclusion  
2 that's stated at the bottom of 4-4.

3 Consequently, all of that is part of a legal  
4 argument which he makes at the bottom of 4-4, which is that  
5 these regulations require something -- that these criterion  
6 require something and it requires it legally, it's not that  
7 it requires it technically. In the first place, it is that  
8 it requires it legally.

9 I also made the comment, however, that even if  
10 you were to consider that it may be a quasi-technical argument  
11 in that he's saying that the OBE should include the values  
12 of velocity, displacement and duration, that is a kind of a  
13 judgment that is made by a structural or mechanical engineer,  
14 and which I believe I've clearly demonstrated that is not  
15 within the expertise of this witness.

C5

16 Now if you would like to hear, as a preliminary  
17 matter, what I feel demonstrated that he is not an expert  
18 in these fields, I'd be happy to go through my examination,  
19 maybe that would help lay some foundation too.





1 MRS. BOWERS: Well, I think you should, because  
2 we don't have the full argument in front of us.

3 I just want to raise a point here. I was in  
4 another proceeding a year or so ago, and a technical witness  
5 representing the Applicant in that proceeding was asked  
6 questions about the requirements of the Water Act, and every  
7 question he was asked, he responded, "That's a legal question,  
8 I can't answer that," even though he was asked about the  
9 technical requirements of the Water Act.

10 So it's a fine line.

11 DR. MARTIN: You're not arguing that Appendix A  
12 to 10 CFR Part 50 doesn't require something?

13 MR. TOURTELLOTTE: No, but understand that  
14 Appendix A says whatever it says, and that sort of information  
15 does not need to be introduced into the record by a witness.  
16 That sort of information can easily be cited by the attorney  
17 himself in making his proposed findings, or making whatever  
18 kind of motion that he would ordinarily make.

19 DR. MARTIN: How do engineers find out what these  
20 regulations require? Do they have a lawyer advising them as  
21 to what the regulations mean?

22 MR. TOURTELLOTTE: Well, frequently they do, yes.

23 DR. MARTIN: So they can't start doing their  
24 engineering until some lawyer tells them what they have to do?

25 MR. TOURTELLOTTE: Well, basically it's a



wel 2

1 regulatory process, or even in an industrial process, I  
2 guess, process in the industry, is that a company or the  
3 government figures out exactly how they want to proceed with  
4 problems, and that is usually agreed upon by technical people  
5 and is put into words with the assistance of attorneys.

6 And in the case of the government, those words  
7 find their way into the regulations which are drafted by  
8 attorneys, and they also find their way into things like  
9 various design criteria which are drafted by attorneys with  
10 technical assistance.

11 And then presumably as the technical people put  
12 these various tools to work, they make reference to those  
13 matters and they do some interpretation. Sometimes they need  
14 the help of attorneys to interpret, and sometimes they don't.

15 But that is not really what is at issue here.  
16 What is at issue here is that the only thing that is being  
17 presented here is a sort of list of citations which are  
18 legal citations, and a conclusion is being drawn on that  
19 basis.

20 This witness is not offering up a series of  
21 regulations and saying that he did some kind of a study, or  
22 that he read some kind of a paper, or that he has some kind  
23 of an opinion based upon some individual analysis. He is  
24 telling the Board that this is what the law is, and you'd  
25 better follow the law. And that isn't within his expertise,



1 and even if it were in his expertise he should be writing  
2 that in a final brief, and not as a part of testimony.

3 MR. KRISTOVICH: Mrs. Bowers --

4 DR. MARTIN: You're arguing that only the Staff  
5 and Applicant can go through this process of studying the  
6 regulations and deciding what's required, and that nobody  
7 else can form opinions?

8 MR. TOURTELLOTT: Not at all, no. Not at all.

9 What I am saying is that if there is to be a  
10 presentation by a witness, it doesn't make any difference  
11 whether it's a Staff witness, the Applicant's witness, or  
12 the Intervenor's witness, if it's a technical witness it has  
13 to be technical information that he's providing. He doesn't  
14 provide legal input into the process, he provides technical  
15 input into the process.

16 And while it's satisfactory to make some  
17 reference to a regulation for the purpose of demonstrating  
18 how he went about his own analysis from a technical stand-  
19 point, and what he did technically, what tests he performed,  
20 or were not performed, or what analysis he made of tests that  
21 were performed or not performed, and why that analysis is  
22 inconsistent with the requirements or standards that are  
23 set out in the rules and regulations, that's quite all right.

24 But that isn't what happened here. What happened  
25 here is that he cites a series of what might be considered



wel 4

1 legal or quasi-legal requirements, and they may or may not  
2 be legal requirements, and then he makes a conclusion about  
3 what those things say. He's not making a conclusion about  
4 any tests that were run. He's not making conclusions about  
5 anything that he did or any empirical study that he made.  
6 He's making a conclusion about what the law is. And he  
7 can't do that.

8 It takes something more than what he has done so  
9 far. I'm not saying that in all cases he could not make  
10 reference to the regulations. He can make reference to the  
11 regulations. But he has to make reference to the regulations  
12 to give a framework for his own technical analysis. And  
13 that isn't what he did here.

14 MR. KRISTOVICH: Mrs. Bowers, may I say something?

15 I think that's exactly what Mr. Hubbard is doing  
16 here. I think you're wrong, Mr. Tourtellotte.

17 I'd like to refer you to the Indian Point Units  
18 2 and 3 case, where the Appeals Board was sitting as a finder  
19 of fact in the seismic show-cause hearing, and at that time  
20 the Appeals Board recognized that these types of hearings  
21 are highly technical, and they involve mixed questions of  
22 law and fact, and that witnesses can give opinions whether  
23 certain regulations were met.

24 Secondly, this section is entitled, "Background."  
25 Mr. Hubbard is merely quoting from the regulations and





wel 5

1 paraphrasing them. He is entitled to do that.

2 Applicant, when it put on its witnesses, had  
3 statements in their testimony -- such as in Mr. Esselman's  
4 and Young's testimony regarding electrical equipment and  
5 instrumentation, on the first page of their written testimony  
6 lines 14 and 15, state:

7 "This seismic qualification program and  
8 associated activities meet the applicable requirements  
9 of 10 CFR 50 and 10 CFR 100."

10 Based on what the Appeals Board said in Indian  
11 Point Units 2 and 3 that's appropriate. Witnesses can give  
12 an opinion as to whether certain regulations are met. Mr.  
13 Hubbard is merely reciting the regulations, quoting them  
14 directly and paraphrasing them.

15 With regard to this conclusion you say he reaches  
16 at the bottom of page 4-4, I believe that comes directly from  
17 the regulations, and that's what Mr. Hubbard is saying. And  
18 I can ask him that if I'm entitled to do my direct examina-  
19 tion now, and ask him what the basis of that statement is.

20 But basically what I'm saying is that this is  
21 entirely appropriate. The Appeals Board has said so. I  
22 just don't understand what the problem is.

23 MR. NORTON: Mrs. Bowers, may I respond?

24 MRS. BOWERS: Yes.

25 MR. NORTON: The problem, as I see it, is that



wel 6

1 a technical or an expert witness is supposed to assist the  
2 Board in understanding matters that are generally outside the  
3 Board's area of expertise, although the Boards in the Nuclear  
4 Regulatory Commission cases usually have a great deal more  
5 expertise than a lot of boards or judges, for example.

6 Judges very rarely have expertise in complicated areas they  
7 hear, and they also are to assist juries.

8 Well, in this case the finder of fact, the  
9 ultimate finder of fact, is this Board, and it's both a  
10 judge and a jury, and it must determine, based on the  
11 evidence presented, whether or not to grant an operating  
12 license.

13 I think Mr. Kristovich is partially right. I  
14 think it certainly is within the province of an expert  
15 witness to say that a regulation requires something. For  
16 example, if you have a structural engineer and have a  
17 regulation or a code dealing with structural engineering,  
18 it's certainly within the province of that witness to say  
19 that the code or the regulation requires something from an  
20 engineering standpoint.

21 However, the problem we have here is that Mr.  
22 Hubbard I think has very amply demonstrated that he is not  
23 a qualified expert witness in the area of structural and  
24 mechanical engineering, which is what OBE deals with.

25 What he has done is he has made an argument as



wel 7

1 a matter of fact that if I were Mr. Fleischaker or Mr.  
2 Kristovich I suspect that my proposed findings of fact would  
3 include much of this background testimony that's listed here  
4 as a basis for proposed findings.

5 The problem is that it becomes very circular.  
6 What we have is a witness who really isn't qualified -- he's  
7 not a structural or mechanical engineer -- taking regulations  
8 which supposedly structural and mechanical engineers under-  
9 stand and supposedly lawyers can argue about, and he's  
10 neither a lawyer nor a structural or mechanical engineer, and  
11 he gives the Board his interpretation of what he says they  
12 mean.

13 Then, along comes the attorney for Intervenor in  
14 his proposed findings of fact, and says, "See, this is what  
15 they mean. It's in evidence. It's in the record. It's  
16 evidence that this is what these statutes mean. So therefore  
17 you must find X, Y or Z."

18 And that's the problem.

19 If he were qualified, then he could say, "Yes,  
20 regulation "X" required "Y."" But he's not qualified as an  
21 expert to make that judgment, nor does he have the license  
22 of a lawyer to make that judgment.

23 We're not qualified either, but we have a license  
24 to make the argument.

25 (Laughter.)



1           There's been a lot of kidding going on back and  
2       forth about, "Well, that's testimony. The lawyer is making  
3       testimony." Well, the lawyer is not making testimony.  
4       Lawyers don't testify. They sound like they do, they think  
5       they do, but they don't. They're arguing. They're not  
6       testifying. What a lawyer says is not in evidence. It's  
7       not a fact that this Board can rely on in findings.

8           Mr. Hubbard shouldn't be allowed to make an  
9       argument, though, where he's not qualified to make that  
10      argument, in that legal argument.

11          I would agree with Mr. Kristovich that it is  
12      a mixed question of fact and law that is stated in here.  
13      The problem is he's not qualified to do that.

14           MR. KRISTOVICH: May I respond to that?

15           MRS. BOWERS: Yes.

16           MR. KRISTOVICH: First of all, I don't think you  
17      have to be a structural engineer to make the statements Mr.  
18      Hubbard makes on pages 4-3 and 4-4.

19      Mr. Hubbard has experience as a systems analyst.  
20      He has been under contract to the Swedish Government, the  
21      German Government, regarding risk assessment of nuclear  
22      power plants.

23           He has testified before Senate committees.

24           He was a quality assurance engineer for General  
25      Electric.





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1 He was a manager of application engineering for  
2 General Electric.

3 He has dealt with regulations and codes.

4 He has experience with them.

5 I think he's perfectly well qualified to go  
6 through these regulations which he refers to on pages 4-3 and  
7 4-4 and make the statements he makes. He is merely quoting  
8 from and paraphrasing the codes.

9 MR. NORTON: Mrs. Bowers, I didn't realize Mr.  
10 Kristovich was going to argue about the qualifications, but  
11 I think the example of the Stevenson paper shows very, very  
12 clearly that Mr. Hubbard doesn't understand the basis for  
13 these decisions that are made and the workings of the code  
14 and OBE -- doesn't understand it at all, doesn't even under-  
15 stand the definition of the basic terms involved, the basic  
16 formulas involved.

17 Sure, he can read. I can read. Anybody can  
18 read, and argue about what they think these regulations mean.  
19 But you have to have the background to have that thought  
20 warrant this Board's consideration. You've got to have the  
21 expertise.

22 MR. KRISTOVICH: Mrs. Bowers, I believe Mr.  
23 Hubbard does have the expertise. He does have professional  
24 experience as a systems analysis. He has done work on risk  
25 assessment of nuclear power plants. He has worked with



10

1 regulations and codes.

2 MR. TOURTELLOTT: As the proponent of the motion,  
3 I suppose I get to speak last.

4 MRS. BOWERS: Go ahead.

5 MR. TOURTELLOTT: Well, I believe in one respect  
6 that we're not in disagreement, because what Mr. Kristovich  
7 did was to cite an example where someone who was a technical  
8 person referred to a requirement, or some requirements, of  
9 the regulations as the kind of standard that they used to  
10 measure what they did technically.

11 The problem that we have here is Mr. Hubbard has  
12 not demonstrated, either by his resume, and certainly not by  
13 the voir dire, that he has any expertise in the areas of  
14 mechanical or structural engineering in order to make any  
15 kind of assessment at all, in the first place.

16 In the second place, Mr. Kristovich has said that  
17 you don't have to be a structural or mechanical engineer to  
18 make the kind of observations that are made on these pages  
19 that we're talking about. And I agree with that, too.

20 You can be a lawyer and make that kind of a  
21 representation. As a matter of fact, I think Mr. Norton was  
22 absolutely correct in saying that if they want to include this  
23 in their legal argument to the Board, they may do so.

24 But the problem that we have is that -- also as  
25 Mr. Norton pointed out -- is that if this is allowed in



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1 evidence, then we're put in the position that we have to  
2 figure out some way to come up with some kind of rebuttal  
3 testimony -- rebuttal testimony for a legal argument. And  
4 it really puts us in an absurd position.

5 We should not have to do that. I have no problem  
6 with the use of regulations to demonstrate what a standard  
7 is for making some sort of empirical analysis or some  
8 scientific analysis, but I do have difficulty in presenting  
9 legal materials solely for the purpose of drawing legal  
10 conclusions. And it appears to me that's what has been  
11 done here.

12 Perhaps before we go any further I should make  
13 some indication on the record of what I think my voir dire  
14 showed this morning.

15 I inquired as to whether Mr. Hubbard was an  
16 expert in the areas of geology, seismology, structural  
17 engineering and mechanical engineering. The general answer  
18 that he gave me was that, no, he's not an expert. He has  
19 some understanding of what goes on in those things, and he's  
20 read some things, but he's not really an expert in any of  
21 those areas.

22 In delving into exactly what degree of expertise  
23 he did have, we found that he didn't know the basic meaning  
24 of fundamental formulas that are used in mechanical and  
25 structural engineering. He didn't know what the load



al 12

1 combination formula meant.

2 He did not know what the basis for the numbers  
3 was.

4 He said that he thought stress was mentioned in  
5 the statement, and that it was 1.4 D, although he wasn't  
6 sure, when, in fact, stress is not mentioned in that state-  
7 ment.

8 I can only say that I can make an offer of proof  
9 to demonstrate that it is not in that statement.

10 He could not describe how a structural engineer  
11 would use the information derived in that statement,  
12 1.4 D + 1.7 L + 1.9 E.

13 He could not describe how a structural engineer  
14 would use that information in calculating the stress in a  
15 structural element.

16 And yet, again, I can offer -- make an offer of  
17 proof that anyone who is in the structural engineering  
18 business can tell you that right off the top of their head,  
19 they don't have to look at a book.

20 In examining Mr. Stevenson's article, he told  
21 us that he thought that one part of the article S sub ALL  
22 equals 1.5S sub M, was equation 9, or maybe part of equation  
23 9. In fact, it was not equation 9. And any mechanical  
24 engineer can tell you that it isn't equation 9.

25 When I gave him equation 9, he didn't really know





1 13

1 what types of stress were considered in it. And yet a  
2 mechanical engineer can tell you those sorts of things.

3 He couldn't define primary stress. He couldn't  
4 define secondary stress. And yet a mechanical engineer can  
5 tell you what those things are.

6 He couldn't give examples of load conditions that  
7 produced primary or secondary stress, but mechanical  
8 engineers can tell you that.

9 In piping, he said that he wasn't really sure  
10 whether primary or secondary stresses were produced by  
11 earthquakes, but he thought maybe it was secondary -- when  
12 in fact it's both. And a mechanical engineer can tell you  
13 that.

14 As a matter of fact, some seismologists and  
15 geologists can tell you that.

16 He's never used equation 9 in performing any  
17 kind of an analysis, and yet he's talking about the OBE and  
18 the significance of the OBE.

19 He doesn't know where in equation 9, once the  
20 equation has been given to him, he doesn't know where in  
21 equation 9 it considers earthquakes loads.

22 He didn't understand the basic statement  
23 about  $S_{sub} S = 1.5 S_{sub} M - 0.1 S - 0.5 S_{sub} M$   
24  $M = 0.9 S_{sub} M$ . He didn't really understand that.  
25 And he didn't understand that those figures were assumed by



.31 14

1 Stevenson. He didn't know.

2 He couldn't describe what shakedown means as  
3 applied to piping. Any mechanical engineer can tell you that.

4 He couldn't define bending stress.

5 He couldn't define membrane stress.

6 And yet there are formulas for both of those that  
7 mechanical engineers know.

8 He couldn't say whether bending stress is  
9 considered across the cross-section of a structural element,  
10 how it varies.

11 He didn't know how to compute bending stress.

12 And he didn't know what the assumptions were in  
13 the formula.

14 I asked a question which seemed like a fairly  
15 easy question, whether yield is equivalent to failure. He  
16 said that he didn't know, but he thought maybe in certain  
17 cases where a structure was very brittle that it might. He's  
18 wrong about that.

19 He didn't know how to express stiffness of  
20 structures, and that is a fundamental matter of knowledge  
21 to structural and mechanical engineers.

22 He did not know how to draw a typical floor  
23 response spectrum curve, although he said that generally he  
24 thought that the maximum floor acceleration would be at the  
25 peak of that curve, when in fact it is at the foot of the



al 15

1 curve.

2 And he didn't know how to use maximum floor  
3 acceleration to analyze the design of a normal piping system.

4 And yet we've got this entire amount of testimony that's  
5 telling us about OBEs and about the significance of what  
6 action has been taken by people who are qualified and who do  
7 know all of these things.

8 He's making some critical analysis of what actions  
9 they have taken. And it is just simply absurd for the Board  
10 or anyone else to take what he says as having any validity at  
11 all.

12 I think Mr. Norton certainly hit the nail on the  
13 head when he said that the purpose of an expert in appearing  
14 in this proceeding, or any other proceeding, whether it's an  
15 administrative proceeding or in a court, the purpose of an  
16 expert witness is to aid the court in understanding difficult  
17 technical facts.

18 And Mr. Hubbard, in the first instance, has not  
19 really done any kind of an analysis or presented any kind of  
20 an analysis of technical facts that would give the Board any  
21 kind of an understanding that it couldn't get by reading the  
22 same regulations and putting the same regulations together.

23 Consequently, his purpose for being here is not  
24 really serving the interests of the Board or serving the  
25 interests of the administrative process.



1           The matter of requirements for an expert witness,  
2           and the value of expert witnesses, was decided by this Board  
3           in a collateral matter concerning security. But the basic  
4           principles of law involved are the same here as they were  
5           there. That is that the expert is not here just for adversary  
6           proceedings, or to represent some different point of view.  
7           The purpose is to represent whatever point of view that  
8           expert has in such a manner as to shed light upon the  
9           technical facts that are before the Board.

10           That has not been done.

11           I would also like to say that while the Staff  
12           understands the difficulty of intervenors in obtaining  
13           witnesses, that really doesn't excuse the intervenors, or  
14           anyone else, from presenting witnesses that are qualified  
15           to testify about the matters which they are offered up for.  
16           In this case, Mr. Hubbard simply doesn't have the expertise  
17           necessary.

18           It is also important, I think, because if we  
19           allow witnesses to come in and sort of summarily wave our  
20           hands and say we're going to allow the testimony in for  
21           whatever weight it has, if it has no weight why in the first  
22           place can't the Board just make that decision upon a review  
23           of the testimony and discard it in the beginning, because if  
24           it is not discarded in the beginning when it requires the  
25           other parties to face the issue of whether they must get





1 together rebuttal testimony. And it seems a little bit  
2 unfair to require other parties to rebut testimony which has  
3 no weight in the first place, but which has to be rebutted  
4 because it puts the other parties in a position of not knowing  
5 how much weight the Board is going to give that testimony.

6 Another thing I think that's an important policy  
7 consideration is that if an individual is allowed to testify  
8 as an expert in a proceeding of this sort, it puts that  
9 individual -- even though very little weight is given to the  
10 testimony -- it gives that person, who does not possess the  
11 necessary qualifications of an expert, the opportunity to  
12 bootstrap themselves up, or hoist themselves by their own  
13 petard, in regard to gaining expertise. That is, it is  
14 possible that if we continue to allow Mr. Hubbard to testify  
15 or to offer up testimony on structural engineering and  
16 mechanical engineering, even though he's no expert, and even  
17 though the Board discards it as being relatively weightless,  
18 after he's done this 10 or 12 times then he will use that --  
19 he can use that as an argument that he has gained expertise  
20 because he's testified 10 or 11 times.

21 If that argument sounds a little bit unreasonable,  
22 you only need to consider what happened in the security case  
23 where precisely the same factor was used.

24 So that I guess in the final analysis what I'm  
25 saying is that there has not been an adequate statement of



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1 expertise in this instance which would allow this witness to  
2 make the kind of observations that he's making in his  
3 testimony, and that the Board should take immediate action  
4 to discard as much of the testimony as is necessary to make  
5 sure that the record is not overburdened with weightless  
6 material.

7 MR. KRISTOVICH: Could I respond to that?

8 MRS. BOWERS: Well, very briefly, because the  
9 movant has a right to be heard --

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MR. KRISTOVICH: I would like to respond to Mr. Tourtellotte's testimony on what is fundamental for structural and mechanical engineers to know. And I would like to say that Mr. Hubbard is qualified to make the statements he has made here based on his background as a Quality Assurance engineer, manager of application engineering, his professional experience doing risk assessments at nuclear plants for the Swedish and German governments, and his testimony before various U.S. government bodies.

If anything, the statement should be admitted; maybe Mr. Tourtellotte is right, it goes to the weight of the evidence. But I believe Mr. Hubbard has the professional experience and training to make the statements he does. And I would like to ask him some questions about the basis for making these statements, what his professional experience and training -- how they give him a basis for making these statements.

MR. NORTON: Excuse me, Mrs. Bowers.

I don't believe that's proper. There's a motion to strike pending, and that should be ruled on. If it is ruled against -- I hate to tell Mr. Kristovich how to do his job, but if the ruling goes against him, then he's free to do anything he can to try to get testimony in one way or another and to lay a foundation.

But there's a motion pending now, and the proper



mpb2 1 time for him to do his direct testimony is after that motion.  
2 is ruled on. For one thing, it may be unnecessary. Mr.  
3 Tourtellotte's motion may be denied.

4 MR. KRISTOVICH: Okay.

5 I guess I was unaware of the proper procedural  
6 steps to follow.

7 But then I merely would like to conclude that all  
8 of these statements come straight from the regs. What Mr.  
9 Tourtellotte labeled a conclusion comes straight from the  
10 regulations.

11 MR. NORTON: Mrs. Bowers, I would like to say one  
12 thing, and I appreciate Mr. Tourtellotte has last bite on this  
13 because it's his motion, and Mr. Kristovich can certainly  
14 respond too.

15 But the comment the Board made at the beginning  
16 still bothers me, and I would like to address that. And that  
17 is the statement realizing the difficulty intervenors have  
18 with witnesses. I don't understand whether that's a generic  
19 statement or a specific statement. But in this particular  
20 case, if it is a generic statement, I'm not going to address  
21 it.

22 But as it might be a specific statement, in this  
23 particular case intervenors have hired a Washington lawyer  
24 who I've heard repeatedly state that he's had much experience  
25 in these proceedings. He's tried many of these cases. Boy,





mpb3 1 that's far more than I have. This is only my second one; and  
2 the first one only lasted a week.

3 So, you know, they have the funds to hire a very,  
4 very, very -- according to his own argument -- experienced  
5 Washington lawyer to run these proceedings for them. They  
6 have the ability to hire, to bring in as expert witnesses, a  
7 consulting firm, NHB. They have the ability to get Dr. Bruna  
8 and Dr. Silver to work for them.

9 I don't think this is a case where there is any  
10 basis in the record -- they even have the ability to hire a  
11 public relations person the first week of these hearings. I  
12 don't think there's any basis in the record for this Board to  
13 somehow make an exception to Rules of Evidence under the aura  
14 of "Intervenors have such a hard time getting witnesses". I  
15 don't think there's any basis in this record for that.

16 And I don't know whether that was a generic --  
17 and I'm not really asking the Board a question about it. I  
18 just don't feel that that has really been shown to be the  
19 case in this case.

20 MRS. BOWERS: Well, the point I was trying to make,  
21 we all are aware of the fact that Mr. Hubbard has had a back-  
22 ground in nuclear engineering.

23 Now, I've had witnesses proposed in other cases,  
24 one a Ph.D. in chemistry who spent his life teaching at Yale  
25 and then retired to that community, and he has done some



mpb4 1 literature reading, but it was other than his discipline.  
2 And my only point was to have the parties state on the  
3 record the position, whether all of the testimony dealing  
4 with Joint Intervenor's 65 is buttressed on seismology and  
5 the OBE and that sort of thing, or is any part of it separated  
6 out from that, so that his background in quality assurance  
7 and other matters of GE would be appropriate, and --

8 MR. NORTON: Of course -- and of course, at this  
9 time we're only talking about the OBE testimony; we're not  
10 talking about anything beyond that.

11 MRS. BOWERS: That's right.

12 MR. KRISTOVICH: Mrs. Bowers, do you want -- may  
13 I respond to Mr. Norton's financial comments?

14 I think Mr. Norton repeatedly in the last week  
15 has referred to Intervenor's and the financial resources the  
16 Intervenor's have and how it isn't that difficult for them. I  
17 can speak with complete reassurance that Applicant undoubtedly  
18 spends more in one day than Intervenor's have spent in the past  
19 three years and will spend in the next year on this case.

20 MRS. BOWERS: It was the Board that brought this  
21 matter into the record. We said considering limited resources.

22 MR. NORTON: Mrs. Bowers, we would stipulate that  
23 it's costing the Applicant far in excess each day waiting  
24 for the plant to be licensed than it has cost Intervenor's in  
25 the last three years.



mpb5

1 MRS. BOWERS: Let's go on to other matters.

2 Now we have before us a motion to strike on  
3 really two grounds of 3.1, Background, down to the beginning  
4 of the last paragraph on 4-4.

5 We're soon going to be breaking for the luncheon  
6 break, and that would, of course, give the Board a good  
7 opportunity for thorough consideration.

8 Our original thought was to take each piece at  
9 a time. But, Mr. Tourtellotte, we will defer our ruling on  
10 this first part, and then can you go through the rest of it  
11 and identify other areas and the basis?

12 MR. TOURTELLOTTE: Sure.

13 Before I go on, though, since I did propound the  
14 motion, I'd like to make one more quick response to Mr.  
15 Kristovich, because he responded to my remarks in that he  
16 felt like the resume of Mr. Hubbard indicated clearly that he  
17 had the kind of experience necessary to make testimony in  
18 this case. And he pointed specifically to his experience in  
19 quality assurance.

20 And this reminds me of a story that Mark Twain  
21 told about experience and the importance of experience.

22 Somebody asked him what he thought of the import-  
23 ance of experience, and he said, Well, he said, if you take  
24 a man and you give him a cat at eight o'clock in the morning,  
25 you have him pick that cat up by the tail and hold it until



mpb6 1 five o'clock, at five o'clock he will have more experience  
2 than anybody else in the world at holding a cat by the tail.  
3 But what good is it?

4 (Laughter.)

5 Now the application of that particular story in  
6 this case is Mr. Hubbard has stated that he has some experience,  
7 but the question is what good is that experience insofar as  
8 presentation of testimony in this case is concerned? I point  
9 out to the Board that it is the responsibility of the individ-  
10 ual who offers up an expert to demonstrate that that expert  
11 is qualified. It isn't my responsibility; it isn't the  
12 responsibility of the Applicant in this case. It isn't the  
13 responsibility of the Board in this case. It's the respon-  
14 sibility of the person who is offering him up, who happens  
15 to be the Intervenor in this case.

16 And although we can use terms in a very broad  
17 manner, like, well, he was involved in QA at GE, or he gave  
18 testimony before this committee or that committee, or he flew  
19 to Germany and testified before this committee or that  
20 committee, I don't know who the committees were, I don't know  
21 what his testimony was. I don't know whether the people  
22 there really considered him as an expert, or whether they  
23 just wanted to see somebody who came from the United States.

24 I frankly don't know why he was there, and I don't  
25 know what that has to do with his level of expertise. The





mpb7 1 simple fact that he has gone through the motions of doing  
2 something doesn't mean that he's an expert. And what we  
3 found this morning by examining in more particular detail  
4 what he knows about the fundamentals of the disciplines of  
5 structural and mechanical engineering, what we found out is  
6 that he doesn't know.

7 And he can testify all he wants, and he can spend  
8 the rest of his life reading, and he can go wherever he wants  
9 to go; but in the final analysis the question is: what does  
10 he know about technical analysis for this structure or any  
11 other structure. And he has demonstrated that he doesn't  
12 know even the most fundamental type of formulas.

13 Now I'll go on.

14 DR. MARTIN: Excuse me, something's bothering me.  
15 You say the statement of the contention is  
16 correct.

17 MR. TOURTELLOTT: Yes.

18 MR. NORTON: Excuse me, Dr. Martin. I have a  
19 question of you.

20 What do you mean by "is correct"?

21 DR. MARTIN: Is it correct. Is that what you all  
22 understand to be the contention?

23 MR. NORTON: Okay.

24 We wouldn't agree that the contention is correct.

25 We would agree that this is a correct recitation of the



mpb8 1 contention, however.

2 DR. MARTIN: Well made point.

3 It is stated correctly, so that you all agree  
4 that that is the contention.

5 Well, my reading of the introductory statement  
6 to number four seems to imply a legal argument that here are  
7 10 CFR Part 50, 10 CFR Part 100, and the contention is that  
8 the seismic design fails to provide the margin of safety  
9 required by those.

10 Was it Staff or Applicant's anticipation that  
11 evidence on this subject would be provided by a lawyer? In  
12 other words, that you'd have someone trained in the law  
13 sitting here as a witness?

14 MR. NORTON: Well, Dr. Martin --

15 DR. MARTIN: I get the implication that --

16 MR. NORTON: That's not my feeling at all.

17 What I would have expected is that they would have  
18 provided an expert who would tell how the analysis failed to  
19 provide the margin of safety required by 10 CFR Part 50 and  
20 10 CFR Part 100. In what way was the analysis deficient.

21 DR. MARTIN: Before you do that, don't you have  
22 to know what those requirements are?

23 MR. NORTON: Sure.

24 But it takes an expert witness --

25 DR. MARTIN: How much expertise does it take to



mpb9 1 read and interpret regulations? I mean, can I do it? Is it  
2 all-right for me to do it?

3 MR. NORTON: It depends.

4 I would think in some areas -- for example, if it  
5 was a regulation -- I'm not familiar with your expert back-  
6 ground -- but if it were an area of -- let's assume that you  
7 know a little about some specific area, and if it's a technical  
8 area, you may or may not be able to read and understand it.  
9 And if it's a complexly worded regulation, even if you had the  
10 expertise or the technical background you may or may not be  
11 able to understand it based on what the legal significance of  
12 a term or two might be.

13 In other words, oftentimes with the regulations it  
14 takes both the technical and legal person to figure out exact-  
15 ly what it requires, particularly government regulations. Most  
16 large utilities and companies in this country now have indi-  
17 viduals who do nothing but review proposed regulations that  
18 come out in the Federal Register, and it's their job to try  
19 and figure out what those regulations mean. And they have to  
20 consult their technical people and their legal department to  
21 get opinions as to what those proposed regulations mean and  
22 what impact they will have on that particular industry or  
23 company.

24 So it's not -- when you say "could I", it depends  
25 on the regulation in question.



mpb10 1

2 DR. MARTIN: Well, it seems somehow when I got  
3 this job, I had the feeling that the hearing process had  
4 something to do with determining the meaning and application  
5 of regulations and that somehow I had some qualification for  
6 them when the Commission appointed me.

7 But now my confidence is shaken because I hear  
8 that only lawyers and experts are capable of doing these  
9 things.

10 MR. NORTON: No.

11 Only experts are capable of offering evidence  
12 as to whether or not the regulation has been complied with.  
13 You, as the finder of fact, have to listen to that evidence  
14 and decide whether or not it's correct. And that's a tough  
15 job.

16 DR. MARTIN: Yes, you said it.

17 (Laughter.)

18 MR. TOURTELLOTT: Excuse me.

19 Let me try and answer that question another way.

20 I see the two parts of it:

21 One, what is it that this contention would require  
22 a potential expert witness to do; and I see the other part of  
23 it is some feeling of drawing some analogy between yourself,  
24 as a trier of fact, and an expert witness on the stand. And  
25 I would address those in reverse order because as the trier  
of fact, you don't have to be an expert. But you do have to





mpb11 1 rely upon the expert witness and what is in the record as  
2 a result of an expert opinion as a sole basis for whatever  
3 conclusion you reach.

4 You can't reach a conclusion based upon your own  
5 understanding, which is not in the record. If you have an  
6 understanding that is not in the record, and there's some  
7 expert on the stand, what you have to do is either establish  
8 that through your own line of questioning as a trier of  
9 fact, or you can't rely on that.

10 So that you don't have to be an expert. And what  
11 is presumed in your case as a trier of fact is that you will  
12 be able to take in all of the information and to sift out  
13 that which you feel is important and that which you feel is  
14 not important.

15 And you may agree with an expert, and you may  
16 not agree. Certainly as a trier of fact you're going to have  
17 differing expert opinions in some instances, and you don't  
18 have to agree with all of them, or it would be impossible to  
19 accomplish your final task.

20 But you can't really equate your own position as  
21 -- certainly in your case, you are neither a structural or  
22 mechanical engineer, at least that's my understanding of  
23 your background. But you don't have to be. The law does not  
24 require you to be.

25 The law does require that if we're going to hear



mpb12 1 what is called expert testimony from somebody on a subject  
2 matter which deals with mechanical engineering, that they  
3 possess the qualifications either by education or by experience  
4 which would indicate that they have a knowledge that is suff-  
5 icient so that whatever they say can be given some degree of  
6 credibility or has some probative value.

7 Certainly people who have been around this area  
8 very long can pick up the newspaper and read about Diablo  
9 Canyon. But the fellow who is in the insurance business or  
10 the fellow who is a lawyer downtown or somebody who is a  
11 doctor, simply by reading about it cannot offer themselves  
12 up in this proceeding as an expert in some discipline which  
13 they have no background in, either education or experience on.  
14 That's the first thing.

15 The second thing is that when we talk about  
16 10 CFR Part 50 and 10 CFR Part 100, again we're talking  
17 about a standard against which we measure some analysis.  
18 What that contention says is the seismic design for Category  
19 1 structures, systems, and components, fails to provide the  
20 margin of safety required by the regulations. Okay.

21 What we would expect to see from an expert  
22 witness, then, is an analysis of the structure, some informa-  
23 tion, some analysis that they have based upon available  
24 information that the structure in some way is defective,  
25 because something less than one-half of the maximum vibratory



mpb13 1 acceleration for a safe shutdown earthquake is used.

2 If they have something to do with systems, then  
3 we would expect an analysis from that, or we would expect an  
4 analysis of the components of those -- of the Diablo Canyon  
5 Nuclear Plant. But we don't -- what we are not looking for  
6 is a simple recitation of what the regulations are.

7 Remember, the purpose for the expert being here  
8 is to help the Board. The Board can read the regulations,  
9 the Board knows. And in fact, if you strike the legal argu-  
10 ment, it's of no prejudice to the Intervenor because they  
11 can make that in their findings anyway.

12 And that indeed is what we have here. It's just  
13 another legal argument. And it really serves no purpose from  
14 an evidentiary standpoint.

15 But at any rate, again, not to really belabor  
16 the point, but the point is I agree that an engineer, a  
17 structural engineer or mechanical engineer, seismologist,  
18 geologist, they're going to have to read the regulations and  
19 they're going to have to use the regulations as a standard.  
20 But after they've done so, they have to come up with some  
21 kind of an analysis that provides the nexus between the  
22 standard and the conclusion that they reach, and not simply  
23 recite the law and make a bottomline statement that the  
24 regulations have not been met.

25 MR. KRISTOVICH: Mrs. Bowers -- I don't know if



mpb14 1 Dr. Martin has followup questions or not, but it seems that  
2 Mr. Tourtellotte was getting pretty far afield. I thought  
3 we were talking about pages 4-3 to 4-4.

4 DR. MARTIN: No, he was answering my question.

5 MRS. BOWERS: Well, and a little earlier I  
6 asked if it would be possible before the luncheon break for  
7 you to identify other areas that you will cover with your  
8 motion.

9 MR. TOURTELLOTTE: Okay.

10 The paragraph at the bottom of 4-4, starting  
11 "The Staff discussed", on over to the next page, 4-5, down  
12 to the point in that paragraph where it says "in past Staff".  
13 Those two sentences can be left in.

14 The next sentence is "In past Staff practice"--

15 MR. KRISTOVICH: Excuse me.

16 Could you repeat that? I didn't follow that.

17 MR. TOURTELLOTTE: Well, starting out with the  
18 last paragraph on 4-4, there is one, two, three sentences.  
19 The third sentence ends "B equal to 3.75g." That can be left  
20 in.

21 The next sentence I would ask be stricken, along  
22 with the -- I assume that the whole table there is in that  
23 sentence. There is no basis given for that statement, no  
24 authority is cited for that statement in the first place, and  
25 in the second place it isn't relevant. So I ask that it be





mpbl5 1 stricken for irrelevancy.

2 The next paragraph says "The Applicant in the  
3 April 11, 1978 letter acknowledges that the original Diablo  
4 Canyon seismic basis was based on a two to one relationship  
5 between the Double Design Earthquake and the Design Earthquake."

6 I would ask that that be stricken because in the  
7 first place it isn't clear what the April 11, 1978 letter is.  
8 That hasn't been identified. If it were identified and it  
9 represents what they claim, it isn't relevant, nor is it  
10 material in this case because they're talking about the  
11 original seismic design and we're not talking about the  
12 original seismic design. We're talking about the design  
13 and the analysis of the design as it fits the Hosgri event  
14 today, not what it fit some time ago.

nd  
ADELON 2  
ADELON 3  
lws



mpb3  
MPB/agbl

1 The paragraph was Section 3.2, Design Significance  
2 of OBE, I would ask that it be stricken, the first paragraph  
3 which is a recitation of Section 4a2 of Appendix A to Part --  
4 10. CFR Part 100, is basically a legal argument. The con-  
5 clusion which follows, down to the point which, on 4.6, which  
6 the Intervenor struck themselves, is a conclusion, a legal  
7 conclusion that is unsupported by the facts and is unsupported  
8 by any recitation of facts or analysis in the proceeding and  
9 is simply a legal argument.

10 I would also ask that it be stricken -- the entire  
11 -- actually, the rest of the section as well as the first  
12 part of the section be stricken because it's been clearly  
13 demonstrated that this expert does not have the -- or this  
14 witness does not have the level of expertise necessary to  
15 evaluate the design significance of the OBE.

16 MRS. BOWERS: So you're striking down to where  
17 3.3 begins, is that correct?

18 MR. TOURTELLOTTIE: Yes. For two reasons. One  
19 is that basically it's a legal argument and, secondly, even  
20 if it were considered to be a technical argument, he does  
21 not possess -- the witness does not possess the expertise  
22 necessary to make that argument.

23 Under 3.3, I would ask that all of this section  
24 be stricken because, as the questions that were asked on  
25 voir dire indicated, this witness does not know how to calculate



1 loads, he doesn't understand how loads are calculated, there-  
2 fore, it would be impossible for him to make the argument  
3 that the vertical acceleration values were underestimated.

4 Specifically, the first sentence says that:

5 "Even if a 0.20g were appropriate for  
6 the OBE, the Applicant's use of constant accelera-  
7 tion values regardless of elevation underestimates  
8 the loads."

9 And then he goes on with four examples. Obviously,  
10 if he doesn't understand the basic formulas for calculating  
11 loads, he can't say whether they're underestimated or not.

12 Further down under 3.4, the fifth line up from  
13 the bottom, the words toward the end of that line: "may  
14 not be possible or practical," should be stricken, since they  
15 are not within -- I'm sorry, up one more line:

16 "Determination of internal equipment  
17 damage including seismically-induced aging  
18 may not be possible or practical to achieve  
19 with known inspection techniques."

20 There is no basis in the record that would indicate  
21 that he has the expertise to make that kind of an assessment.  
22 We would ask that that be stricken.

23 We would ask that the rest of it be stricken,  
24 because it's basically a legal argument as to what is required  
25 by that section of the appendix.



MPB/agb3

1  
2 MR. NORTON: Mrs. Bowers, is it appropriate for  
3 us to jump in and add an added reason of why it should be  
4 stricken when we have an added reason, such as here?

5 It's just a short statement as to why we feel it  
6 should be stricken, that particular piece of testimony. It's  
7 not argument, we just want to state why we think it should be.

8 MR. KRISTOVICH: I assume we'll have argument  
9 after lunch on all of this, piece-by-piece?

10 MRS. BOWERS: We thought we could consider it at  
11 the luncheon break, but obviously we won't be able to.

12 MR. KRISTOVICH: Mrs. Bowers -- Well, no, I do  
13 have argument on each individual piece.

14 MRS. BOWERS: All right.

15 MR. NORTON: We just thought, for purposes of  
16 people's notetaking, if we could state our basis for the  
17 objection, if it's different from the Staff -- and it hasn't  
18 been up to this point -- we have an added reason why we think  
19 it should be stricken, this portion of the testimony.

20 MRS. BOWERS: Well, one thing that was put before  
21 us earlier this morning was the general, almost generic  
22 question if the matter is legal rather than technical. And,  
23 actually, going down through here, probably a better way would  
24 have been to have given the other parties an opportunity on  
25 each item.

MR. NORTON: Well I had nothing to add as for





MPB/agb4

1 bases for the motion. I think Mr. Kristovich should wait  
2 until the bases have all been set forth and we have argument  
3 on it. But I have nothing to add to the prior stuff, it's  
4 just when they got to here there is, I think, an additional  
5 reason to strike some of it, and I would like to just set  
6 that forth.

7 MRS. BOWERS: On 3.4? Is that right?

8 MR. NORTON: Yes. This part that we're at right  
9 now. Actually, it starts with, "However," which is the next  
10 to the last line on 4-10, the middle of the line, from there  
11 through --

12 MRS. BOWERS: Well why don't you go ahead, and  
13 then we'll go back through for Mr. Kristovich on each and  
14 every section after lunch.

15 MR. NORTON: Well, presumably he isn't going to  
16 add anything to the motion to strike.

17 MRS. BOWERS: No, this will be to give him an  
18 opportunity to respond.

19 MR. NORTON: Okay. Yes.

20 Through the middle of the next page, where it  
21 says: "TAP-B49," the end of that sentence, we would move to  
22 strike that. These documents are not in evidence, they're  
23 not attached as exhibits. I don't know what they say, the  
24 Board doesn't know what they say, and that's totally improper  
25 to discuss articles like that that aren't in any way before



MPB/ugb5

1 the Board.

2 MR. KRISTOVICH: What exactly are you referring  
3 to?

4 MR. NORTON: Well the discussion of TAP-B50 and  
5 TAP-B49. The only reason I said it is I'm told, for example,  
6 that that B49 has absolutely nothing to do with this, but  
7 I don't know that's what I'm told. But there's no way for  
8 the Board to make such a determination or anybody else, they're  
9 not attached, they're just conclusions drawn from these  
10 documents that aren't in evidence and aren't here, and I  
11 have no basis of whether they've been accepted, what the  
12 status of them is, I don't know anything about it.

13 MR. FOURTELLOTTIS: That was going to be one of  
14 my points.

15 My basis for objecting to that section is that  
16 it is in the nature of a legal argument (a), and (b), it's  
17 not competent testimony and it's not competent testimony  
18 basically for the reasons stated by Mr. Norton just previously.

19 Clearly, the last sentence which starts: "Clearly,"  
20 is a legal conclusion and should be stricken.

21 3.5, as we're told by Mr. Hubbard, -- is the next  
22 section, starts at the bottom of 4-11, "Difficult to Upgrade  
23 Design for Increased OBE."

24 I object to this entire section because it is  
25 immaterial. If you read the substance of what is there, it



mpbl  
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MPB/agb5

1 is really immaterial to the case that is going on right now,  
2 in the first place.

3 In the second place, by reason of his adding the  
4 title now makes it a little clearer as to why it's there. It  
5 says "Difficult to upgrade the design for increased OBE".  
6 Once again, I would object because he does not possess the  
7 necessary expertise to say whether the design is difficult to  
8 upgrade or not because he has already clearly stated that he  
9 is not a structural or mechanical engineer. He does not know  
10 that much about design. And therefore, he is not in a posi-  
11 tion to say that it is difficult or it is not difficult.

12 And the title, I think, gives that away, aside  
13 from its being immaterial.

14 MRS. BOWERS: I think we should interrupt this  
15 now, because we've learned from past experience unless we  
16 break at twelve o'clock that it's sometimes very difficult  
17 to eat within an hour.

18 MR. NORTON: Excuse me, Mrs. Bowers.

19 So that we can get off this section, I just have  
20 one thing to add to that same section as a reason, and then  
21 we're on to the other testimony, I believe. If we can do that?

22 I would add that again, this is a use of a paper.

23 It says:

24 "As stated in Attachment C, the Applicant's  
25 Project Manager Lindblad..."



mpb2 1 and so on and so forth.

2 That is -- if I remember Attachment C, that was  
3 written by Mr. Bettinger, who was quoting Mr. Lindblad. This  
4 evidence is not competent. We don't know that either one  
5 of those people were qualified to even make these statements,  
6 or if indeed they made those statements in context, or what  
7 context those statements were made, or when, or based upon  
8 what knowledge or anything else.

9 It's just basically totally incompetent material,  
10 to take a memo that somebody else wrote. And it's just a  
11 little teeny outline with little words instead of whether  
12 that was a thought or that was a maybe or a definitely or  
13 what, no one knows. That's why that kind of material should  
14 not be admitted in evidence without proper foundation.

15 There was absolutely no attempt by intervenors  
16 to lay any foundation for that memorandum at all. And the  
17 witness was in fact on the stand. They had the opportunity  
18 to do so, and they did not do so for apparently a good reason.

19 MRS. BOWERS: Well, we'll break now, and give  
20 Mr. Kristovich an opportunity after lunch to go through each  
21 one of these.

22 (Whereupon, at 12:10 p.m., the hearing in the  
23 above-entitled matter was recessed, to reconvene at  
24 1:10 p.m., this same day.)  
25





1E

AFTERNOON SESSION

WRB/wbl

(1:10 p.m.)

MRS. BOWERS: We'd like to begin.

Whereupon,

RICHARD B. HUBBARD

resumed the stand as witness for and on behalf of the Joint  
Intervenors and, having been previously duly sworn, was  
examined and testified further as follows:

MRS. BOWERS: Mr. Kristovich, do you want to  
proceed with your response?

MR. TOURTELLOTTE: I think I still had a couple  
of other items in the conclusion. We're down to the con-  
clusion, I think.

MRS. BOWERS: That's right; we broke for lunch  
at that point.

MR. TOURTELLOTTE: The first sentence under 4,  
Conclusion, is a legal conclusion and should be rejected for  
that reason; that is, for the reason that he isn't competent,  
and that legal conclusions are not within the purview of an  
expert to make anyway.

The second sentence is also a legal conclusion.  
Moreover, it implies an evaluation of the importance of the  
OBE which requires a legal of technical expertise that this  
witness does not possess, and, therefore, is also objectionable  
on that basis.



1 I don't have any objection to the next sentence.

WRB/wb2

2 The next sentence, which starts out "However,  
3 where a nuclear plant is located in an area of high seismicity,  
4 as is the case for Diablo Canyon units, an exemption to the  
5 regulatory requirements is not justified," that's objectionable  
6 because (a) Mr. Hubbard is not a seismologist, and even though  
7 he attempted to give this some more credence by citing  
8 Gawthrop today, he is not in a position as a seismic expert  
9 to even make that kind of a citation. Moreover, it is a  
10 conclusion which only this Board can reach based upon the  
11 facts in evidence, and therefore it's a legal conclusion  
12 and should be rejected for that reason.

13 The final sentence is also objectionable both  
14 for the reason that it is a legal conclusion and that this  
15 witness does not possess the expertise necessary to evaluate  
16 the necessity for making a re-analysis of the Diablo Canyon  
17 nuclear plants for OBE equivalence.

18 That's the sum and substance of the objections  
19 on the testimony itself.

20 Attachment C should be stricken because it is  
21 not competent evidence. It is not acceptable to present this  
22 type of hearsay into evidence by simply offering it up. And  
23 we have no real understanding as to whether it is in fact  
24 what it represents, and we don't know whether it represents  
25 the truth of the matter asserted, therefore it is of little or



1 no value.

WRB/wb3

2 The final-- I've got Attachment B that's  
3 written on this, although it comes after Attachment C. It  
4 looks like a couple of tables entitled "Auxiliary Building,  
5 Maximum Absolute Horizontal Accelerations," and another set  
6 of tables on the second page which is entitled "Containment  
7 Exterior Structure, Maximum Absolute Horizontal Accelerations."

8 My copy is backward. The first one I gave you  
9 was on page B-2 and the second one I gave you is B-1.

10 Likewise, this information is information which  
11 would be used by an expert, or might be used by an expert.

12 There's no way to tell whether it is or is not. But we do  
13 know one thing, that this expert does not possess the -- or,  
14 rather, this witness does not possess the expertise necessary  
15 to evaluate horizontal accelerations or other accelerations,  
16 since he is neither a seismologist nor a structural engineer,  
17 and therefore it should be stricken because it is not  
18 competence.

19 I think before we proceed to the next piece of  
20 paper we probably ought to deal with Contention 4.

21 MRS. BOWERS: Well, Mr. Norton, before we go to  
22 Mr. Kristovich to go down through the whole thing, we'll give  
23 you an opportunity to state a position on what has been said.

24 MR. NORTON: If I may take the attachments first,  
25 I have a very strong predisposition to not allowing into



WRB/wb4

1 evidence documents for which there is absolutely no founda-  
2 tion. And I think that's the problem with Attachments B, C  
3 and D. --excuse me; A, B and C. The opportunity to cross-  
4 examine Mr. Bettinger as respects Attachment C was presented  
5 to the Intervenor and the opportunity, of course, on dis-  
6 covery to ask questions in terms of written interrogatories.  
7 They never did. And to take someone's minutes of a meeting  
8 and sponsor them into evidence for the truth of the facts  
9 stated therein is far worse than just allowing hearsay.  
10 There's just no foundation whatsoever for a document like  
11 this to be in evidence. I don't know whether it's accurate  
12 or not; that's not the point; the point is, there is no  
13 basis to determine whether or not it's accurate and the cir-  
14 cumstances under which it was taken, the meaning of the words,  
15 what the author intended, how sure the author is of the words  
16 he used, etc. etc.

17 Minutes of meetings-- I think you could take  
18 judicial notice of the fact that minutes of meetings are  
19 sometimes complete, sometimes incomplete, sometimes accurate,  
20 sometimes not accurate, depending on-- and this looks like a  
21 large meeting with a number of people talking. I have no  
22 idea, and that's why a foundation is required for something  
23 like that.

24 As to the conclusion, the legal argument aspect  
25 of the conclusions, I think far more important than the fact





WRB/wb5

1 that they could be argued to be legal arguments is the basic  
2 lack of expertise of this witness to make those conclusions.

3 I think the voir dire amply demonstrated that  
4 Mr. Hubbard does not have the expertise to be making such  
5 conclusions because he doesn't have the expertise to do any  
6 of the analyses or examine any of the analyses upon which  
7 one must base such a conclusion. Anybody can state a con-  
8 clusion, but you have to have the expertise upon which to  
9 arrive at that so that it will have some meaning to this  
10 Board. And I really take no position on the legal argument  
11 aspect of it. I simply don't feel there has been any showing  
12 that this witness has the expertise to draw such conclusions.

13 MRS. BOWERS: Mr. Kristovich?

14 MR. KRISTOVICH: Well, with reference to the  
15 statements on pages 4-3 and 4-4 down to the beginning of the  
16 last paragraph on 4-4, I would merely like to reiterate that  
17 the Appeals Board in Indian Point Units 2 and 3 said that  
18 witnesses can give opinions whether certain regulations are  
19 met, and that Mr. Hubbard's professional training and back-  
20 ground allows him to make the statements he made in these  
21 pages.

22 Turning to page 4-5; Staff has moved to strike  
23 testimony beginning the fifth line down on that page, the  
24 sentence beginning "In past Staff practices, for other  
25 recent West Coast sites the SSE and OBE values of ground

7.120.



WRB/wb6

1 acceleration were selected as follows:" and then there's  
2 a recitation of three sites with the applicable SSE and OSE  
3 citations.

4 I would merely like to recall that a similar  
5 recitation was in Mr. Hoch's testimony. At that time I made  
6 a motion to strike the similar testimony. This Board denied  
7 that motion to strike and allowed the testimony in. The  
8 circumstances are exactly the same. --well, not exactly the  
9 same: there's actually more basis for this testimony.

10 Mr. Hoch couldn't answer where he got the  
11 figures he used. Mr. Hubbard has testified this morning that  
12 he got those figures from going to the SERs for those plants,  
13 from a call to Sandra Wastler of the NRC. And, if anything,  
14 there's more of a basis for our figures than the figures of  
15 Mr. Hoch which were allowed to stay in.

16 There has also been a motion to strike the next  
17 paragraph beginning "The Applicant in the April 11th, 1978  
18 letter." I'm really not sure of the basis for this motion to  
19 strike. Mr. Hubbard is merely stating an historical fact  
20 and he is referring to a letter in the Appendix to the Hogri  
21 Report. Witnesses for the Applicant were allowed to have  
22 historical statements in their testimony as background. This  
23 is merely what this statement is.

24 MR. TOURTELLOTT: Mrs. Bowers, I realize that I  
25 went through all this stuff fairly quickly. If there is some



WRB/wb7

1 question about what the basis for my objection was, I'd be  
2 happy to answer any questions about that.

3 The reason I say that, Mr. Kristovich said he  
4 wasn't certain what the basis for my objection was. And I can  
5 help refresh his recollection if he wants.

6 MRS. BOWERS: Well my notes show the basis was  
7 "April 11th letter not fully identified. Not relevant or  
8 material."

9 MR. TOURTELLOTT: That's it. Correct.

10 MR. KRISTOVICH: Well, I don't know if it's a  
11 proper basis if the letter is not fully identified. It seems  
12 on cross-examination counsel could further ascertain what  
13 letter is being referred to. I will direct his attention  
14 to the Appendix to the Hosgri Report where the letter can be  
15 found.

16 As for relevancy, as I said before, it's merely  
17 stating an historical fact and putting the testimony in  
18 context, as Applicant's witnesses were allowed to do in their  
19 testimony.

20 With regard to Section 3.2, Design significance  
21 of OBE, Staff argues that it is legal argument and outside  
22 the expertise of Mr. Hubbard. Well, similarly, with all  
23 Staff's contentions that certain statements are legal argu-  
24 ment, I would only refer back to Indian Point Units 2 and 3,  
25 that it is not improper for a witness to give his opinion as



1 to whether certain regulations are met.

2 As for being outside of the expertise of this  
3 witness, well, with direct reference to the first full para-  
4 graph on page 4-6, the first full paragraph under the indented  
5 sentences, I believe Staff stated that this was a legal con-  
6 clusion with no support in the facts. To my recollection,  
7 last week there was testimony regarding piping, and a witness  
8 said in some cases the OBE was controlling. This statement  
9 is also based on Attachment C and Mr. Lindblad's and other  
10 statements in that attachment. And I will address that  
11 attachment when I come to it.

12 Turning now to page 4-8, the Staff moves to  
13 strike the paragraph at the bottom of that page beginning  
14 "Further, the OBE value," and that paragraph continues on  
15 to the next page, by saying that is outside Mr. Hubbard's  
16 expertise. As part of the quality assurance program for  
17 General Electric, Mr. Hubbard did similar work. These state-  
18 ments are within his expertise.

19 On page 4-9, the section entitled "3.3. Vertical  
20 acceleration values underestimated," the Staff states that  
21 this is outside the area of the expertise of the witnesses  
22 because he does not know how to calculate loads, and therefore  
23 it is impossible to make the statements he is making here.

24 I would merely respond that these statements are  
25 based on Attachment B which I will address shortly.





WRB/wb9

1 Mr. Hubbard's statements here are statements of fact. They  
2 don't require any tremendous calculations. I think by  
3 definition what he says is true, and the figures in Attach-  
4 ment B will speak for themselves.

5 Turning now to page 4-10, Section 3.4, "Post-OBE  
6 inspection," a motion to strike was made regarding the sen-  
7 tence beginning on the sixth line from the bottom of the  
8 page, which begins "Determination of internal equipment  
9 damage," and the basis for that motion is it's outside the  
10 expertise of the witness. At General Electric where Mr.  
11 Hubbard worked he had responsibility for deciding whether  
12 equipment put on shaker table tests could still be shipped  
13 to customers for use. And his work in the Quality Assurance  
14 program qualifies him to make this type of statement.

15 The Staff then moved to strike the following  
16 sentence, the sentences following that statement as being  
17 legal argument. I would merely refer the Board back to the  
18 previous Indian Point Units 2 and 3 citation. Applicant said  
19 that the statement was not competent testimony because  
20 TAB-B-50 and TAP-B-49 were not in evidence. It seems to me  
21 that the FSAR -- in the FSAR there are thousands of citations  
22 to various documents. Those documents are not in evidence.  
23 I don't see how this differs from that situation.

24 Still on page 4-11, beginning half way down the  
25 page, the sentence beginning "Clearly absent demonstration of



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WRB/wb10

1 an acceptable post-OBE inspection procedure," the motion was  
2 made to strike because it was a legal conclusion. It seems  
3 to me really it's a factual conclusion: this is Mr. Hubbard's  
4 opinion, it's not a legal conclusion. And that is an improper  
5 basis for strike this statement.

6 MR. NORTON: Excuse me, Mrs. Ewers. I believe  
7 there was also an objection that that sentence -- that the  
8 witness had demonstrated no expertise in that area, in  
9 addition to the legal conclusion. At least that's what my  
10 notes indicate.

11 MR. TOURTELLOTT: That's correct.

12 MR. KRISTOVICH: In response to that I would  
13 merely state that Mr. Hubbard's professional training and  
14 experience is adequate background for making this statement.

15 End 1E.  
16  
17  
18  
19  
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1F WRB/agbl

Turning now to Section 3.5, "Difficult to Upgrade Design for Increased OBE," a motion to strike this section was made on the grounds that it was immaterial, outside of Mr. Hubbard's expertise, not competent because -- well, that Attachment C upon which these statements are based, is not competent.

7.250

In response to that, I would say that these statements are based on Attachment C. Attachment C is a document obtained by Intervenor on discovery of PG&E papers. I don't believe the authenticity of that document is in question.

If Intervenor have -- Pardon me, if Applicant has problems with that document, if their position has changed from the statements made in that document, they have ample opportunity to put Mr. Bettinger, who signed that document, on the stand on rebuttal. They have opportunity to cross-examine Mr. Hubbard on what is stated in that document.

It seems that the only basis to object to that document being in is authenticity, and I haven't heard any convincing evidence that that isn't an authentic document and that we didn't get it from PG&E during discovery and it should be left in. And therefore, the statements in 3.5 should be left in because they're based on that attachment.

With regard to the conclusions on Page 4-12 and 4-13, I won't go through it sentence-by-sentence but -- well, for the first two sentences, maybe I will, since there are



WRB/agb2

only four sentences in the section.

The Staff has moved to strike the first two sentences because they're legal conclusions. In response to that, I would merely cite to Indian Point Units 2 and 3 and the right witnesses have to give opinions on whether certain regulations are met, as Applicant's witnesses did in their written testimony.

The first sentence on Page 4-13, where Mr. Hubbard states:

"However, where a nuclear plant is located in an area of high seismicity, as in the case of the Diablo Canyon units, an exemption to the regulatory requirements is not justified." -- in citing a Gawthrop paper for high seismicity.

And in addition, I suppose, as a basis for a motion to strike that this is a legal conclusion, the Staff suggests that Mr. Hubbard cannot rely on Gawthrop for this citation because he's not a seismologist.

It seems to me that witnesses can rely on expert opinions of other witnesses and, therefore, it's clearly proper for Mr. Hubbard to rely on Mr. Gawthrop in this case.

With regard to the last sentence, the motion to strike is based on the grounds that this sentence states a legal conclusion.

It seems to me Mr. Hubbard is merely stating facts





WRB/agb3

1 in this sentence and, therefore, I don't think that saying  
2 this is a legal conclusion is a proper basis for striking this  
3 sentence.

4 Moving to Attachment B and Attachment C, these  
5 are both documents obtained on discovery of PG&E papers. I  
6 haven't heard anything suggesting that these are not authentic  
7 documents, that these are not really PG&E documents. If  
8 Applicant and Staff wish to cross-examine on their contents,  
9 they may. If the position of Applicant has changed with  
10 regard to these documents, they can put on rebuttal testimony.  
11 But they are authentic documents, Mr. Hubbard can testify  
12 to that, and on that basis they should be allowed to stay in.

13 With regard to Attachment B, the table speaks  
14 for itself. Mr. Hubbard can add and subtract and do those  
15 types of calculations with these figures which he needs to  
16 do as background for the statements in his testimony.

17 And if Applicant or Staff wishes to show that he  
18 cannot use these tables to back up the statements he made,  
19 the limited statements he made in his testimony, they have an  
20 opportunity to do that on cross-examination.

21 That concludes what I have to say at this time.

22 MRS. BOWERS: What about Attachment C? I know  
23 you touched on it earlier.

24 MR. KRISTOVICH: I thought my statements just  
25 now with regard to Attachment B and its authenticity also



WRE/agb4

1 applied to Attachment C.

2 Applicant keeps referring to the fact that we  
3 didn't cross-examine Mr. Bettinger on this document. I don't  
4 know any rule of evidence that states we have to cross-examine  
5 Mr. Bettinger on this document. Applicant has the opportunity  
6 to put Mr. Bettinger on the stand in rebuttal, if they wish  
7 to disagree with the statements in this document which is  
8 signed by Mr. Bettinger, and they have the right to cross-  
9 examine Mr. Hubbard on the use of this document. But Mr.  
10 Hubbard will testify that this is an authentic document  
11 obtained from PG&E on discovery.

12 MR. NORTON: Excuse me, Mrs. Bowers. May we  
13 reply before Mr. Tourtellotte, so that MR. Tourtellotte gets  
14 his last opportunity?

15 MRS. BOWERS: Go ahead.

16 MR. NORTON: I just have a few things.

17 First of all, indeed, either Mr. Kristovich --  
18 I believe it was Mr. Kristovich, moved to strike Mr. Hoch's  
19 use of four or five plants showing where an OBE less than  
20 one-half had been used. The basis for that motion to strike,  
21 however, was because the numbers weren't available.

22 He incorrectly stated that he moved to strike  
23 the numbers, but I believe he moved to strike the statement  
24 regarding those plants because the numbers were not available.

25 Now he did not object on the basis of relevancy

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WRB/agb5

1 or materiality. Had he done that, I would suggest that the  
2 Board maybe should have struck the material as not relevant  
3 to these proceedings. The question before this Board is  
4 whether or not Diablo Canyon is safe to have an operating  
5 license issued.

6 But because a piece of testimony got in because  
7 an attorney didn't object to it in an earlier stage or in  
8 another case or at another time doesn't mean that you allow  
9 improper evidence in when a proper objection is made to that  
10 evidence.

11 The old "two wrongs don't make a right" is cer-  
12 tainly applicable in terms of evidence. Because a lawyer  
13 fails to make a proper objection in one instance doesn't mean  
14 that he can't later make a proper objection to another piece  
15 of evidence and have it excluded.

16 And no objection was made by Interveners when  
17 Mr. Hoch testified regarding the other plants as to relevancy  
18 or materiality and that's what the objection to these plants  
19 is in this case.

20 We keep hearing the fact that Indian Point said  
21 an expert can say whether or not regulations have been com-  
22 plied with. Well, there's no question about that. Obviously  
23 an engineer can say whether or not some regulation has been  
24 complied with in an engineering sense. The point is, however,  
25 that if he doesn't have the professional qualifications to make



WRB/agb6

1 that judgment, it then becomes a legal argument.

2 I don't have the professional qualifications to  
3 make a determination as to whether, from a mechanical or  
4 structural engineering standpoint, 10 CFR Part 50 and Part 100  
5 have been complied with, but as a lawyer, I can take the  
6 expert testimony of my witnesses and cite that as factual  
7 evidence and then make the argument.

8 What we have here is a person who does not have  
9 the expertise to make that judgment making the argument.  
10 Unfortunately, he's not a lawyer, he is putatively an expert  
11 witnesses.

12 As to the attachments, I'm afraid I don't under-  
13 stand at all where Mr. Kristovich is arguing when he says  
14 well they are authentic. I assume they are authentic,  
15 they're copies, I assume, of originals. That isn't the basis  
16 of the objection, that they're not authentic. The basis  
17 of the objection is that there is absolutely no foundation  
18 for these documents, and I am not obligated to lay a founda-  
19 tion for Intervenor's documents, that's Intervenor's job.  
20 They have to lay the foundation, and they can do that in a  
21 number of ways. They could have done it by cross-examining  
22 Mr. Bettinger, that's one way they could have laid a  
23 foundation for Attachment C. They could have done it by  
24 having a request for addition. They could have done it by  
25 asking interrogatories.





WRB/agb7

1 They didn't do that. And now they're saying that  
2 I have the opportunity to lay the foundation for them. I'm  
3 not going to lay the foundation for them, it's not my job,  
4 it's their job. And there has been absolutely no foundation  
5 for those documents and under no circumstances should they  
6 be put in evidence.

7 Finally, he talks about the tables. Well, he says,  
8 Mr. Hubbard can add and subtract. So can I. Unfortunately,  
9 I don't have the expertise, and neither does Mr. Hubbard, to  
10 make a meaningful use of those tables, to go through an  
11 analysis and show X, Y or Z. Neither one of us has the  
12 ability to do that, although we certainly can add and subtract,  
13 so the fact he can do that is not a basis for allowing those  
14 documents into evidence.

15 That's really all I have.

16 MR. KRISTOVICH: May I respond to that, Mrs.  
17 Bowers?

18 MRS. BOWERS: Well, we want to chop this off as  
19 soon as we can but go ahead briefly.

20 MR. KRISTOVICH: Well, with regard to Mr. Hoch's  
21 testimony, I don't have a copy of the transcript on that day  
22 here. I believe I made a motion to strike based on grounds  
23 of relevancy, I can't remember for sure. I think I did.  
24 Like I said, I don't have the transcript here.

25 I would merely like to comment also that it's



WRB/agb8

1 curious that the Staff at that time, if I remember correctly,  
2 didn't make a motion to strike on relevancy and now in this  
3 case they have. They can choose to make motions to strike  
4 when they want to, I just find it curious that in one case  
5 they would and in one case they wouldn't, if they are exactly  
6 the same situation.

7 With regard to the tables in Attachment B,  
8 Mr. Hubbard refers to these tables as the basis for making  
9 specific statements. He uses these tables for a limited  
10 purpose, and I believe it is clear that he has qualifications  
11 to use these tables for the limited purposes for which he  
12 makes the statements.

13 MR. NORTON: Excuse me, Mrs. Bowers. We have to  
14 terminate this someplace. Mr. Kristovich is not making new  
15 argument, he's repeating old argument. And you know, it's  
16 not a question of who has the last word, it's who has the  
17 correct word.

18 MRS. BOWERS: We expected you to be limiting it  
19 to new words.

20 MR. KRISTOVICH: That's all I have to say.

21 MRS. BOWERS: Mr. Tourtelotte, you're the movant.  
22 And we do ask you not to repeat prior argument.

23 MR. TOURTELLOTTE: I recall one time when I was  
24 in a case and I made the statement I would briefly recapitulate  
25 and it took me an hour and 45 minutes and the judge just about



WRB/agb9

1 threw me out of the courtroom.

2 I'll try and be brief.

3 I do feel like, briefly, the reference to Indian  
4 Point Number 3 by Mr. Kristovich is correct, experts can  
5 state opinions as to whether or not the Regs. are met.

6 However, as I indicated earlier, the question is  
7 whether or not the person who is making the statement is  
8 an expert in the first place, and whether or not the Regs.  
9 are met is not a question of whether the Regs. are met  
10 in a legal sense but whether or not the standards, whether the  
11 technical standards established in the regulations are being  
12 met, and that requires a degree of expertise. It also re-  
13 quires a degree of technical analysis.

14 And absent the technical analysis and absent  
15 the expertise, then a witness -- and that's all you have left,  
16 not an expert witness, but a witness -- cannot state opinions  
17 about what the regulations do or do not mean.

18 Let's see if I can eliminate some of this.

19 (Pause.)

20 Mr. Kristovich indicated that Attachment B speaks  
21 for itself, and I find that a rather unique way to defend  
22 an introduction of a document. If indeed documents can speak  
23 for themselves, then we're wasting a lot of time being here.  
24 We can all send our documents in to a central control center  
25 and they can all speak for themselves and perhaps they will



WRB/agblc

engage in the argument that we're engaging in, and we can all get into another business.

(Laughter.)

Attachment C, the question -- Mr. Kristovich stated that authenticity is not in question. And that is not the point. The point is that we have no way of determining, at this point in time, whether the purported facts contained therein are true or not. We don't know whether it's the truth of the matter asserted or not, we don't know whether it's part of the story or we don't know whether it's all of the story. And Attachment C simply has no evidentiary value.

endLF

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1 Mr. Kristovich also made the statement that  
2 witnesses can rely upon other expert witnesses in citing  
3 Gawthrop, and that's also a rather peculiar situation,  
4 because all we would need then is a collater of expert  
5 opinion for the purposes of coming up here and rendering  
6 advice to the Board.

7 The Board does not need a collater of expert  
8 opinion. The Board can get its own staff members to go out  
9 and gather documents together, if that's all that's important.

10 What we need is the keen analysis of people who  
11 have expertise in the area that they're testifying about, and  
12 not someone who simply is a form of librarian who draws  
13 various pieces of information together for the purposes of  
14 presenting them.

15 This witness is not a seismologist, okay? So  
16 he's citing Mr. Gawthrop. He can't possibly know since he's  
17 not a seismologist whether Mr. Gawthrop's article is worth  
18 citing or not. He doesn't have the background in the  
19 discipline necessary to evaluate the importance of Mr.  
20 Gawthrop's article. If he doesn't have that, that background,  
21 then the simple presentation of a fact excerpted from that  
22 particular document is of no evidentiary value in this case.

23 Finally, I would like to say that we're talking  
24 about Contention number 4, and we're talking about operating  
25 basic earthquake. Essentially what I have done is made a



1 motion to strike, which involves striking virtually every-  
2 thing that is stated therein. And I have tried, on almost  
3 a sentence-by-sentence basis, to tell this Board why I thought  
4 all of that information should be stricken.

5 However, I would invite the Board's attention  
6 to the fact that this is operating basis earthquake.

7 I would also invite the Board's attention to the  
8 fact that the voir dire early this morning clearly indicated  
9 that he did not know how -- Mr. Hubbard did not know how to  
10 calculate loads. He didn't know fundamental load formulas.  
11 He didn't know anything about structural and mechanical  
12 engineering that one must know in a fundamental way.

13 Forget about the more esoteric applications of  
14 mechanical and structural engineering. He didn't even know  
15 the most fundamental rules that apply, or the fundamental  
16 formulas that are applied, in those disciplines.

17 Consequently, anything that he has to say about  
18 the operating basis earthquake, whether it's a legal argument  
19 or whether it's not a legal argument, he simply doesn't  
20 possess the expertise to testify about it.

21 Mr. Kristovich can talk until he's blue in the  
22 face about the fact that he used to work for GE, and he used  
23 to be in the QA program. But he cannot overcome the fact  
24 that this morning, right now, Mr. Hubbard is incapable of  
25 answering the most fundamental questions about the disciplines



wel 3

1 necessary to evaluate what an operating basis earthquake  
2 should be or should not be.

3 MRS. BOWERS: We have a logistics problem. I  
4 don't know that we can carefully consider this out on the  
5 windy bluff. Since most of you welcome the opportunity to  
6 leave the room, maybe we could encourage you to do that now.  
7 And, of course, the lobby is open and these other rooms are  
8 open around here.

9 But we're going to have to go through this  
10 carefully, so -- sorry about this --

11 MR. NORTON: Are you going to run up the flag  
12 to let us know when to come back?

13 (Recess.)

14 MRS. BOWERS: We'd like to get started.

15 I'll run down through the whole thing, and there  
16 may be a problem with my notes where we might have to have a  
17 Board discussion on part of it, but I don't think so.

18 Beginning on page 4-3, under III. DISCUSSION OF  
19 ISSUES, the motion asks that that section down to the  
20 beginning of the last paragraph on page 4-4 be stricken on  
21 the basis that it was a legal argument.

22 We think it's reciting the regulations, and to  
23 some extent paraphrasing them. And we don't see an argument  
24 there. So it will not be stricken.

25 Now, the Staff didn't ask that the last paragraph,



1 nor did the Applicant, on page 4-4 be stricken.

2 Beginning on page 4-5, the fifth line down, "In  
3 past Staff practices for other recent West Coast sites," we  
4 were asked to strike in that it wasn't relevant.

5 We were also asked to strike the next paragraph  
6 referring to the April 11 letter as not relevant or material.

7 We are going to leave that information in the  
8 record. We think on cross-examination and on direct more  
9 information can be brought out. But we do think that there  
10 is sufficient relevancy not to strike.

11 Following 3.2, Design Significance of OBE, again  
12 we're faced with striking what is the quotation of the Regs.  
13 And so we won't strike that. But when you get over on the  
14 next page, 4-6, the first paragraph under the quote will be  
15 stricken as a conclusion that this witness does not have the  
16 expertise to support.

17 Now, the rest of that -- and it is, in effect, to  
18 some extent a legal conclusion -- the rest of that page was  
19 withdrawn by the witness, until you get over to page 4-8.

20 Beginning the last paragraph there, "Further,  
21 the OBE value is also a key parameter in the seismic design...  
22 that will be stricken, since it's an opinion that should be  
23 based on expertise. And this witness has not been qualified  
24 as having expertise dealing with these matters.

25 But beginning with, "For example, if testing is





wel 5

1 to be utilized for design verification of safety-related  
2 electrical equipment,..." we will not strike that sentence,  
3 or the following quote. And we are assuming that the last  
4 sentence, dealing with the seismic test program at Wyle  
5 Laboratories, is also related to electrical equipment. So  
6 we won't strike that. But we expect some testimony on that.

7 Now, 3.3, Vertical Acceleration Values Under-  
8 estimated, the first sentence we think is a conclusion and  
9 expertise has not been established. So it will be stricken.

10 As far as the rest of that paragraph, on the  
11 next page, the second line, "Assuming that the Applicant  
12 utilized the same procedure..." we will not strike the rest  
13 of that paragraph -- no -- wait a minute. 3.3, Vertical  
14 Acceleration, we agreed to strike the first sentence, right?

15 MR. BRIGHT: Right.

16 MRS. BOWERS: We agreed to leave in, beginning  
17 "For example, as shown in Attachment S..." we agreed to leave  
18 in the next sentence, and then the last sentence on the page  
19 begins, "The result was that in the Hosgri reanalysis the  
20 vertical loads were a factor of two (2) to six (6)..." we  
21 agreed to leave in, correct?

22 MR. BRIGHT: Yes.

23 MRS. BOWERS: But the next sentence, "Assuming  
24 that the Applicant utilized the same procedure..." there's  
25 no data to indicate the combination of vertical and horizontal



1 loads is significantly understated for the OBE. Didn't we  
2 agree that that would be stricken?

3 MR. BRIGHT: Yes.

4 MRS. BOWERS: Yes. That's the last sentence in  
5 3.3.

6 Now, going to the next section --

7 MR. TOURTELLOTT: Excuse me. What was the  
8 basis for striking that?

9 MRS. BOWERS: As a conclusion for which expertise  
10 has not been established.

11 And then 3.4, Post-OBE Inspection, we will leave  
12 in -- well, the quoting of the regulation and then the  
13 paraphrasing, down to the words in about the sixth line,  
14 "Determination of internal equipment damage..." We think that  
15 is a conclusion that there's no expertise for, and so it  
16 will be stricken.

17 Going to the next sentence, "The requirements  
18 for this post-OBE inspection are stated in Section (ump-ee-ump)  
19 of the Standard Review Plan," and then there's reference to  
20 the Task Action Plan, we will not strike that. We're putting  
21 this in the same category as -- what was the name of that  
22 other thing -- Fugl? Fugro? -- the report that we heard a  
23 lot about that was never introduced? And we think this is  
24 simply in the same area of reciting documents. In order for  
25 this to have weight or meaning there would have to be a



further explanation -- down to the sentence beginning.

"Clearly, absent demonstration of an acceptable post-OBE inspection procedure..." that is out based on the fact that there isn't the expertise.

Now, going to 3.5, Difficult to Upgrade Design for Increased OBE, that entire section is out. There's been no foundation for the documents that were introduced, and certainly there could have been some questions asked of some of the prior witnesses.

Now, when it comes to IV, CONCLUSION, the first sentence will not be stricken, but it will be modified.

"For the foregoing reasons, the Staff and Applicant selection of an OBE corresponding to a horizontal ground acceleration of 0.20g contravenes the express language of Appendix A, V.(a)(2) to 10 CFR Part 100."

The rest of the paragraph is out as conclusions without the necessary expertise.

On the attachments, Attachments C and B are out as lacking foundation.

Were you able to follow that?

MR. KRISTOVICH: I was just unclear about the modification of the first sentence in the conclusion, what you added.

MR. NORTON: I have a question, also.

MRS. BOWERS: We're identifying Appendix A,



V. (a)(2).

MR. KRISTOVICH: Thank you.

MR. NORTON: Mrs. Bowers, did you strike Attachments B and C?

MRS. BOWERS: Yes. No foundation.

MR. NORTON: Well, you left a sentence in on 4-9 which says, "For example, as shown in Attachment B..." and you've struck Attachment B. I'm not sure how you can strike Attachment B and not strike that sentence. Or just strike it through, "For example, as shown in Attachment B for..." and strike that portion of it and leave in, "the containment..." that's one possible way you could do it.

But I don't see how you could leave the sentence in without the Table.

MRS. BOWERS: You're suggesting that we just simply drop the phrase, "...as shown in Attachment B?"

MR. NORTON: Yes..

MRS. BOWERS: So it would read, "For example, for the containment exterior structure..." and so on?

MR. NORTON: That isn't what I suggested, but that's better than what I suggested.

MRS. BOWERS: This was an oversight. We meant to drop the reference to Attachment B.

MR. KRISTOVICH: So does that mean you're striking the words, "As shown in Attachment B?"





1 MRS. BOWERS: Yes.

2 MR. KRISTOVICH: Okay.

3 MRS. BOWERS: Now, let me check and see how you  
4 want to proceed. We've had the motion to strike in specifics  
5 of the part of Joint Intervenors 65 dealing with Contention  
6 4, but we have not had that same information on Contentions  
7 5, 6 and 7.

8 MR. NORTON: Mrs. Bowers, perhaps we could  
9 proceed by doing the summary of Contention 4 and the cross-  
10 examination of what remains of that testimony before  
11 proceeding to Contentions 5, 6 and 7, and, you know, disposing  
12 of that contention first and then moving on to the others.

13 I just offer that as a suggestion, because  
14 certainly that testimony is all fresh in our minds at this  
15 point in time.

16 MRS. BOWERS: Mr. Kristovich?

17 MR. KRISTOVICH: That sounds fine.

18 MRS. BOWERS: That's fine with the Board. We  
19 were hoping, if there was a motion to strike any part of  
20 Contentions 5, 6 and 7, that we might have that information  
21 before we adjourn this evening.

22 MR. NORTON: Well, there is, and I think the  
23 cross-examination on Contention 4 will be very short, of  
24 the testimony that is left.

25 MRS. BOWERS: Mr. Tourtellotte, I don't know



wel 10

1 whether we're interrupting your motion or not. Do you have  
2 any objection to proceeding with Contention 4?

3 MR. TOURTELLOTTE: You mean cross on 4?

4 MRS. BOWERS: Yes. Well, first there would be  
5 the summary, and then perhaps further direct.

6 MR. TOURTELLOTTE: If he wants to summarize 4,  
7 do you mean?

8 MRS. BOWERS: That's what was suggested.

9 MR. TOURTELLOTTE: Okay. I don't have any  
10 problem with that, if he wants to summarize 4 and then cross  
11 on it. No problem.

12 I did have -- I still have some difficulty with  
13 that discussion at the bottom of 4-9, because I think all  
14 of that information that is there is information which comes  
15 from Attachment B, including, "The result was that in the  
16 Hosgri reanalysis, the Hosgri vertical loads were a factor  
17 of two (2) to six (6) greater."

18 I think that all comes from Attachment B. And  
19 it's difficult to know how Attachment B can be stricken  
20 without striking the rest of it.

21 MR. NORTON: Well, Mrs. Bowers, I think the same  
22 thing Mr. Tourtellotte does, and I was going to ask Mr.  
23 Hubbard if that were the case and if it were, I was going to  
24 move to strike that based on that. But I don't know whether  
25 that's the case or not, and that hasn't been established



1 yet. I assume that also is the case, but it may not be.

2 MR. TOURTELLOTT: Well, we can go ahead then.

3 Why don't we do that? We still have the right to make  
4 a motion to strike after the cross-examination. We could  
5 make it again. So I guess we should go ahead with cross.

6 MRS. BOWERS: Well, you're reserving the right, is  
7 that correct?

8 MR. TOURTELLOTT: Yes, you reserve the right,  
9 whether it's actually an inherent right, after cross-examina-  
10 tion, to make a motion to strike.

11 MR. NORTON: Well, that is unless you stipulate  
12 it into evidence.

13 (Laughter.)

14 MR. TOURTELLOTT: Right.

15 Well, actually, what we're talking about is that  
16 if some new information is developed during the cross-examina-  
17 tion which was not previously known, and that new information  
18 provides an adequate basis for a motion to strike, a motion  
19 to strike is in order.

20 The case that I'm citing is Vermont Yankee,  
21 ALAB-179.

22 Why don't we go ahead with cross?

23 MRS. BOWERS: Well, the summary. Mr. Kristovich,  
24 we assume you understand that the summary would relate to  
25 those matters that were accepted?



1 MR. KRISTOVICH: Yes.

2 I think we can just proceed with cross-examina-  
3 tion. We've been talking about this all day so far.

4 Mrs. Bowers, would it be appropriate to offer  
5 it into evidence at this time? Well, I guess since the  
6 subsequent testimony is all part of Joint Intervenor's  
7 Exhibit Number 65 perhaps I should wait until we go through  
8 the second half of the testimony.

9 MRS. BOWERS: The entire exhibit, yes.

10 MR. NORTON: We are only cross-examining on the  
11 testimony that is being proposed, and only that portion of  
12 which has not been struck, but you can cross-examine on  
13 proposed exhibits whether they're in evidence or not. There's  
14 no reason you can't.

15 MR. KRISTOVICH: Would it be easier if we broke  
16 up the two pieces of testimony and gave them separate  
17 exhibit numbers?

18 MRS. BOWERS: I don't think it really matters,  
19 but I suspect that the Reporter has already handled it as  
20 one exhibit.

21 MR. KRISTOVICH: Okay.

22 MRS. BOWERS: Mr. Norton, since it's been  
23 several weeks since we had the Intervenor's witness, am I  
24 recalling correctly that you think you follow the Staff?

25 MR. NORTON: No, I think I went first with





wel 13

1 Intervenor's witnesses, and the Staff went after I did.

2 MRS. BOWERS: Fine. Well, why don't you go  
3 ahead, then?

4 CROSS-EXAMINATION

5 BY MR. NORTON:

6 Q Mr. Hubbard, directing your attention to 4-5 of  
7 the testimony, you are aware of other nuclear power plants  
8 which have been granted construction permits and/or operating  
9 licenses where the OBE is less than one-half of the SSE, is  
10 that not the case?

11 A The first part has to do with operating license.  
12 I'm not aware. It's a multi-part question. The part about  
13 operating license I'm not aware of any plants that are in  
14 the operating license that have OBEs less than half of SSEs.

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Q All right.

But you are aware of plants, then, at least in your mind, that have been granted construction permits where the OBE is less than one-half of the SSE?

A I am not sure that the construction permits have been issued.

Q You have no basis, then, to controvert the testimony of Mr. Hoch to that effect? You haven't made a review of all of those plants and come to an independent decision that what he said was not true, is that correct?

MR. KRISTOVICH: Could we have a specific reference to which part of Mr. Hoch's testimony you're referring to?

MR. NORTON: Well, we discussed that earlier this morning. And I was obviously referring to the testimony regarding Byron and Braidwood, and there was some discussion as to whether that was one or two facilities, and so on. Those facilities that were listed in Mr. Hoch's testimony as having an OBE of less than one-half of the SSE.

THE WITNESS: I have data on those that was provided me by Sandra Wastler of the NRC on November 9, 1978.

BY MR. NORTON:

Q Yes.

And my question to you is:

Do you have any basis to dispute Mr. Hoch's



mpb2 1 testimony that the OBE is less than one-half of the SSE?

2 A I do not for Byron-Braidwood. I do not for  
3 Marble Hill. And I do not for Fipps Bend.

4 Q Well, Byron is one, Braidwood is one, Marble Hill  
5 is one, Fipps Bend is one.

6 A Yes.

7 Q Does that mean you do for Koshkenong and Clinton?

8 A For Koshkenong, I have no information --

9 Q Well, then, you don't have any that disputes  
10 what Mr. Hoch said.

11 A Well, the understanding I had was that that  
12 application had been dropped or resubmitted under another  
13 name, and that was no longer the proper name.

14 Q Okay.

15 How about Clinton?

16 A In Clinton, the information was provided to me  
17 that the OBE was greater than one-half of the SSE.

18 Q And where did you get that information?

19 A I obtained that from Sandra Westler of the NRC,  
20 but I did not include it in my direct testimony because it  
21 was in disagreement with what the Applicant had produced.  
22 And since -- you know, I informed her that this was a differ-  
23 ence, and she said, Well, that was the right number.

24 But I have not been to an SER or an SAR to check  
25 the numbers.



mpb3 1

Q Well, the numbers I have are .1 and .25.

2

Do you have any reason to dispute those other

3

than hearsay?

4

A No, I do not.

5

Q Okay.

6

Now directing your attention to 4-6, you have

7

this statement -- no, excuse me, I think that was struck.

8

You don't have it anymore. So let's move on.

9

Okay.

10

The bottom of 4-8, where it says "For example",

11

over to 4-9. You have IEEE Standard 344-1975.

12

Can you tell the Board whether or not that

13

standard is required under the regulations to be used for

14

Diablo Canyon?

15

A My understanding is that it's not required.

16

Q All right.

17

A However, in SER number 7, on page 371, there is

18

a statement that the Applicant committed, at the Staff's

19

request, to utilize 344-1975.

20

I could give you the exact --

21

Q In testing equipment?

22

A In testing equipment, yes.

23

Q Then you refer to:

24

"Thus, the value of the CBE utilized in

25

the seismic test program by the Applicant, such





mpb4

1 as for the tests at Wyle Laboratories, is of  
2 safety significance."

3 ARE you aware of what the OBE level was that was  
4 used in those tests?

5 A No, I am not.

6 Q Do you recall Mr. Young's testimony that it was  
7 either 50 or 60 percent of the SSE?

8 A Yes, I do.

9 Q All right.

10 So you do now have available to you information  
11 that indeed under those tests an OBE in excess of 50 percent  
12 -- equal to or in excess of 50 percent of the SSE was used,  
13 do you not?

14 A That was Mr. Young's testimony and I have no  
15 reason to dispute that.

16 Q All right.

17 So then this sentence disappears in terms of  
18 significance, doesn't it? It in fact does exactly -- the  
19 Applicant did exactly what you call for in this sentence, did  
20 he not?

21 A It surely appears so.

22 Q All right.

23 Getting down now to the part of the testimony  
24 that was discussed just prior to the beginning of cross-  
25 examination as to whether or not it should be struck, isn't



mpb5 1 it a fact that those sentences that were left in, which  
2 are the last six lines on page 4-9 and the first line and  
3 several words of the second line of the next page, were based  
4 upon your review of Attachment B to your testimony?

5 A The factors of two to six are based on my analysis  
6 of what was Attachment B. The rest of the conclusions are  
7 based on what is in SER Supplement 7.

8 Q Okay.

9 In other words, the first two sentences on page  
10 4-9 are based on SER Supp 7; that the sentence -- the remainder  
11 of the testimony that was not struck -- in other words, the  
12 last three sentences -- was based on Table B, is that correct?

13 A Probably, to be perfectly correct, the first  
14 sentence would have had most of its basis on Attachment B.  
15 The second sentence primarily on what's in the SER, and the  
16 third sentence primarily from what was Attachment B.

17 Q Okay.

18 Now moving on to page 4-10, the section of your  
19 testimony entitled Post-OBE Inspection, have you personally  
20 reviewed Pacific Gas and Electric Company's Diablo Canyon  
21 Inspection Plan, as testified to by Mr. Shiffer on, I believe,  
22 Friday?

23 A No, I have not. That was not provided during  
24 discovery.

25 Q Did you ever request it?



mpb6 1 A We received about 13,000 documents during discovery,  
2 and this was not one, to the best of my knowledge, that was  
3 included.

4 Q And you don't know whether you specifically request-  
5 ed that document or not, do you, or whether it was included  
6 in any category in which you did request documents?

7 A Our impression would be that in a broad interpreta-  
8 tion that it could have been included. But we could under-  
9 stand why it was left out.

10 We never specifically asked for it.

11 Q Okay.

12 And did you ever specifically ask the question  
13 in an interrogatory, request for information, et cetera, as  
14 to whether such a plan existed?

15 A To the best of my knowledge, we did not.

16 Q So not having reviewed it, do you feel that  
17 you can make the statement that you make, in primarily the  
18 last sentence of the testimony that's left on page 4-10, it  
19 says:

20 "In order to determine the capability  
21 of a plant to resume operation following an  
22 OBE, an adequate inspection of the plant and  
23 site area must be performed."

24 Not ever having reviewed the plan, I take it  
25 it would not be within your area of expertise to say that the



mpb7 1 plan was good, bad, or indifferent, is that correct?

2 A I believe not.

3 I had that dilemma at GE repeatedly because we  
4 would take production line equipment and put it on a shaker  
5 table and shake it for this sort of testing, and then we would  
6 hand -- they would come back into the manufacturing process  
7 and we'd have to fix the welds and redo the tests essentially  
8 that -- the sort of things that Mr. Shiffer mentioned. I  
9 mean, that was the type of program that we did before we then  
10 shipped it out to the plant as if it were new equipment.

11 And at that time we had a hard time really satis-  
12 fying ourselves that what we were shipping was really equi-  
13 valent to new equipment. And so my personal opinion is  
14 that it's that type of inspection to verify really that you  
15 have not degraded the equipment in some way that you can't  
16 detect, that that is indeed a problem and it's an inherent  
17 problem in trying to reinspect.

18 Q Well, that's right.

19 You testified on voir dire, I believe, that you  
20 -- no, you didn't testify, that was the lawyer, Mr. Kristovich,  
21 who testified in response that you are responsible for deter-  
22 mining whether or not that equipment should go back, or should  
23 be sent to the customer? Is that correct?

24 A Yes.

25 Q All right.





mpb8

1 So Mr. Kristovich's testimony in that regard was  
2 correct?

3 A That's correct.

4 Q All right.

5 Well, let me ask you this:

6 Did you ever make the determination that indeed,  
7 yes, the equipment tested should go to the customer?

8 A Yes, we did.

9 Q No, did you, Mr. Hubbard? I thought that was  
10 your responsibility.

11 Did you make that decision?

12 A Yes, I made that decision.

13 Q Okay.

14 So now you've made the decision in the past that  
15 equipment tested should go to the customer as new equipment  
16 when that was your job to make that decision. But now as a  
17 witness you're saying that someone who has a plan for test-  
18 ing that doesn't have the ability to do that, is that correct?

19 A I would say that at the time that was a very  
20 difficult decision to make, and in hindsight that I might not  
21 have made the same decision.

22 So based on my experience that while I made the  
23 decision a certain way at that time, I might make it different  
24 today.

25 Q Let's get over to TAP E-49.



mpb9 1 Do you have a copy of that?

2 A Yes, I do.

3 Q Could you tell me where in there it states that  
4 -- how it's relevant to Diablo Canyon, where in there it talks  
5 about this OBE situation, where TAP B-49 addresses the OBE  
6 situation? Where the words "OBE" or "earthquake analysis" or  
7 "earthquake inspection" or "inspection for earthquake damage",  
8 or any of that is contained in that?

9 A TAP B-49 addresses two issues. The title is  
10 "In-Service Inspection Criteria and Corrosion Prevention  
11 Criteria for Containment". And the way I have it, it was  
12 part of the NRC's testimony on generic issues on Black Fox.

13 Q Could you answer my question, please?

14 A The answer to your question would be it doesn't  
15 specifically talk about OBE --

16 Q Does it talk about earthquakes at all, or stresses  
17 as a result of earthquakes or inspection of equipment as a  
18 result of earthquakes? Does it in any way relate to earth-  
19 quakes?

20 A It talks about in-service inspection --

21 Q Excuse me.

22 Could you answer my question?

23 A The answer to the question is it does not talk  
24 about earthquakes specifically. But a full answer, then, would  
25 say that it has to do with in-service inspection, and that's



mpb10 1 what we're talking about in post-OBE inspection, the ability  
2 to go in and look at something following an event.

3 So in spite of the fact it doesn't talk about  
4 earthquakes particularly, it is relevant to inspection follow-  
5 ing some sort of an event.

6 Q And your statement goes on to say that:

7 "...detailed and comprehensive criteria  
8 need to be developed for performing in-service  
9 inspections of all types of containment."

10 But you haven't reviewed the plan that the  
11 Staff and the Applicant -- or the Applicant has prepared  
12 that the Staff has reviewed regarding inspection of Diablo  
13 Canyon, is that correct?

14 A Inspection of the containment?

15 Q Inspection as referred to by Mr. Shiffer.

16 A I have not.

17 Q All right.

18 MR. NORTON: Just a moment.

19 (Pause.)

20 MR. NORTON: Excuse me, Mrs. Bowers.

21 What was left in at the conclusion of what was  
22 struck? I think --

23 MRS. BOWERS: The first sentence was left in as  
24 limited by inserting after Appendix A, a small a and followed  
25 by a small b2 in print.



mpbil 1

MR. NORTON: Right.

2

And the rest of it was struck?

3

MRS. BOWERS: Yes, the rest of the conclusion.

4

MR. NORTON: Okay. That's what I thought.

5

All right. I have no further cross.

6

MRS. BOWERS: Mr. Tourtelotte?

7

BY MR. TOURTELLOTTE:

8

Q Mr. Hubbard, I invite your attention to the

9

bottom of page 4-4, the last full paragraph right below the

10

quoted material, where it says:

11

"In addition to horizontal and vertical

12

ground acceleration, the other factors which

13

are required to define the OBS include the

14

corresponding values of velocity, displacement,

15

and duration."

16

Mr. Krystovich stated that you got that from the

17

regulations. I'm sure you'll be glad to give us a citation

18

for that.

19

Could you give us a citation?

20

A Yes, Mr. Tourtelotte.

21

In Section 6A2, under Operating Basic Earthquake--

22

MR. NORTON: Excuse me.

23

Could the witness give us a page?

24

THE WITNESS: Page 501 of the 1978.

25

MR. NORTON: Thank you.





mpbl2 1

And now could we have the cite again?

2

THE WITNESS: On the right-hand corner at the

3

bottom it says:

4

"The operating basis earthquake shall

5

be defined by response spectra."

6

Then, if you turn back to page 496 for the

7

definition of "response spectra", it says:

8

"A response spectra is a plot of the

9

maximum responses, acceleration, velocity, or

10

displacement."

11

And then it goes on. So that's where accelera-

12

tion, velocity, or displacement came from. And the matter

13

of duration, if you go back to page 502, the first part,

14

number two, having to do with operating basis earthquake,

15

the last sentence says:

16

"The analysis for TAP shall take into

17

account soil-structure interaction effects and

18

the expected duration of vibratory motion."

19

So that's where the four terms came from in the regulations, Mr. Tourtellotte.

20

21

MR. TOURTELLOTTE: I have no other questions.

22

MRS. BOWERS: Do you have further redirect, Mr.

23

Kristovich?

24

MR. KRISTOVICH: No redirect.

25



mpbl

## EXAMINATION BY THE BOARD

BY MR. BRIGHT:

Q Let's see. In terms of what we were talking about, or you were talking about just before we quit, it says:

"The other factors which are required to define the OBE include the corresponding values of velocity, displacement, and duration."

On page 496 under L, Definition of a Response Spectrum, it says:

"...is a plot of the maximum responses (acceleration, velocity, or displacement)..."

Well, and when you say "and", you're implying that you've got to know all of them. And this says "or", implying that it can be defined in terms of one of them.

This appears -- could you explain this?

A The spectra for each of those can be taken -- you know, you would have it for acceleration, for velocity, or for displacement. And they are related to each other, as we discussed earlier.

So I wasn't trying to say that they were all -- what it really says here, the response is a plot of one of those three, and they are related. And they do have a duration on them.

Q So you are saying, then, that the regulation which



mpb2 1 was identified and your statement here say the same thing?

2 A I believe so, yes.

3 Q Thank you.

4 A That was the intent, Mr. Bright.

5 CROSS-EXAMINATION ON BOARD QUESTIONS

6 BY MR. TOURTELLOTT:

7 Q Mr. Hubbard, in light of that question, you  
8 wouldn't object, then, if in your testimony we inserted in  
9 place of the word "and", if we inserted the word "or"?

10 A No, I would not.

11 Q Would you do that voluntarily so we don't have  
12 to go through the motions of doing that?

13 A Yes, that's fine.

14 MR. NORTON: Well, I think where the word "or"  
15 goes is between the words "velocity" and "displacement", as  
16 I just read Mr. Bright's question, as I read the Statute.  
17 But frankly, that's why obviously it doesn't take a lawyer  
18 to make legal argument. You know, that's why statutes are  
19 subject to construction argument, is because of the word  
20 "and" and "or" and so on and so forth.

21 MR. BRIGHT: I think in terms of what I was saying,  
22 that if it read "include the corresponding values of velocity  
23 or displacement and duration".

24 THE WITNESS: That's correct.

25 MR. NORTON: That's correct. I thought "or"



mpb3 1 should go between "velocity" and "displacement" rather than  
2 prior to "duration".

3 DR. MARTIN: How does it read now?

4 MR. NORTON: Could the witness read the sentence  
5 now the way it is intended to be placed in the record as his  
6 testimony?

7 THE WITNESS: "Including the corresponding  
8 values of velocity or displacement and duration."

9 MR. TOURTELLOTTE: Well, I'm going to have to ask  
10 him another question or two.

11 BY MR. TOURTELLOTTE:

12 Q Where is duration? Is duration a part of the  
13 response spectrum?

14 A Duration came from page 502, where on the last  
15 sentence it says:

16 "Take into account the expected dura-  
17 tion of vibratory motion."

18 It's also -- if you go to USGS 672, where they  
19 determine the proper numbers for a 7.5 earthquake. If you  
20 recall, they have columns on acceleration, velocity, displace-  
21 ment, and duration.

22 MR. NORTON: Well, I don't have any problem with  
23 the word "duration". I think every response spectra that  
24 I've ever seen has a time duration to it. I don't think  
25 there's any question that it was not taken into account in





mpb4 1 this case at all. I don't think that's the import of the  
2 testimony.

3 So I don't have any problem with that "and dura-  
4 tion".

5 BY MR. TOURTELLOTTE:

6 Q Well, I asked the question:

7 Is duration a part of response spectrum, of the  
8 response spectrum. Is it?

9 MR. KRISTOVICH: I thought that had already been  
10 asked and answered.

11 MR. TOURTELLOTTE: Well, the answer was not  
12 responsive. It's been asked, that's true; but the answer  
13 was not responsive.

14 MRS. BOWERS: Could you answer, Mr. Hubbard?

15 THE WITNESS: The answer is no.

16 MR. TOURTELLOTTE: Okay.

17 MRS. BOWERS: Now we've really gotten out of  
18 sequence here.

19 The Board has no further questions.

20 But, Mr. Kristovich, do you have any further  
21 questions?

22 MR. KRISTOVICH: No.

23 MRS. BOWERS: Mr. Norton?

24 MR. NORTON: No.

25 MRS. BOWERS: Do you have any further questions,



mpb5 1 Mr. Tourtellotte?

2 MR. TOURTELLOTTE: Yes.

3 I guess I just want to get this one sentence  
4 cleared up here. Another part of it suddenly bothered me.

5 BY MR. TOURTELLOTTE:

6 Q It says:

7 "In addition to horizontal and vertical  
8 ground acceleration, the other factors which are  
9 required to define the OSE..."

10 And my understanding on the basis of what we've  
11 just said is that the other things that we're talking about  
12 here are stated in the disjunctive rather than the conjunctive.  
13 So that all three are not required, but may be used.

14 Would it be a better terminology to say that  
15 instead of "which are required", to say "which may be used"?

16 A Well, once you have the acceleration you can get  
17 the velocity and displacement. So I think it -- you know,  
18 it would be all right to say "may be used", yes. I mean,  
19 once you have the acceleration, the others follow.

20 Q But they're not really required by the regula-  
21 tions, isn't that true?

22 The regulations that you cited me are stated in  
23 the disjunctive rather than in the conjunctive, isn't that  
24 correct?

25 A You would have to, I guess, define for me the



mpb6 1 words "disjunctive" and "conjunctive".

2 Q Okay.

3 It means that it's a situation in which all of  
4 those things are not required, but you may use any one of  
5 the several, that the several are not required together. But  
6 the several may be resorted to on an individual basis. It's  
7 the difference between saying "or" and saying "and".

8 When you say that you can do this or that, or  
9 that you do this and that, one means that you have a selec-  
10 tion of doing one or the other, the other means that you have  
11 to do both. That's the difference between disjunctive and  
12 conjunctive, conjunctive being the one that requires both.

13 A As I said before, I don't want to quibble on  
14 words. Once you have acceleration you can get velocity and  
15 displacement from that.

16 So it would seem satisfactory to me that you  
17 could do your analysis using whichever one of the accelera-  
18 tion or velocity you thought was appropriate to be used.  
19 That would be my understanding.

20 So I guess I would be in accord with what you  
21 were saying.

22 Q Would it be satisfactory if we were to strike the  
23 words "are required" and insert the words "may be used".

24 A I believe so.

25 Q Would you be willing to do that, then, or assert



mpb7 1 that that's the way you would offer your testimony?

2 A Yes, that would be acceptable.

3 Q Okay.

4 MR. TOURTELLOTTE: No other questions, then.

5 MRS. BOWERS: Well, the Board has nothing further  
6 on Contention 4.

7 Now can we go to the next part of Joint Intervenor's  
8 55?

9 MR. TOURTELLOTTE: Could we renew a motion to  
10 strike with reference to the items at the bottom of page 4-9,  
11 based upon --

12 MRS. BOWERS: Wait a minute.  
13 You're back on 4, is that right?

14 MR. TOURTELLOTTE: Yes, before we leave 4 I think  
15 it would be appropriate to take up a motion to strike the  
16 sentence that begins "For example" down through DDE.

17 MRS. BOWERS: What page?

18 MR. TOURTELLOTTE: 4-9.

19 And then the last sentence, that is, the next  
20 sentence would be "In", and then the third sentence, "The  
21 result that was that the Hosgri reanalysis" and so forth  
22 also be stricken, those two sentences be stricken on the  
23 ground that the testimony from the witness was that they  
24 were based upon Attachment B which has been excluded on the  
25 ground that the witness did not have sufficient expertise to





mpb8 1 offer that document.

2 MRS. BOWERS: But the sentence in the middle  
3 reading "Instead, two-thirds of the peak horizontal" is not  
4 affected by this notion, is that right?

5 MR. TOURTELLOTT: No, because that he claims  
6 comes from the SER rather than from Attachment B. My hope  
7 is that the SER is not stricken.

8 (Laughter.)

9 MRS. BOWERS: Mr. Norton, before we go to Mr.  
10 Kristovich, do you have any position on this?

11 MR. NORTON: Well, yes.

12 He has admitted that it's based on something  
13 that isn't in the record, that has been stricken. And I  
14 don't see how it can remain in the record without its refer-  
15 ence point. It's rather meaningless. And if he doesn't have  
16 the expertise to interpret the chart upon which it's based,  
17 he certainly doesn't have the expertise to make the statement  
18 out of thin air.

19 MRS. BOWERS: Mr. Kristovich?

20 MR. KRISTOVICH: My only response would be I  
21 recall Mr. Hubbard said he relied primarily or basically on  
22 Attachment B for those sentences. So I am unclear whether  
23 he relied on other things which would serve as a basis for  
24 keeping those sentences in there.

25 MRS. BOWERS: I don't think he qualified it.



mpb9 1

But let's check with the witness.

2

Did you qualify, or did you just say Attachment B

3

for each of the two sentences?

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THE WITNESS: I said "primarily". And I'd have to go back and read Supplement 7 -- I have two sources, really, Supplement 7 and this document -- And the document which was Attachment B. But I primarily made the statement based on what was Attachment B for the first and third sentence.

MRS. BOWERS: Do you have anything further, Mr. Kristovich?

MR. KRISTOVICH: Well, perhaps the witness should be given an opportunity to look at Supplement 7.

and  
MADELON  
VRBLOOM  
flws (1G)



1G  
WRB/agbl  
C12

1 MRS. BOWERS: Are you proposing now that the witness  
2 go through Supplement Seven?

3 MR. KRISTOVICH: I believe it's unclear what the  
4 basis of these two sentences were, and if the basis isn't  
5 Supplement Seven, then they should stay in the testimony.

6 MRS. BOWERS: Can you go to it directly, Mr.  
7 Hubbard?

8 THE WITNESS: Yes, it's on Page 322. It's the  
9 top, and it's just two paragraphs. The first sentence says:

10 "A vertical response dynamic analysis  
11 was performed rather than assuming an invariant  
12 vertical acceleration throughout the structures,  
13 as was done in the original analysis."

14 So that would imply to me that the containment  
15 auxiliary building -- that there was no dynamic analysis  
16 done for the original DDE, so that would support what was  
17 shown in sentence number one; the factor of two to six greater  
18 that was in the third sentence, there is no mention of those  
19 factors in the SER, so that that would be based on what was  
20 in Attachment B.

21 MR. KRISTOVICH: Based on that, Mrs. Bowers,  
22 I would argue that the first sentence should remain in the  
23 testimony.

24 MRS. BOWERS: Mr. Tourtelotte, do you have a  
25 position?



WRB/ab2

1 MR. TOURTELLOTT: Well, having now looked at that  
2 page causes me to want to re-evaluate my motion, because I  
3 see that the page he's citing there also does not mention  
4 the middle sentence that:

5 "Two-thirds of the peak horizontal  
6 ground acceleration was used for the vertical  
7 acceleration design in the design at all  
8 elevations."

9 He cites Page 3-22, and there isn't anything on  
10 that page that says that.

11 However, I will stay with the present motion to  
12 strike for right now, and say that the first sentence up  
13 there, while it may be possible for Mr. Hubbard to imply what  
14 the first sentence represents in fact is true, it is also  
15 possible to imply something else.

16 And it seems to me that if he does not know of his  
17 own accord whether that first sentence is true except on the  
18 basis of what was represented in Attachment B, then what he's  
19 doing is guessing, and it doesn't really have any weight in  
20 any event.

21 MR. NORTON: Mrs. Bowers, I don't understand it.  
22 The sentence says:

23 "For example, as shown in Attachment B  
24 for the containment exterior structure in the  
25 auxiliary building, the Applicant did not conduct





WRS/agh

1 a vertical dynamic analysis for the double design  
2 earthquake (DDE)."

3 Well, very clearly it's based on Attachment B.  
4 I don't see how we can sit here and be arguing that it's  
5 based on something else when it says "as shown in Attachment  
6 B." Attachment B has been struck, therefore, the sentence  
7 should be struck.

8 MRS. BOWERS: Well the witness answered he pri-  
9 marily relied on Attachment B, and now he's trying to say  
10 that, or he is saying that he also has a reference in Supplement  
11 Seven of the SER.

12 MR. NORTON: And if you look at 3-22, it isn't  
13 there.

14 MRS. BOWERS: Well, we struck the words: "as  
15 shown in Attachment B." Which you thought was fine.

16 MR. NORTON: Well, that was until he said that  
17 it came from Attachment B, which we decided we were going to  
18 discover on cross-examination pursuant to Mr. Kristovich's  
19 request, and I thought we did establish that it came from  
20 Attachment B.

21 But frankly I don't care whether it stays in  
22 or stays out. I don't think it has any meaning without  
23 anything going around it, in front of it or behind it. But  
24 technically, it should not be in.

25 MRS. BOWERS: Well we don't think there is clear



WRB/ajb4

1 support for the sentence, for example, so the motion to strike  
2 is granted.

3 But you've indicated another problem, Mr.  
4 Tourtellotte, with the sentence following that.

5 MR. TOURTELLOTTE: I guess I have to make a  
6 motion to strike that sentence also, because that page does  
7 not support that, there is no mention of that particular item  
8 on that page either.

9 MRS. BOWERS: Mr. Kristovich, perhaps the witness  
10 has some memory as to whether the page citation is correct  
11 or not.

12 MR. KRISTOVICH: I think we'd have to ask him  
13 that.

14 MR. NORTON: Mrs. Bowers, the problem I have is  
15 that there's no basis for this witness to be making these  
16 statements. Much of the wording on the bottom of 4-9 is,  
17 in fact, accurate, however, and we're wasting our time trying  
18 to strike something that is not inaccurate. If I had some  
19 problem with the accuracy of it, I would be fighting a much  
20 stronger fight or if I had some problems with the meaning of  
21 it, I would fight a much stronger fight because there was  
22 no basis for him to be saying it.

23 But the fact remains that it's basically the same  
24 as testimony that the Applicant put in on cross-examination,  
25 7041, 7042, et cetera, of the transcript.



WRB/agb5

1 So I don't know, in a way we're wasting time  
2 because it's already in the record, those words are in the  
3 record. I would agree with Mr. Tourtellotte that there's  
4 no basis for this witness, nor does he have the expertise to  
5 be making these statements, but they are not inaccurate in  
6 this particular instance and so I frankly wish we would move  
7 on.

8 MRS. BOWERS: Well, perhaps the reference to the  
9 SER should be stricken, since it doesn't -- since it is  
10 cited as authority.

11 MR. TOURTELLOTTE: Well, why don't we see if  
12 Mr. Hubbard has the correct citation, if it exists.

13 THE WITNESS: Mr. Tourtellotte, there are numerous  
14 places in the PSAR where it says that the horizontal is 2/3rds  
15 -- the vertical is 2/3rds the horizontal, but I don't have  
16 one that I can cite right off the top of my head.

17 MR. TOURTELLOTTE: You know, if a way I have to  
18 agree with Mr. Norton because I don't really have much problem  
19 with the accuracy of it. It's just that this witness doesn't  
20 have any business testifying about it in the first place and,  
21 as a matter of principle, it seems wrong that we should be  
22 going through this.

23 However, maybe the thing to do is -- because I  
24 don't really object to the statement, I'll strike the reference  
25 so that his statement can stand for whatever purpose it is.



WRB/agb6

1 MRS. BOWERS: Mr. Krystovich?

2 MR. KRISTOVICH: Fine.

3 MRS. BOWERS: Well the footnote reference to the  
4 SER will be stricken.

5 MR. TOURTELLOTT: That's all I have on motions  
6 to strike on 4. I don't know if Mr. Norton has anything  
7 additionally or not.

8 Does Mr. Krystovich have anything on motion to  
9 strike?

10 (Laughter.)

11 MRS. BOWERS: You know, Mr. Tourtelotte, you  
12 marked for identification Staff's Exhibit Number 10, which  
13 was the equation. Was your purpose just to mark it for  
14 identification?

15 MR. TOURTELLOTT: Yes, to mark it for identifica-  
16 tion at this time, yes.

17 MRS. BOWERS: Okay.

18 So we can go on to the other document, Contentions  
19 5, 6 and 7.

20 MR. TOURTELLOTT: If it's satisfactory with the  
21 Board, what I would like to do in this case is approach the  
22 subject matter from a sort of a generalized basis. I think  
23 that we went through the other document on a sort of a  
24 sentence-by-sentence approach, a paragraph-by-paragraph  
25 approach. And basically for this document, my approach would





WRB/agb7

1 not be any different.

2 MRS. BOWERS: Excuse me, Mr. Tourtellotte, before  
3 you proceed, I really should inquire if Mr. Norton has cross-  
4 examination or motions.

5 MR. NORTON: Well, Mr. Tourtellotte--it's nice  
6 to see somebody besides myself wearing the black hat, so I'll  
7 just sit back and let Mr. Tourtellotte proceed.

8 MR. TOURTELLOTTE: I object to the characteriza-  
9 tion of my hat.

10 (Laughter.)

11 MRS. BOWERS: Why don't you proceed, Mr.  
12 Tourtellotte?

13 MR. TOURTELLOTTE: Basically we don't object to  
14 the Introduction, which is I, the statement of the contention,  
15 II, discussion of the issues right on down to the conclusion.

16 We have two fundamental problems. One is that  
17 the majority of this material really constitutes a legal  
18 argument, and that Mr. Hubbard is not competent nor is it  
19 appropriate to make legal arguments in the form of expert  
20 testimony, and we'd object to it on that basis.

21 I emphasize the nature of his legal assertions. At  
22 Page: 5,6,7-8, the last sentence of the second paragraph  
23 under 3.4, where it says:

24 "The Board should determine for what  
25 period of time such tests will remain valid for



WRB/agb8

1 demonstrating conformance for the regulations  
2 and limiting the operating license issued so  
3 that it is not valid for any longer than that  
4 period."

5 And it seems to me that that is clearly a directive  
6 as to how the Board should rule in this case. And it really  
7 is not within the purview of this witness to make that kind  
8 of determination, because that's a legal determination. He  
9 can present facts, he can present scientific analyses upon  
10 which that kind of a conclusion may be drawn, but it's a  
11 conclusion that would be drawn by his lawyer and not by him  
12 as an expert witness, if he were an expert.

13 That takes me to my second overall objection,  
14 which is that the voir dire this morning clearly indicated  
15 that he is not a structural engineer, that he does not possess  
16 the expertise necessary to make a seismic re-analysis of  
17 structures, systems and components, and that he does not know  
18 the basic formulas. We've been through that argument before  
19 with reference to Contention 4 and the OBE, and the same  
20 argument applies to the seismic re-analysis of structures,  
21 systems and components.

22 This is something that a structural engineer would  
23 know about, it's something a mechanical engineer would know  
24 about. It is something which Mr. Hubbard does not possess  
25 the expertise to draw any conclusions about.



WRB/agb9

Consequently, unless some further explanation is required, I would rather not go through on a sentence-by-sentence basis.

Maybe I can say that, again, since it's the responsibility of the Intervenor who is presenting this witness to demonstrate the expertise of the witness and he has not done so with reference to classification of safety-related Category 1 structures and components, 3.2 should fail.

Since he does not understand the basic formulas or the basic equations used in calculating actual material strengths, he doesn't understand the simple concepts like primary and secondary stresses, he doesn't understand the simple concept of bending stresses, it seems he would be incapable of making any conclusions at all about the use of actual materials under 3.3.

MR. NORTON: Excuse me, following the procedure this morning, I would like to make an addition to the objection to 3.2, and I think I'll have to ask the Board to share memories with me.

Unfortunately, Mr. Fleischaker isn't here, and I don't think he was there then anyway. It was Mr. Rushforth but Mr. Hubbard was and Mr. Tourtellotte was and that was in Los Angeles in a prehearing conference approximately a year and a half or two years ago. I believe it was almost two years ago now where Intervenor attempted to make 3.2 a



WRB/agbl0

1 contention in these proceedings and asked this Board to require  
2 that the Applicant and Staff make a list of all Class 1  
3 equipment, structures, systems and components.

4 That contention was -- that request for an added  
5 contention was expressly rejected by this Board, and this  
6 3.2 is nothing more than that contention stated again and it  
7 has already been rejected by the Board as a contention in  
8 these proceedings.

9 MR. TOURTELLOTTE: With respect to --

10 MRS. BOWERS: Just a minute.

11 Mr. Kristovich, do you have any information on  
12 that?

13 MR. KRISTOVICH: I would have to ask Mr. Hubbard  
14 about that.

15 MRS. BOWERS: Mr. Hubbard was there.

16 THE WITNESS: Would you like my understanding of  
17 that?

18 MRS. BOWERS: Well it can either come now or later.  
19 Perhaps you want to go ahead, Mr. Tourtelotte,  
20 and then we'll go back and give Intervenor's the opportunity.

21 MR. TOURTELLOTTE: That might be the quicker way.

22 3.4 involves seismic qualification, requalification  
23 program. This, by its own title, indicates that a conclusion  
24 has been drawn by this witness that the requalification program  
25 is inadequate. It requires him to make some kind of an





WRB/agbl1

1 evaluation, and in order for that evaluation to carry any  
2 weight it has to be supported by some kind of background and  
3 information and study and testing, and the witness has  
4 conceded and demonstrated that he is not really an expert in  
5 seismicity and consequently would not possess the expertise  
6 necessary to evaluate a requalification program to determine  
7 whether it is adequate or inadequate.

endlg



WRB/  
2A wbl

CL3

1 Section 3.5 entitled "Load response combinations  
2 not in accord with Regulatory Guide 1.92," again this witness  
3 demonstrated this morning on voir dire that he did not know  
4 how to calculate loads, he didn't understand basic formulas  
5 for calculating loads or basic formulas that were used by  
6 structural engineers and mechanical engineers in figuring  
7 out load combinations, and therefore he would not really be  
8 in a position of determining whether it was in conformity with  
9 Regulatory Guide 1.92 or not. That is the first part of  
10 that, that is, that he does not possess the expertise.

11 In the second place, with regard to Regulatory  
12 Guide 1.92, that is irrelevant in any event, because  
13 Regulatory Guide 1.92 is not a regulation and it has been  
14 clearly established in the development of administrative  
15 law before the Board, licensing boards and the appeal boards  
16 at the AEC and the NRC, that a regulatory guide in no way is  
17 compelling; that a regulatory guide is simply put out there  
18 for the applicant to use as a yardstick to determine what  
19 course of action they might take, and they have the freedom  
20 to take alternate courses of action if they see fit. The  
21 alternate course of action has not been attacked, and even  
22 if it were attacked this witness does not possess the exper-  
23 tise to attack it with any credibility or with any probative  
24 value.

25 I might also invite the attention of the Board



WRB/wb2

1 to page 5,6,7-10, the first full paragraph where it starts,  
2 "In the original seismic analysis," that whole paragraph  
3 there is really irrelevant because the original seismic  
4 analysis of piping systems is not what is important. The  
5 important item in this case is, Are the piping systems as  
6 they have been designed and installed, are those piping  
7 systems capable of withstanding the Hosgri event without undue,  
8 without posing an undue threat to the public health and  
9 safety.

10 Under 3.6, Design in excess of yield, once again  
11 this witness has indicated that he doesn't know those basic  
12 formulas that deal with this subject matter. Indeed, the  
13 very simple question that he was asked about yield being  
14 equivalent to failure was an inaccurate response, and he is  
15 incapable from the standpoint of expertise of making the  
16 kind of evaluation that is made in 3.6. And that should be  
17 stricken.

18 The conclusions, of course, are actually based  
19 upon everything that is stated in the first part of the paper.  
20 And it's my judgment that those, too, should fail for the  
21 reason that he neither possesses the expertise to make the  
22 technical judgment nor can he make the legal judgment that's  
23 involved there.

24 Attachment A should be stricken because it has  
25 no proper foundation and is not competent for evidentiary



1 purposes.

2 Attachment B also is not competent. The proper  
3 foundation is not laid anywhere for its use for evidentiary  
4 purposes.

5 And Attachment C is objectionable for the same  
6 reason as Attachment A.

7 Attachment D I think we had some discussion on  
8 earlier. And I think the witness has already been questioned  
9 about it to some extent. He has indicated that he really  
10 doesn't understand the subject matter that's involved here  
11 nor does he understand exactly how these figures were arrived  
12 at or how this list was compiled, nor does he have any specific  
13 information that any of it really applies to Diablo Canyon,  
14 so that it's not relevant.

15 That's our motion to strike.

16 MR. NORTON: We would join in the motion. Only  
17 as to the last attachment, Attachment D, these are -- this  
18 again is an example of a witness, much like the Gawthrop  
19 illustration, of a witness using someone else's non-specific  
20 paper entitled "Examples of Deficiencies of Component  
21 Quality Assurance," and somehow bootstrapping that in by  
22 saying, Well it's an expert who wrote the paper, and perhaps  
23 it can be related to Diablo Canyon so therefore I'm adopting  
24 it and relying on it, when the individual doing so has no  
25 expertise in that field.





WRB/wb4

1                   It's a very, very dangerous precedent. It  
2 puts the Applicant in this case at a tremendous disadvantage  
3 in not being able to cross-examine anybody about it. We  
4 can't cross-examine Mr. Hubbard because he doesn't have the  
5 expertise, and we can't -- as much as we would like, we  
6 can't cross-examine Mr. Okrent.

7                   MRS. BOWERS: Mr. Kristovich?

8                   MR. KRISTOVICH: Well since Mr. Tourtellotta  
9 painted with a broad brush I will also, and merely incorporate  
10 all the arguments I previously made regarding the first piece  
11 of testimony.

12                   And with regard to the statement that certain  
13 parts of this testimony constitute legal argument, legal  
14 conclusions, I would merely once again say that witnesses in  
15 this type of proceeding may testify as whether the regulations  
16 have been met, give their opinion as to whether the regulations  
17 have been met.

18                   The major problem seems to be with expertise.  
19 And I think we pretty well this morning and this afternoon  
20 discussed Mr. Hubbard's expertise.

21                   I would merely say that it appears to me that  
22 his professional training and experience allow him to make  
23 the statements in his testimony, and the Board will have to go  
24 through it paragraph-by-paragraph, line-by-line, and make  
25 that decision.



1 MRS. BOWERS: Do you have anything further?

2 MR. KRISTOVICH: Nothing further.

3 MRS. BOWERS: Is there any way we could consider  
4 this overnight rather than going down through--

5 MR. NORTON: Mrs. Bowers, I almost think that's  
6 going to be a necessity. Because, unlike 4 which was fairly  
7 short, at least relative to this piece of testimony, there  
8 has not been a lengthy discussion by all three counsel and the  
9 Board, and so on, as to the various sections. We haven't  
10 gone through it piece-by-piece. I think the principles that  
11 were argued this morning are obviously the same principles  
12 that control here.

13 I think the Board is going to have to sit down  
14 and go over it sentence-by-sentence and make the same kind of  
15 a determination it did -- not with necessarily the same  
16 result, but the same analysis that it did regarding the  
17 testimony on Contention 4. And I don't see how you can do  
18 that between now and five o'clock very well, due to the  
19 volume.

20 MRS. BOWERS: We assume Mr. Hubbard will be  
21 here tomorrow.

22 (Witness shaking head negatively.)

23 MR. NORTON: Mr. Hubbard will not be here  
24 tomorrow? Well what if the cross-examination lasts until  
25 tomorrow?



1 THE WITNESS: Then I will be here tomorrow.

2 I have plane reservations this evening to leave.

3 And, of course, I will stay if that's required. I had  
4 intended to fly home tonight and come back tomorrow night,  
5 so I'd be back Wednesday morning. I have reservations to do  
6 that.

7 However, if it's needed for me to be here  
8 tomorrow, I will be here tomorrow.

9 MRS. BOWERS: Well we can try to go through it.

10 THE WITNESS: It's almost becoming a moot point,  
11 because the plane is at 5:10. Based on the earlier conversa-  
12 tions I had thought that that was feasible. And so, rather  
13 than to try to hurry you, expedite you in any manner, it  
14 would probably be best to just follow your guidance.

15 The only suggestion I have is, possibly rather  
16 than taking it up tomorrow morning we could do it the first  
17 thing Wednesday morning.

18 MR. NORTON: No, I don't want to proceed in that  
19 fashion, bringing in a witness in the middle of this witness'  
20 testimony and then coming back to this witness.

21 MRS. BOWERS: Well, they are rather separate  
22 contentions.

23 MR. NORTON: But we may not be finished with  
24 Dr. Brune Wednesday morning. Who knows? Obviously the best  
25 laid plans go astray. Because we didn't assume we would take

WRB/wb6



WRB/wb7

1 much time on cross-examination with Mr. Hubbard -- and, indeed,  
2 we have not; however, we have spent most of the day arguing  
3 about a motion to strike.

4 I don't know whether Mr. Hubbard has another  
5 engagement tomorrow, if that's the problem, or if he was just  
6 going to go home for a day. If that were the case, then  
7 perhaps he could just go home Wednesday instead, if he were  
8 just going to -- you know, if the idea is to just go home for  
9 a day. If it's some sort of an appointment or something,  
10 that's different, of course.

11 MRS. BOWERS: Is it an appointment?

12 THE WITNESS: Yes. I had scheduled an appoint-  
13 ment in Palo Alto. However I can cancel that. I had done  
14 that since this was the one day in about the next two weeks  
15 that I didn't absolutely have to be here, because I thought  
16 Dr. Brune would be on the stand.

17 I would be perfectly willing to go along with the  
18 Board and be here tomorrow morning. I had somewhat looked  
19 forward to going home.

20 MRS. BOWERS: We thought you were going home  
21 last weekend and we saw you loping around San Luis Obispo.

22 MR. NORTON: What was he doing around San Luis  
23 Obispo? Maybe I can use that in my cross-examination.

24 (Hilarity)

25 MRS. BOWERS: Mr. Tourtellotte, does the Staff





WRB/wb8

1 have a position on interrupting and delaying the contentions  
2 5, 6 and 7 until after Dr. Brune's testimony?

3 MR. TOURTELLOTT: It's not a very orderly way  
4 to proceed, but I don't much care one way or the other.

5 MR. NORTON: Well it just seems, though, that  
6 we have a good shot at finishing Mr. Hubbard and Dr. Brune  
7 tomorrow and starting with the Staff's case on Wednesday.  
8 In other words, we may lose a half day by postponing this  
9 until Wednesday. We may finish with Dr. Brune at two o'clock  
10 tomorrow afternoon. And then we have to wait for Mr. Hubbard  
11 to come back until Wednesday morning to finish that up. And  
12 then the Staff doesn't start until perhaps after lunch on  
13 Wednesday. And it's the half day that we might avoid losing  
14 that I am concerned about.

15 MRS. BOWERS: Mr. Kristovich, do you have a  
16 position on this?

17 MR. KRISTOVICH: I really have nothing further  
18 to add.

19 MR. TOURTELLOTT: I would say one thing: it's  
20 probably-- If you consider how much time we took on the  
21 motion to strike and how much time we took on cross-examination,  
22 my view is that probably if we got this thing together in  
23 the morning at 8:30 and a ruling was made rather quickly,  
24 cross-examination probably won't take fifteen minutes and  
25 Mr. Hubbard can get out of here in the morning in time to make



1 an appointment in the afternoon.

WRB/wb9 2 My own view is that, given what has occurred on  
3 Contention 4, if the general views are maintained-- The  
4 reason I didn't go into an extensive argument, for instance,  
5 about legal conclusions, and so on, is, I have a fairly good  
6 idea what the Board is going to do with that, considering what  
7 they did with it today.

8 Citing that as an example, I don't believe that  
9 I'll have more than two or three minutes of cross-examination  
10 after the motion to strike is ruled on. I don't know how  
11 Mr. Norton feels about it.

12 MR. NORTON: Well, I have my thoughts, but I'm  
13 not going to presume in any way how the Board is going to  
14 rule. If all the testimony is still in there than obviously  
15 the cross-examination is going to last more than fifteen  
16 minutes. If, on a ratio, testimony is struck as it was in  
17 the first one, the testimony probably wouldn't last more than  
18 fifteen or twenty minutes. But I know I can't assume how  
19 the Board is going to rule.

20 So, I don't know.

21 MRS. BOWERS: We'll adjourn now and meet at  
22 8:30 in the morning.

23 For those of you who might have entered the  
24 hearing room after this morning's session, it's not that  
25 Mr. Hubbard is not an expert in certain areas; it's just in



1 the testimony that's being sponsored here that his expertise  
2 has been challenged.

3 We'll adjourn, then, until eight-thirty tomorrow  
4 morning.

5 (Whereupon, at 4:00 p.m., the hearing in the  
6 above-entitled matter was recessed, to reconvene at  
7 8:30 a.m., the following day.)  
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WRB/wb10

