

ORIGINAL

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of:

DIABLO CANYON
PUBLIC MEETING

Docket No.

50-275

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1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION
3 DIABLO CANYON
4 PUBLIC MEETING

5
6 Nuclear Regulatory Commission
7 45 Fremont Street
8 2nd Floor
9 San Francisco, California
10 Tuesday, April 19, 1983

11 The Commission met, pursuant to notice, at
12 9:00 a.m.

13 BEFORE:

14 B. BUCKLEY
15 A. VIETTE
16 J. WERMIEL
17 O. PARR

18 ALSO PRESENT:

19 L. DANIELSON
20 J. SCHLONDKI
21 D. NIXDORF
22 B. HAMILTON
23 J. HOEBEL
24 R. FOSTER
25 B. GIFFEN
G. MOORE
G. TIDRICK
C. WARD
E. CONNELL
B. LEW
R. ANDERSON
H. FRIEND
C. COFFER
T. CRAWFORD

P R O C E E D I N G S

9:11 a.m.

1
2
3 MS. VIETTE: My name is Annette Viette for those
4 of you who don't know me and I'm with the NRC.

5 I know that some of you are aware of some of
6 the questions or problems that we're having as far as
7 getting information. Since I know that some of you have
8 participated in conference calls that we've had over the
9 last couple of weeks and that's why we're out here today
10 to clarify some of the information and for the Staff to ask
11 any additional questions that we might have.

12 And as we stated earlier, we would like it to be
13 a working meeting. A question and answer and maybe a brief
14 summary from PG&E, but not necessarily any presentations
15 or anything like that.

16 I guess we should first of all start around the
17 room introducing ourselves, making sure that everybody knows
18 who is who.

19 Bart, you want to start?

20 MR. BUCKLEY: I'm Bart Buckley, licensing project
21 manager on Diablo.

22 MR. WERMIEL: My name is Jerry Wermiel. I'm the
23 auxillary systems branch with the NRC and I'm responsible
24 for the review and evaluation of the Diablo Canyon cooling
25 water system.

MR. PARR: My name is Olin Parr. I'm also from

1 auxillary system. I'm the branch chief.

2 MR. TIDRICK: My name is Larry Tidrick. I'm from
3 PG&E and I'm in the mechanical group.

4 MR. WARD: Russ Ward. I'm in the mechanical group
5 on the Diablo Canyon Project.

6 MR. CONNELL: Ed Connell, mechanical group super-
7 visor, Diablo Canyon Project.

8 MR. GIFFEN: My name is Bryant Giffen. I'm with
9 Pacific Gas and Electric nuclear plant operations.

10 MR. FOSTER: Ray Foster, nuclear plant operations.

11 MR. LEW: Barkley Lew, licensing, Diablo Canyon
12 Project.

13 MR. HOBELL: I'm John Hobell, I'm Westinghouse
14 Projects manager.

15 MR. SCHOLONSKI: I'm Jim Scholonski, Westinghouse
16 fluid systems design.

17 MR. NIXDORF: Dave Nixdorf, Westinghouse nuclear
18 safety department.

19 MR. COFFER: Charles Coffe, licensing Diablo
20 Canyon Project.

21 MR. FRIEND: I'm Howard Friend with the Diablo
22 Canyon Project.

23 MR. HAMILTON: Mel Hamilton, manager of fluid
24 systems design for Westinghouse.

25 MR. ANDERSON: Dick Anderson, Diablo Canyon Project.

1 MR. BUCKELY: Anybody else here to be identified?

2 MS. DANIELSON: I'm Lynn Danielson and I represent
3 the State of California.

4 MR. MOORE: Gary Moore, project engineer Diablo
5 Canyon.

6 MR. PARR: Just to start out, our evaluation of the
7 component cooling water has advanced quite a ways. As a
8 matter of fact, we have a draft of our safety evaluation
9 report which unfortunately you will not get a copy of today.
10 But the reason that I'm bringing it up is the fact that we
11 think we've crystalized where we need information and that
12 is the purpose of the meeting today.

13 MR. BUCKLEY: Olin says that you weren't going to
14 draft today. You weren't going to draft at any point. You
15 will get a finished product.

16 MR. FRIEND: For clarification.

17 MR. WERMEIL: I would like to divide the discussion
18 today into basically two parts and they deal with the two
19 concerns -- broad concerns which are already identified to
20 the Diablo Canyon Project.

21 The first one being the concern for the seismic
22 capability of the CLoop and the non essential, non safety
23 related components thereon.

24 And the second involving the concern for deter-
25 mining and assuring proper component cooling water system

1 heat load performance following the most limiting single
2 failure within the CCW system itself.

3 So, number one, let's begin with the seismically
4 qualification concern.

5 The submittals that we have to date indicate that
6 the Diablo Canyon Project is in the process of performing
7 some reanalysis or reverification of the capability of the
8 nonessential components on the C Loop to obtain their
9 pressure boundary following the Hosgri seismic event.

10 The first basic question is what is the status of
11 that since as I understand it the last letter you sent in
12 indicated that that had not been fully completed for all
13 the components.

14 MR. CONNELL: Gary, the status is is that it is
15 virtually complete. We have one component left which is the
16 lower bearing oil cooler on the reactant coolant pumps.

17 The analysis is in progress. We have Westinghouse
18 and the project of getting together tomorrow with the seismic
19 analysts and we're going to discuss further methods to
20 analyze the problem.

21 It's a little too early to give you a firm date,
22 but I'm anticipating about two weeks from tomorrow.

23 MR. WERMIEL: Now, let me understand exactly what
24 we're going to have when we're finished. Following the
25 Hosgri seismic event, is it now the Diablo Canyon's plan or

1 their intent to assure that, there will be no rupture of the
2 pressure boundary at all within the component cooling water
3 system?

4 MR. CONNELL: I think it's too early to say that.

5 MR. WERMIEL: You don't know yet.

6 MR. CONNELL: We read our licensing commitment as
7 that system being designed for leakage not to exceed 200 GPM.

8 MR. WERMIEL: Let me point something out to you
9 then.

10 If when you are finished, you find that following
11 a Hosgri event, you will be taking credit for a 200 GPM
12 leakage from the system, the operator following this will
13 be required to take a safety action. He's going to be
14 required to assure seismic makeup first of all to the surge
15 tank in order to assure proper functioning of the pumps.
16 And therefore, he is going to need some indication, as I
17 understand it, the normal source of makeup being not seismic
18 must be aligned to the seismic source.

19 So there's a time factor involved first of all and
20 there is need for qualified indication of when to take that
21 action and there is also need for the proper procedure to
22 tell him to do that before you reach an unacceptable level
23 in the surge tank and potential cavitation of the pumps.

24 If you can show that you will not get any leakage
25 above what you would normally have within the system, then

1 this safety action doesn't need to be taken. It certainly
2 doesn't need to be taken right away and we would then
3 consider some long term diagnostic indication to the operator
4 acceptable.

5 To that of course, the full qualification of the
6 instrumentation will not be required. There's a difference
7 there.

8 MR. MOORE: Jerry, can I -- This is Gary Moore.
9 I just want to make a clarification in my own mind.

10 If we abide by the 200 GPM assumption and demonstrate
11 that that assumption is not exceeded, I believe our calcula-
12 tions have shown at least in the past that that allows for
13 20 minutes -- you know -- if it's 200 GPM leakage, the
14 storage capacity in the surge tank allows a 20 minute period
15 for operator action.

16 Would it be reasonable to -- as a procedural
17 situation to post seismic event to take the following actions
18 and make it a proactive situation verses reacting to a --
19 some kind of a signal, if you will, that said you had to take
20 the action?

21 MR. WERMIEL: Again, if you want to make it proactive
22 you're not going to be able to do that in 20 minutes.

23 MR. MOORE: Certainly. Saying that the triggering
24 event is the earthquake.

25 I have an earthquake and then I do action A, B, and

1 C.

2 MR. WERMIEL: Well, are you saying that one of those
3 immediate actions will be to switch the makeup source, for
4 example?

5 MR. MOORE: It could be.

6 MR. WERMIEL: If that is needed, then I would
7 consider that acceptable so long as whatever is giving the
8 operator the indication, he needs to take that action, is
9 qualified and will be available and is fairly immediate.

10 In other words, we're not talking oh he gets the
11 signal ten minutes later and then 20 minutes more down the
12 road, the tank is already drained.

13 MR. CONNELL: We have seismic instrumentation that
14 exceeds the rate value one twelve or whatever the number
15 is that you could use as a trigger.

16 MR. WERMIEL: Other than say the indication
17 directly on the surge tank, you say?

18 MR. CONNELL: No, I meant the seismic instrumenta-
19 tion that is required by regulatory guide. One point -- is it
20 one, two.

21 MR. MOORE: Two nine?

22 MR. CONNELL: No, no, seismic instrumentation.

23 MR. WERMIEL: No, no. You're talking about the
24 accelerometers or whatever they are.

25 MR. MOORE: Right.

1 MR. CONNELL: That's right and that's the trigger
2 if you're talking about something --

3 MR. WERMIEL: And you would be prepared then in
4 your procedure --

5 MR. MOORE: I'm suggesting --

6 MR. WERMIEL: -- to which the operator reacts to
7 for that. Takes some action immediately with respect to
8 component cooling water.

9 MR. MOORE: I'm suggesting that -- I guess I'm
10 really seeking some feedback from you, if that would also
11 be an acceptable alternative.

12 MR. WERMIEL: That would be an acceptable alterna-
13 tive provided again the procedure told him to react to that
14 and that reaction was related to the component cooling water
15 system.

16 I don't see a problem with that. That indication
17 would be fairly immediate, I would think.

18 MR. PARR: It's clear cut that he's got to do those
19 actions. He doesn't depend on looking at anything.

20 MR. WERMIEL: Then that brings us to the other
21 point.

22 Since it would be something other than the
23 instrumentation on the surge tank he would be relying on,
24 I would assume then that the surge tank instrumentation would
25 still have a pressure boundary qualified for the event such

1 that it wouldn't fail.

2 Has that been folded into this Hosgri reevaluation?
3 In other words, are you assuring that the pressure boundary
4 on the level transmitters and all this sort of thing -- the
5 indicators on the surge tanks?

6 MR. WARD: Those are seismic -- pressure boundaries.

7 MR. WERMIEL: We've looked at a schematic drawing
8 for that indication. I have the number here. It's schematic
9 102033 sheet 19 which happens to show a portion of that
10 pressure boundary as seismic class two.

11 Is that now a change? Is what you're telling me
12 now a change from that?

13 MR. WARD: I'm not sure which revision you have.

14 MR. WERMIEL: It's rev 9.

15 MR. WARD: That pressure boundary has always been a
16 one, class one C pressure boundary which is a seismic class
17 one.

18 MR. WERMIEL: It doesn't show that way on this
19 drawing.

20 MR. MOORE: Can we just stop for a second and can
21 we have that drawing here?

22 MR. WERMIEL: Do you have it handy by any chance?

23 MR. WARD: I was just looking at a copy of it
24 yesterday.

25 MR. WARD: Let me get it then.

1 MR. WERMIEL: If you can get it, I would sure
2 appreciate it.

3 MR. MOORE: The classification that you would
4 be looking for, Jerry, would be a one C classification.

5 MR. WERMIEL: That's correct. I understand the
6 difference between one C and one B, clearly and I now see
7 what you're saying is that this would not be one B, since
8 you're not relying on it to give the operator the information
9 or the immediate indication. You're relying on something
10 else. That is one B. But still the pressure boundary would
11 need to be qualified.

12 MR. CONNELL: I would like while we're waiting to
13 go back to a previous question or statement that you made.

14 I think you said that this would involve a safety
15 action.

16 MR. WERMIEL: Correct.

17 MR. CONNELL: It's worth pointing out that a reactor
18 coolant pump are isolated on LOCA signal. So there will be
19 if one had a LOCA, where one had, I don't know what you mean
20 by safety action, but one is talking about a loss coolant
21 accident.

22 MR. WERMIEL: The safety action is assuring the
23 function of the component cooling water system.

24 MR. CONNELL: I just want to make clear in the
25 postulated case of a loss coolant accident, you don't have

1 to worry about any leakage because it is isolated. There
2 is no leakage. It's isolated.

3 There's containment isolation valves on those --

4 MR. WERMIEL: I was speaking of a seismic event.

5 MR. CONNELL: Without any other upset.

6 MR. WERMIEL: Yes, I'm speaking of simply an SSE.

7 We would not compound a LOCA with an SSE.

8 MR. PARR: Yet.

9 MR. WERMIEL: Not yet.

10 MR. MOORE: Jerry, maybe we can move on.

11 MR. WERMIEL: We can go on, yes. Why don't we
12 go on?

13 MR. CONNELL: I would just like to leave that by
14 saying that the analysis is not over and it remains to be
15 seen.

16 MR. WERMIEL: There will obviously be further
17 discussion on this.

18 Let me get one thing clear.

19 MR. MOORE: Jerry, before you move on to the next
20 one, I would like to go back to some of your opening remarks
21 with regard to your summarization of the concerns.

22 I believe the words that you chose reflected a
23 concern with the seismic capability and if I recall a concern
24 correctly it was the -- the concern dealt with the maintenance
25 of the pressure boundary in association with 200 GPM leak

1 assumption and there was several ways to address that concern
2 including isolation of the sea header.

3 MR. WERMIEL: Yes.

4 MR. MOORE: That was an alternative.

5 MR. WERMIEL: The problem with that of course is
6 that the valve -- there is only one valve which I think is
7 what --

8 MR. MOORE: I just want to make sure for the record
9 that we properly characterize the concern. I think the
10 concern had to deal with the pressure boundary integrity
11 and the 200 GPM leak assumption. Not the fact that the
12 equipment was seismically qualified or not.

13 MR. CONNELL: Let me say again that for the
14 particular component that we're talking about it isn't that
15 there is just one valve. There is that valve plus the
16 containment isolation valves.

17 For anything else where you're looking at only
18 one valve that's already been seismically analyzed and found
19 acceptable for Hosgri, so we're past the worrying about one
20 valve. That's not a problem.

21 MR. ANDERSON: Could you describe this equipment
22 so that everybody understands it a little bit?

23 It's a cooling coil, three-quarter inch --

24 MR. CONNELL: We're talking about some very small
25 component that is sitting inside this massive reactor

1 coolant pump motor. I've got a drawing here. I don't know
2 if you're interested, but you can see this three-quarter
3 inch copper tubing that is inside an oil bath there and there
4 are four or five turants.

5 We've already, as I think we stated in our letter,
6 we -- our analysis has already shown that the -- boil cooler
7 itself will maintain integrity. It is simply the piece of
8 the analysis that has been completed yet is whether or not
9 the tubes will develop any leakage or not inside the bath
10 and we'll have to wait and see. Probably a couple of weeks
11 before we get that analysis done and find out.

12 MR. WERMIEL: Let me ask some more specific ques-
13 tions on this area and then a much broader one.

14 In looking at the PNID it's difficult to tell
15 whether or not the alignment for makeup to the surge tank
16 is normally from a nonseismic source or from a seismic
17 source.

18 MR. CONNELL: Normally it is nonseismic.

19 MR. WERMIEL: It is normally nonseismic. So there
20 is this transfer action that must be taken.

21 And then one other point of clarification. The
22 -- where was I?

23 All right, following in SSE, the pressure boundary
24 for the instrumentation on the surge tank is it kept in tact,
25 but as I understand it, the functional capability for the

1 transmitter would be lost or could be lost because it is not
2 qualified to retain its integrity following an SSE.

3 Can the operator take some action to restore it
4 so that he can maintain some diagnostic capability on the
5 function of the system following the event?

6 MR.CONNELL: Jerry, we have conflicting meetings
7 going. We have Cloud in here on what Cloud does and he
8 write now has our instrumentation man tied up.

9 I would like to defer any detailed questions
10 until this afternoon.

11 MR. WERMIEL: Okay, we'll raise that again.

12 Now, a general and rather broad question.

13 When, you as a designer go back and take a piece
14 of equipment that has been designed and is installed and
15 has a certain pedigree associated with it and you're asked
16 to requalify it, which is the case here, how do you go about
17 assuring yourself that when you do your analysis you are
18 actually making assumptions and analyzing the component as
19 it really is?

20 In other words, you're taking what are essentially
21 none qualified, non essential components that don't have a
22 particular appendix B or quality group set of paperwork
23 associated with them and you're now trying to upgrade to a
24 certain point for seismic capability.

25 In other words, to retain their pressure boundary

1 in a seismic event. What sort of assurance do you have when
2 you do the analysis the materials that you assume in the
3 analysis are really what they are?

4 MR. CONNELL: It depends on the -- the bottom line
5 is the same. You have a high assurance. Maybe I can show
6 you with this drawing we have in front of us.

7 Whether the component is audited as safety grade
8 or not, you've got the materials that are shown on your
9 fabrication drawings.

10 MR. WERMIEL: In other words, you make an assumption
11 that the materials indicated on fabrication drawings and
12 whatever you have are what they are despite the fact that
13 you may not have a material certification?

14 MR. CONNELL: We make that assumption whether it
15 is nuclear grade material -- nuclear grade component or not.

16 MR. WERMIEL: But with nuclear grade material,
17 you probably have a material certification or at least the
18 certificate of conformance and you won't necessarily have
19 that for these.

20 MR. CONNELL: It depends on the component, but yes
21 we make that assumption in both cases and there is one
22 further thing that we do and we also do this in both cases.
23 Is that not so much on the material, but on the configuration,
24 these have all been -- we have the analyst go to the field
25 and make sure that what he can see he's analyzing what's on

1 the drawing.

2 MR. WERMIEL: Okay. So then he will verify the
3 location of existing supports and things like that?

4 MR. CONNELL: That's correct. Welding attachments
5 and that type of thing. Yes.

6 MR. WERMIEL: So he does do a physical verification
7 of the as built installation.

8 MR. CONNELL: That's correct.

9 MR. MOORE: Jerry, I think it is also very important
10 to remember and we've tried to be careful in our wording
11 so that we don't mislead the staff. We have never in any of
12 these efforts tried to claim seismic qualification in the
13 rigorous sense. We entertain this approach as a way of
14 rigorously assuring people that our original engineering
15 design assumption was a valid one.

16 So the -- we feel that it's appropriate to analyze,
17 to demonstrate the validity of our assumption verses trying
18 to demonstrate the same bottom line, if you will, that you
19 would do when you were trying to claim something as being
20 seismic category one.

21 MR. WERMIEL: It think you've just raised a good
22 point.

23 My understanding is that there really was never
24 any kind of a design approach at all with respect to the C
25 Loop. It was just somebody's feeling that hey following an

1 SSE, a C Loop would retain its integrity. There wasn't even
2 necessarily anything more than simple engineering judgment.
3 There was really nothing on paper.

4 MR. CONNELL: That's not correct.

5 MR. MOORE: I think that that is very dangerous
6 speculation. We here of course were not involved with the
7 original work and so I don't think this group can absolutely
8 speak to what was in the mind of the engineer when he made
9 that assumption, but I would challenge your conjecture that
10 that was not the case.

11 MR. ANDERSON: Jerry, I made some comments back in
12 a meeting in Bethesda that -- We had worked with PG&E
13 back in the early '70s. PG&E is a company that plans or
14 intends to have earthquakes happen to their plants and they're
15 very concerned about seismic design and equipment mainly
16 from the point of view that they don't want the equipment
17 damaged in an earthquake and they had sent people up to the
18 Ft. Richardson plant after the big earthquake.

19 We sent people up there too because we designed
20 that plant. And they had been taking data and gathering
21 information. So when you say it was nothing more than a
22 simple judgment, that simple judgment as far as PG&E was
23 concerned was very much an educated judgment as opposed to
24 many plants in the country that ran into seismic design for
25 the first time when they got into nuclear plant designs.

1 So, it was more than just a judgment and it was
2 more than just a simple judgment. It was an educated
3 judgment. A judgment that was based on what kind of
4 equipment it was. Some of the equipment was qualified for
5 seismic. It was a kind of a hodgepodge of equipment that
6 goes into this kind of a system and they looked at it and
7 they made a judgment that certainly that kind of equipment
8 is not going to --

9 MR. WERMIEL: Don't get me wrong. I'm not saying
10 that engineering judgment was not valid at all or was wrong
11 or was unacceptable so to speak. That's not what I'm saying.
12 I'm just trying to get a feel for what the basis was
13 originally.

14 MR. CONNELL: There was engineering judgment which
15 has been proven correct, I would say by these analysis and
16 there has been other things also.

17 MR. WERMIEL: That's a good point. Has the analysis
18 shown a need for a lot of additional support?

19 MR. CONNELL: Zero, zero.

20 MR. WERMIEL: So far there has been zero modifications?

21 MR. CONNELL: Yes, that's what we're trying to say.
22 This is the only piece that is not complete, this small
23 three-quarter --

24 MR. WERMIEL: Up to this point, you haven't even
25 necessarily needed any additional weldment or anything like

1 that.

2 MR. CONNELL: No, nothing. Just paper.

3 MR. WERMIEL: Okay.

4 MR. MOORE: But Jerry --

5 MR. CONNELL: Excuse me, Gary. Can I finish a
6 thought that there were other things. Virtually all of this
7 equipment if you go back to specification had seismic
8 requirements in the spec even though it is not classified.

9 In addition to that, the more important ~~pieces~~,
10 for example, the coolers on your safety injection pumps,
11 those have been carried on this project for ten years or
12 whatever in the same program -- analysis program that you
13 have for a category of one ~~piece~~ of equipment.

14 There is something like 27 component have been
15 treated from day one as if they were category one even
16 though they are not.

17 So there has been quite a --

18 MR. BUCKLEY: What were they designed for? When
19 you say they have seismic specs. Were they designed for
20 point 4 G.

21 MR. CONNELL: Something on that order, yes.

22 MR. BUCKLEY: And you do have the analysis that
23 have been done? Someone is looking over them to see if
24 any mods -- you indicate no mods and --

25 MR. CONNELL: That's correct. We have gone through

1 and reanalyzed every piece of equipment on this Loop and the
2 analysis is simply not complete for this tubing.

3 MR. WERMIEL: Did you get something -- a certificate
4 of compliance that assured you that when you did specify
5 a G value the manufacturer did comply with it?

6 MR. CONNELL: In some cases yes and in some cases
7 it was simply in the spec and --

8 MR. WERMIEL: And that was it.

9 MR. CONNELL: There was a mixture.

10 MR. MOORE: Jerry, if you recall back in our --
11 I guess it was January discussions with you back in
12 Bethesda, we pointed out that -- I think Ed just said the
13 number is 11 out of 27 were category one of pieces of
14 equipment.

15 In that case, Bart, there was a full set of analysis
16 that were available. Those full sets of analysis have been
17 carried forward as part of the Diablo Canyon program just
18 because they are category one pieces of equipment which we're
19 obligated to review all of that equipment as part of our
20 program.

21 Then there is this intermediate set of equipment
22 that was purchased to a -- and considered a seismic level
23 to be designed and manufactured too that often times where
24 you see that is in a specification and you don't have a
25 rigorous analysis in your files to support that all the way

1 down to, I believe, some of the sample coolers that are
2 quite small showed no evidence of seismic analysis.

3 So we had that range of seismic review, if I can
4 say it that way, depending -- I guess looking back in hind-
5 sight, it indicates to us that based on its function, its
6 importance, its size there is a consistency between largeness
7 or importance or size to degree of analysis that was done.

8 So there is some logic and some consistency. Now
9 we're deducing that basically.

10 MR. WERMIEL: So something like the spent fuel
11 pool cooler would have gotten somewhat more attention
12 originally then say this little heat exchanger that you're
13 now having a problem with.

14 MR. CONNELL: That's correct.

15 For example on that one, spent fuel pump heat
16 exchanger, that has been carried on our analysis program
17 long before any of these CCW issues came off.

18 MR. WERMIEL: Okay.

19 In other words, it was always part of what you
20 wanted to keep track of with respect to Hosgri.

21 MR. CONNELL: It was treated as if it were category
22 one, though it isn't.

23 MR. BUCKLEY: But you upgraded it to meet the
24 Hosgri, is that what you're saying?

25 MR. CONNELL: It wasn't originally --

1 I don't remember if we upgraded it or if we just
2 did the analysis.

3 MR. MOORE: I believe in a separate licensing
4 action there was an upgrading that dealt with the spent
5 fuel pool cooling system, if my memory serves me correctly.
6 Separate from the component cooling water.

7 MR. WERMIEL: Let me ask another question, Gary,
8 the same way.

9 With this upgrading and it has been a long term
10 program as you pointed out, have these components and has
11 this effort always been under the upgrade Q/A program?

12 In other words, has it been tracked in the same
13 fashion that you would be tracking your safety related
14 equipment with respect to --

15 MR. CONNELL: Let me speak to that.

16 With the 11 items that we -- the 11 out of the
17 27, that's true. They were treated identically.

18 Now, furthermore on these items, now the entire
19 27, we have -- both our Westinghouse and internal project,
20 we have tracking mechanisms for the seismic qualification of
21 the equipment when the response spector changes or this
22 type of thing.

23 These have all been added to our tracking mechan-
24 isms both here and at Westinghouse. So from this day forward
25 they're treated -- if spectre should change, if nozzle loads

1 should change, these will be -- they're in the cycle and
2 and they'll be reanalyzed.

3 MR. WERMIEL: And you're able to do that despite
4 the fact that original specifications for these 11 components
5 may not have required the same pedigree and the same degree
6 of paperwork?

7 MR. CONNELL: Yeah, we're doing the analysis
8 independent of the vendor here.

9 MR. WERMIEL: And the Q/A program is basically
10 independent of whatever vendor paper existed for any of these
11 components?

12 MR. CONNELL: Well, the Q/A program for the analysis
13 is the same as it is for any other category one item for the
14 whole project.

15 MR. MOORE: For any other work done by the project.
16 Our procedures really in many respects don't differentiate
17 between class one or non class one. We have the same require-
18 ments as class one throughout.

19 But I'm a little bit confused. We don't want to
20 mislead you here. You can not retrofit quality assurance.

21 MR. WERMIEL: I understand that. That's why I think
22 on this line of questioning --

23 MR. MOORE: And we don't want to give you the
24 impression that we're trying to do that. We -- and it's
25 very similar to the situation we had with our intake structure

1 which started out as a class two structure that ended up
2 holding class one equipment and so just as other utilities
3 have done, you make the best situation out of what you have.

4 So everywhere that it is possible to establish
5 a level, you do so and on those areas that are impossible,
6 you don't do so.

7 MR. WERMIEL: When you get to the point where you
8 don't have something that tells you what you need to know
9 as part of the seismic requalification and I speak of
10 requalification of something and you have to make assumptions.
11 Do you tend to make a conservative assumption in order to
12 assure yourself that if you err, you err on the side of
13 foregiveness?

14 For example, I don't know what this material is
15 and I'm not even sure that what I've got in there is what's
16 on the drawing, because the drawing doesn't really tell me
17 much. It says it's steel, stainless steel.

18 It doesn't tell me that it's 304 or 316 or whatever.
19 From the standpoint of seismic requalification, would I
20 make a conservative assumption?

21 MR. CONNELL: In general, what we would do is
22 we would look at the drawing and say for example I told you
23 it was three-sixteen, but it didn't give you the grade, we
24 would -- in general, we would after taking a look at it,
25 if it wasn't obviously -- or something, we would assume

1 that if it looks like steel it is three-sixteen.

2 We don't know what grade it is and so we would
3 go to the ASTM standards and we would take the grade with
4 the lowest allowable. In fact that question just came up
5 with Cloud and that's exactly what we did on a component
6 that they asked about. We didn't know the grades, but we
7 took the least.

8 It turned out later that we knew the grade.

9 MR. MOORE: We did know the grade.

10 MR. CONNELL: We did it anyhow and the and the
11 analyst didn't ask the right question, so he used the lowest
12 allowable.

13 MR. MOORE: I would like to point out, too, that
14 the scenario that you proposed, Jerry, is -- I don't and
15 we'd have to go back to the analysis group and ask the
16 question, but I don't think that we have run into cases as
17 you speculate. I mean our equipment is -- it is clear at
18 least in terms of design documents what material was used.
19 We may not know the grade, but it is not the subject that
20 we have no information about this piece of equipment.

21 MR. WERMIEL: All I'm saying is that it sometimes
22 gets to the point where the information you have because
23 you don't have standard traceability could be considered
24 to some extent nothing more than hearsay.

25 In other words, you've got the piece of paper that

1 is telling you something and you're using your judgment that
2 that is what it is. You don't have anything more.

3 MR. MOORE: Maybe this is something that I should
4 point out also. Our documentation requirements with regard
5 to design documents, not certificates of conformance or
6 things like this, material certs, are identical for class
7 one and class two equipment.

8 So when this equipment was bought, there wasn't
9 two different documentation standards applied to the
10 equipment. Often times you asked for more information for
11 the class one equipment and it ended up in the areas of
12 material certifications and things like that.

13 But in terms of outline drawings and material iden-
14 tification, you really need that information just to maintain
15 the equipment in the field to prepare properly.

16 MR. LEW: Jerry, to get back to your question, I
17 think the project is always using good engineering judgment
18 and good engineering practice and so in response to your
19 question, it would be an unqualified yes.

20 MR. WERMIEL: Okay. All I'm doing is just trying
21 to get an understanding of something that is not normally
22 a part of my review. It is handled by other people, but
23 in this kind of an effort where my branch of systems is
24 involved, I guess it is important for us to try to under-
25 stand when we ask for requalification and then you volunteer

1 such a thing, we understand what it constitutes and what
2 it involves.

3 MR. BUCKLEY: Let me ask a question.

4 In terms of traceability on Loop C, do you feel
5 that you have good traceability the quality of material that
6 is in the type?

7 MR. MOORE: Not in all cases, Bart.

8 MR. BUCKLEY: How many?

9 MR. MOORE: There are 11 that were bought as
10 class one pieces of equipment.

11 MR. CONNELL: What I was really saying there is
12 that 11 that had been carried in the analysis program as
13 class one pieces of equipment.

14 MR. ANDERSON: On the other hand we have a high
15 degree of confidence that the equipment that is purchased is
16 furnished with the material specified. We don't have all the
17 paperwork that would be associated normally with category
18 one kinds of equipment. We have a very high degree of
19 confidence that the material that is shown on the drawings
20 is there.

21 If it isn't fully identified as Ed said we make
22 a conservative assumption, but if it is identified, we
23 use that and that seems to be like a perfectly reasonable
24 thing to do for this kind of analysis under these conditions.

25 MR. MOORE: Bart, to go back to your question about

1 traceability, though, if you're line of questioning is
2 traceability of material, okay. If it was not purchased as
3 a class one piece of equipment, it might very likely not
4 have that kind of traceability.

5 MR. BUCKLEY: Let me ask you this. What --.I think
6 about six or eight months ago, you submitted a Bechtel.
7 report on Q/A. I forget the number. B top 3 or Rev 3 or
8 something.

9 Are you using that Q/A program now, let's say
10 on Loop C?

11 MR. MOORE: The project is -- Now, you've got to
12 be careful. The project home office -- the construction site
13 operates under the PG&E program, but the Diablo Canyon
14 Project as it is consisted in this office operates under the
15 Bechtel, I believe some kind of a modified form of Bechtel
16 topical Q/A program.

17 That was submitted and approved by the staff.

18 MR. BUCKLEY: Let's say that you have to put in
19 one inch bolts to add some support to the sample core, just
20 as an example. Who checks out that the one inch bolts have
21 in fact been installed? Is there a Q/A construction activity
22 or group that verifies that in the field?

23 MR. MOORE: Well, there are several groups. There
24 is a program to assure the quality of the construction. And
25 I would just as soon not go in to very much more than that,

1 because that's outside of our area or responsibility.

2 In terms of our design control, we have an
3 engineering manual procedure, 3.6 ON that is how we change
4 design and as a part of that system, we have a confirmatory
5 step where the construction says yes I built it like you
6 designed it or I built it like I've marked it up in this
7 as-built drawing and then that's returned back into the
8 system and incorporated into the final drawing and then
9 they are issued to reflect the as-built condition of the
10 plant.

11 As a part of that procedure, engineering must
12 accept that change technically.

13 MR. WERMIEL: Just one more question, then, Gary,
14 on this.

15 When you take a piece of equipment that wasn't
16 originally intended for seismic qualification and you
17 requalify it with this procedure that you've been speaking
18 of. When you're done and you've assured yourself that it
19 has seismic integrity now, seismic category one integrity,
20 do you label it seismic category one?

21 MR. CONNELL: No.

22 MR. MOORE: Jerry, I tried to clarify this. I
23 really object to your use of the term qualify.

24 Our goal here is to demonstrate pressure boundary
25 integrity which is different from -- it maybe different from

1 seismic category one requirements and no we are not
2 reclassifying this equipment.

3 MR. WERMIEL: When you use the word seismic
4 category one then, you do attach some Q/A or some quality
5 group to it?

6 MR. MOORE: Certainly if you were to go out and
7 buy a category one piece of equipment, part of that defini-
8 tion carries with it a set of quality requirements and it
9 also carries with it a set of technical requirements and
10 when we classify something seismic category one, that defines
11 number one what type of seismic events it must be qualified
12 to and it defines a whole set of codes allowable stresses
13 that may be used. It's a whole package that has very specific
14 meanings of Diablo Canyon.

15 MR. WERMIEL: So what category does this go into
16 then? Is it categorized in some fashion?

17 MR. CONNELL: Jerry, let me answer that.

18 These are class two components as opposed to class
19 one. It's roman numeral. I think your question was, what
20 do we do after we've analyzed it.

21 We have a calc for example for the stuff we're
22 doing there on project. That's one example.

23 There's an exact same or similar class one
24 components and what we do, you can see in that calc if you
25 take a quick glance at it is that this tells you how we

1 track these things after we've analyzed them and it's
2 treated the same way in analysis that is in tracking for
3 the analysis as category one. We've gone through each of
4 the items. We've put down where they're located. We show
5 what spectra we use to qualify it and we've got that dated.

6 So anytime that you have an input change, this
7 calc gets updated so that you update the analysis. So it's
8 not category one, because it's function is in category one.
9 In terms of our analysis tracking, it's the same as category
10 one. That is from now until 40 years from now. If you change
11 the input, we've got a track here and we will reanalyze it.

12 MR. WERMIEL: So it's essentially seismic class
13 two equipment with a pressure boundary qualified for the
14 Hosgri earthquake.

15 MR. CONNELL: That's correct and its tracks will
16 always stay that way.

17 MR. PARR: We talk about the types of words that
18 are used to keep our feet of our maths. Is that right?

19 MR. MOORE: Right. I'm trying -- one of our
20 submittals to you. I can't remember which letter it was.
21 I believe we stated some of those words and maybe we can
22 point to those words.

23 MR. WERMIEL: It would help.

24 MR. MOORE: Exactly what we were doing.

25 MR. WERMIEL: There was a status letter on the

1 seismic requalification. Maybe that's it.

2 MR. MOORE: Do you have all the letters, Ed?

3 MR. CONNELL: Well, I do.

4 MR. MOORE: Look at the letter on the 18th of
5 March. That wasn't exactly the case that I was thinking.

6 MR. WERMIEL: That really doesn't have a label
7 associated with it, but I think it states the case, I guess.

8 (Pause)

9 MR. CONNELL: I guess that says analysis does not
10 effect -- to the effect the loading the equipment nozzle,
11 these loads are being developed as part of the phase one
12 piping verification program and will be factored into a
13 revised analysis when this information becomes available and
14 I guess what I just showed you was the calc that we are
15 tracking to assure that that statement happens.

16 It is being carried the same as anything else in
17 phase one piping program.

18 MR. MOORE: Jerry, I'll keep looking through it
19 to see if I can find the words that I remember.

20 MR. WERMIEL: I don't know if I have anything else
21 in this part of it.

22 MR. MOORE: I would like to take it back to an
23 earlier question which you had in regard to pressure boundary
24 classification and implementation.

25 I guess we identified the same confusion that you

1 did. We have brought down change nine on the drawing.

2 MR. WERMIEL: This is what I was referring to.

3 MR. MOORE: Right.

4 I know what that means, but probably you don't
5 know what that means and this is the latest revision of
6 that drawing and you see where we have extended this line
7 down to make it more clear what is in one C and what is
8 not in one C.

9 MR. WARD: That's a draft revision. I don't think
10 that's been approved yet, but you know.

11 MR. WERMIEL: It's all one C.

12 MR. MOORE: It's always been one C.

13 And we can show you evidence of that.

14 MR. WERMIEL: It's always been one C. So this is
15 just nothing more than an editorial change.

16 MR. MOORE: It's clarification.

17 MR. WERMIEL: I'll be darned.

18 MR. MOORE: I don't know how to explain that we
19 were thinking the same thing that you were thinking.

20 MR. WERMIEL: And I see here all the wiring here,
21 the electronics here, is --

22 MR. MOORE: Right and that is the same as the
23 original drawings.

24 MR. WERMIEL: It's an important clarification,
25 incidentally.

1 MR. MOORE: When you see this, you will always know
2 that --

3 MR. WERMIEL: I guess I shouldn't laugh, but it is
4 quite significant.

5 MR. MOORE: Well, if you're familiar with our
6 schematic system, you don't have a problem with determining
7 this, but it is not explicit -- and we try to clean that up.

8 The piping connection is clearly shown as class
9 one C and this piping is all continuous.

10 MR. BUCKLEY: The level controller is also Class
11 B.

12 MR. MOORE: Yes.

13 And Tom, I think if you go back and review the
14 transcript of our January meeting. I keep saying January
15 meeting. Am I correct?

16 MR. WERMIEL: Yes.

17 MR. MOORE: The January meeting you'll see where
18 in Tom's presentation, that's pointed out.

19 MR. WERMIEL: Yes, and that's what precipitated
20 the confusion, because in looking at the drawing, it didn't
21 seem to jive.

22 We're still going to have to get back to that
23 question about -- no, we answered the normal line of diagno-
24 sis following an SSE in a long term. Is there some way of
25 regaining the functional capability of research tank instru-

1 mentation following an SSE even if I didn't need to take
2 credit for its immediate availability.

3 In other words, I would like to know, I would like
4 to be able to follow the normal course of functioning of
5 the system. What's happening with respect to the surge
6 tank? I think that's the kind of thing that I might like to
7 know. Can I regain that capability?

8 MR. MOORE: I'm not sure you're going to lose it,
9 Jerry. It was pointed out at one time it was seismically
10 qualified. When it was reclassified to out of the one B
11 category into the class two category, it was dropped out of
12 this tracking system that Ed mentioned we had on the project
13 and its seismic qualification -- it's rigorous seismic
14 qualification has not been carried forward or carried along.

15 So once again, I think it's speculation on all
16 of our parts to say number one you're going to lose the
17 instrumentation do to seismic event.

18 The thing that we can't do, though, is take credit
19 for.

20 MR. WERMIEL: Unfortunately, when it comes to
21 seismic classification or qualification from a system
22 standpoint, it is either black or white. It's either
23 available and therebooy with standard SSE or it's not.

24 MR. MOORE: I agree if you need to take credit for
25 it.

1 MR. WERMIEL: There may physically be shades of
2 grey following an SSE. We just don't recognize it. That's
3 all I'm saying.

4 MR. MOORE: And I guess in our system design,
5 this indication is not a required indication.

6 There are other class one instrumentation, pieces
7 of instrumentation which are used to monitor the safety
8 related function of this system.

9 MR. BUCKLEY: If you do have a 200 GPM leak and
10 if you do take credit for makeup and I presume the switching
11 from the nonseismic to the seismic source of makeup in the
12 -- storage tank that there are written procedures to tell
13 the operator that he should do such a thing?

14 MR. WERMIEL: We've already talked about that Bart
15 and --

16 MR. BUCKLEY: Well, I want to -- Are there written
17 procedures?

18 MR. MOORE: I'll defer to the operating group.

19 MR. BUCKLEY: This has been around for a long time.

20 MR. WERMIEL: We've got an answer to that and I
21 understand that there are none now.

22 MR. BUCKLEY: I didn't hear the answer.

23 MR. GIFFEN: There are procedures that specify if
24 you lose automatic makeup to get manual makeup. It specifies
25 that --

1 MR. WERMIEL: My understanding though with respect
2 to Bart's questioning though is that none of that has
3 anything to do with the actions or the procedural steps
4 the operator would take following an SSE.

5 MR. CONNELL: The difference is this, if I understand
6 this Bryant. The operators have a procedure that says
7 anytime that you've lost this makeup capability from the
8 unit -- from the class two source, then you switch over to
9 class one. That's what we've got.

10 Now, what we were saying earlier was that the
11 -- the question was, does it say in their procedure when an
12 earthquake of such and such magnitude should it arrive go
13 do that without even checking to see if have a velocity
14 class two. That we don't have.

15 MR. WERMIEL: That's what we're really talking
16 about and we haven't gotten to that point yet.

17 MR. MOORE: That's right, Jerry.

18 MR. WERMIEL: That was my understanding, Bart.

19 They hadn't decided what, if any, leakage would
20 occur from the system following an SSE.

21 MR. BUCKLEY: Well, let's say they upgrade the
22 Loop C and you don't have a leak, then you don't need makeup.
23 You have a zero leak.

24 What if you do have a 200 GPM leak and then the
25 question was asked for my benefit. Can somebody answer

1 again?

2 Are you then going to qualify the instrumentation
3 in the surge tank to remain functional following the SSE?

4 MR. MOORE: We have done that, Bart, in our mind,
5 but that does not -- we would not reclassify that instrumen-
6 tation as class one B or anything other than one C that it is.

7 That is something that we do as a prudent engineer-
8 ing function, but as we went through during our presentation
9 in January, the -- really the classification that the indus-
10 try has been mandated to use does not really allow this
11 service to be classified class one.

12 MR. BUCKLEY: I don't care how you label it. If
13 you need a piece of equipment, it would either be a reanalysis
14 to show that it will remain functional following an SSE or
15 it won't. That's all I'm saying.

16 I would presume the answer is yes, we would re-
17 analyze to show that it would remain functional if it's
18 required.

19 MR. MOORE: Certainly. If it's required, we would
20 demonstrate that.

21 MR. BUCKLEY: Fine, thank you.

22 MR. WERMIEL: Is there anything else on this area,
23 Bart?

24 MR. BUCKLEY: NO.

25 MR. WERMIEL: Okay, let's go on to the second area.

1 The second area involves the reanalysis or the
2 work that is being done to assure proper component cooling
3 water function, heat removal function, it says, given the
4 most limiting single failure and you have made a submittal
5 on April 4th with respect to this thing and a number of
6 questions have arisen from this submittal and we would like
7 to talk about them now if we could.

8 MR. CONNELL: Please.

9 MR. WERMIEL: First of all, let me summarize what
10 I understand your continuing work effort is with respect
11 to this letter.

12 As part of the concern, we raised a question
13 involving the increased flow that you will have following
14 safety injection signals when all three component cooling
15 water pumps will come on.

16 And the capability of the system to retain this
17 integrity with its increased flow during the time prior to
18 the operator taking the action to open the valve and put the
19 second component cooling water heat exchanger on line.
20 And you've indicated that there is some work effort underway
21 on this.

22 Where does that currently stand?

23 MR. CONNELL: On the question of flow, I think --
24 I guess we said April 4th or whatever it was.

25 MR. WERMIEL: Right.

1 MR. CONNELL: There is some question related to
2 flow that our outstanding in the project. In my mind they
3 are not related to yet has started on these allegations on
4 CCW. As far as what type of flows you see through the
5 heat exchanger when you cut on three pumps rather than two
6 which happens during normal operation is a small increase of
7 flow and as we stated in the letter, when we ordered the
8 heat exchanger, we told them that we were going to have a
9 continuous service of 18,600 GPM or some number roughly
10 twice that for flushing purposes from time to time.

11 So considering the difference between the three
12 pump flow which was as I understand it the question in the
13 allegation and the two pump flow which happens all the time,
14 there is very little and there is no reason to think in my
15 mind that there would be any reason that the heat exchanger
16 couldn't accept it.

17 Since it is already in the purchase documents that
18 it should take for flushing purposes a much much higher
19 flow rate.

20 MR. WERMIEL: And you have flushed the heat
21 exchanger at that point?

22 MR. CONNELL: I don't know what we flushed it at
23 to date.

24 MR. WERMIEL: Have you got some assurance from the
25 manufacturer that the flow that you do get when all three

1 pumps come on can be accepted for 20 minutes? Have you
2 asked him that?

3 MR. CONNELL: Well, let me get to that.

4 The assurance we have is this that in the original
5 purchase documents of 13 years ago or whenever it was we told
6 them that we wanted to flush at this -- what is it Chris,
7 30,000 or something?

8 MR. MOORE: 37,200 is in the letter.

9 MP. CONNELL: And that supposedly is what he
10 delivered to us. So I have no reason not to think that
11 that's not acceptable.

12 Now, we went back to the heat exchanger manufacturer
13 just to revisit the question in a proforma type of thing
14 since we had the paper already in house when he delivered
15 the heat exchanger years and years ago.

16 And when we did that, we get a letter back from
17 the manufacturer which said that heat exchanger design has
18 evolved a lot in the past 10 or 12 years and there is a
19 new team of standard out dealing with vibration in heat
20 exchangers and if one considers these new team of standards
21 that this possibility that you will have vibration problems
22 develop in the heat exchanger.

23 Now, I see that as something separate from this
24 question that was raised in the allegation. But it is
25 something that we obviously are investigating and we haven't

1. yet resolved.

2 MR. WERMIEL: Are you going to do your investigations
3 solely on paper or has anybody thought or would you intend
4 at anytime to try and simulate the flow and the system
5 functional performance when it does precede the safety
6 injection signal?

7 MR. CONNELL: Recognizing that this is a working
8 level meeting and this is the topic that is under -- you
9 know, we haven't finished yet, I think that what we are going
10 to do today -- I think we're going to instrument the heat
11 exchanger and see what happens. We have been talking to
12 our research and engineering group about doing just that.

13 MR. WERMIEL: Just instrumented and actually do a
14 pre-op test?

15 MR. CONNELL: We'll instrument it and then we'll
16 run -- involvement. Things can change, but what we're thinking
17 of is instrumenting the heat exchanger. We'll run various
18 flows through the heat exchanger and measure the mode shapes
19 and calculate out the stress in the tubes and see if there
20 is indeed any vibration problems.

21 MR. WERMIEL: And that's in the talking stage?

22 MR. CONNELL: Yes. In the advance talking stage.

23 MR. WERMIEL: Is there any plan to expand this to
24 include what might happen to those components throughout the
25 rest of the system?

1 In other words, do you know that even the A and
2 B Loop of components and the C Loop components should the
3 isolation valve fail to close, can they also -- will they
4 also undergo some unacceptable condition as a result of
5 this increased flow?

6 MR. CONNELL: Well, I don't -- in my mind, at this
7 time, Jerry, what I see is an answer to the question being
8 no until we run the tests. I think when we run the tests and
9 should we find that there are significant vibration problems
10 which I doubt -- but if that happens, then I think we're going
11 to take a look at the rest of the heat exchangers in the
12 plant, but I don't expect that.

13 MR. WERMIEL: Would you base the original tests only
14 on what happens with the component cooling water system?

15 MR. CONNELL: We have no reason to believe that any
16 of the other heat exchangers -- we have no reason to believe
17 that this heat exchanger has these vibration problems
18 other than what the vendor has told us the things have
19 evolved over the years, which is true.

20 MR. MOORE: Jerry, you know, I think we want to make
21 it very clear. Our original review, we used the documenta-
22 tion that is available to the project which indicated
23 basically that there was no concern in this area.

24 The project has recently received new information
25 from the manufacturer about a single piece of equipment and

1 we are obligated to factor that new information into our
2 work. That should not be extrapolated into being construed
3 by anyone as an indication that we might have a problem
4 anywhere else in this system or the rest of the plant.

5 We don't see any kind of a basis that would
6 tend to go to that line of --

7 MR. WERMIEL: Let me ask a question.

8 When you specified flow rate for the other
9 components in the system, what did those manufacturers
10 certify to you or what was the spec for them?

11 Were they aware of the fact that for a period of
12 time there would be a flow in excess of what you probably
13 specified as design flow on the specification sheet?

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1 MR. MOORE: Jerry, you know, once again, I -- are
2 you using your --

3 MR. WERMIEL: Are you looking at --

4 MR. WARD: Jerry, could I say something?
5 When you look at the problem we've having with the CCW
6 heating system, and depending on what you are looking at in
7 terms of valve alignments, and you get this increased flow
8 through the CCW heat exchanger, I think you've got to
9 appreciate, you know, that that heat exchanger is taking
10 the flow for the whole system.

11 Now, you may increase the flow through that heat
12 exchanger, let's say 10 or 20 percent or something, and
13 another 10 or 20 percent of additional flow through that
14 component is disbursed through the rest of the component so
15 that each of the individual components to that system does
16 not see 10 or 20 percent. It may see two or three percent,
17 you know, of whatever, depending on the way the valves are
18 throttled for the normal configuration.

19 MR. WERMIEL: Yes, and that's why, I guess, I'm
20 asking. This is the normal accident design mode to the
21 system. It seems to me the specification should have said
22 this is the flow you will get for a period of time, until
23 we can avert 50 percent of it through the other heat
24 exchanger.

25 MR. MOORE: Jerry, let's make it clear. I believe

1 that in terms of the design specification and the certified
2 information from the manufacturer, that is exactly the
3 case.

4 MR. WERMIEL: Okay. That's what I wanted to hear.

5 MR. MOORE: But in the spring of 1983, when asked
6 another question, he pointed out some new information,
7 which, you know, I kind of wonder if he's got this new
8 information, why hasn't he told us already.

9 MR. CONNELL: Excuse me, Jerry. I'm going to
10 show you the answer to Jerry's question. Your answer is
11 directed towards the CCW heat exchanger, correct?

12 MR. MOORE: Yes.

13 MR. CONNELL: I'm not sure that Jerry's
14 questioning that. I think he's talking about the other
15 heat exchangers that are in --

16 MR. WERMIEL: Normally the system is humping along
17 with probably only one pump on it. I get a safety injection
18 signal, which is something that is to be expected over the
19 life of the plant, something that you design for.

20 Three pumps come on, one component exchanger is
21 valved out, normally. There is now a flow through the
22 system. It seems intuitive to me that that is the flow,
23 with valves wide open, I should have told my manufacturers
24 to give me. Is that the flow those manufacturers are
25 certifying that these components can take, or did you even

1 test that during the pre-out testing phase, to assure
2 yourself that everything is fine, because this is the way
3 the system's going to work.

4 MR. CONNELL: We haven't checked all the paper
5 work on each of those components, to be able to answer that
6 now.

7 MR. MOORE: We have arborated the system, though,
8 with three pumps and service through one heat exchanger, and
9 all the components valved in.

10 MR. WERMIEL: That would be a very important
11 thing to know, if you did do that.

12 MR. BUCKLEY: And if they're monitored to see the
13 vibration --

14 MR. WERMIEL: I'm not sure I even need to have
15 monitored everything, but I do think I would like to know
16 if everything seems to have gone the way it was supposed to.
17 In other words, was the acceptance criteria for that test
18 met?

19 MR. MOORE: I think that what I'd like to do,
20 Jerry, is have somebody go away and pursue the start-up
21 tests that were performed, and I think we can do that this
22 morning and we'll get back to you on that. Because I think
23 it will be fairly clear that these cases were run.

24 MR. WERMIEL: That would be extremely useful, and
25 that would allow -- it would certainly take a weight off

1 my mind. It would allow me to pursue, with the heat
2 exchanger manufacturer, on your own course, whatever
3 resolution you and he feels necessary.

4 MR. MOORE: Let me suggest something, Jerry.
5 Apparently it was the manufacturer who raised the potential
6 for -- it may be over a longer period of time. It might be
7 a year, we might be talking about months. I'm not sure.

8 So, now that there is the potential for
9 vibration, I personally think it would be wise to monitor --

10 MR. WERMIEL: That one heat exchanger, since
11 certainly that one manufacturer has expressed -- that seems
12 to be the most critical component.

13 MR. MOORE: Let me kind of say the same thing.
14 We will definitely, in a proper technical sense, arrest
15 this -- or put in proper perspective, this new information.
16 Now, whether that's monitoring or some other way -- you know,
17 maybe the manufacturer really didn't understand the
18 situation we had and the 6000 GPM is not real. I don't
19 know, but yes, we are obligated to chase this thing back
20 through the system, if you will, and satisfactorily put a
21 check.

22 MR. WERMIEL: Did that manufacturer, when you
23 approached him with this question and he gave you this new
24 information, feel the need to file with NRC a Part 21
25 non-conformance?

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1 MR. MOORE: We have -- that's the question I'm
2 asking.

3 MR. WERMIEL: It seems to me if he thinks it's
4 that big a deal, he should have.

5 MR. MOORE: That's right. That is the question
6 that we're trying to -- we're trying to answer your
7 questions first, but that is a question that I have in the
8 back of my mind.

9 If this is really the case, why didn't you tell
10 us years ago.

11 MR. WERMIEL: Oh, absolutely.

12 MR. MOORE: Because we kind of fell into it by
13 chance.

14 MR. WERMIEL: What you're saying seems to be at
15 variance with what you have taken directly from his
16 information that he had at the time he supplied the heat
17 exchangers.

18 MR. MOORE: Jerry' I'm personally concerned
19 whether we have a valid situation here or not. You're well
20 aware that the manufacturing facility that built this heat
21 exchanger is no longer in existence, and I believe we're
22 working through another division of the parent company.

23 MR. WERMIEL: Oh, I see.

24 MR. MOORE: And the people are not the same
25 people. I mean, you can't go back and talk to the original

1 designers.

2 We do know that there is a new code. We do know
3 that there are more sophisticated computer programs being
4 used --

5 MR. WERMIEL: Let me ask a question --

6 MR. MOORE: And I don't really understand whether
7 we're seeing a new commercial position from a manufacturer
8 that, if he had to sell something to us today and guarantee
9 it, okay, that that wouldn't be the rating that he would
10 give that piece of equipment.

11 These are questions that are in my mind, and
12 that's why, I think, Ed is giving you a correct impression:
13 the vote's still out on this one.

14 I want to make it clear that I am not sure we
15 have a problem here.

16 MR. CONNELL: Well, I'm not, particularly in light
17 of when this heat exchanger was bought in the inlet side,
18 we put a flow diverter section, particularly because some
19 earlier heat exchangers had some problems. And that was
20 specifically designed so we wouldn't get in the same
21 vibration problem.

22 MR. WERMIEL: Well, when you speak of this new
23 information and new sophistication, my experience has been
24 that when new sophistication is imparted into codes and
25 standards of manufacturing, they tend to be less conservative

1 in previous practice, so I'm not sure that this new
2 sophistication doesn't make the case more liberal, say, in
3 that the original design was probably more conservative.

4 MR. MOORE: Well, when you get more sophisticated
5 though -- Jerry, you know, that's speculation on your part.
6 I think when you put it in -- I think when you characterize
7 it as Bart has, if that 6000 GPM is for 40 years, that's
8 one thing. But is it for some period of time that someone
9 would assume that you would have safety injection signals
10 operating.

11 MR. WERMIEL: I'm assuming that when you approach
12 the question with your manufacturer, you indicated that this
13 time frame is the 20 minutes that you're taking credit for,
14 prior to putting the other heat exchanger on the line.

15 MR. BUCKLEY: I think that 20 minutes may have
16 come up after they purchased it. I'm guessing, but
17 probably after they purchased.

18 MR. WERMIEL: Then you ought to make sure that the
19 response you're getting from the manufacturer is to the
20 question you really want answered.

21 MR. BUCKLEY: I think we're beating this to death.
22 We can't speculate, and we just have to find out is there a
23 problem, or isn't there a problem.

24 MR. ANDERSON: At this point, there's no
25 indication of a problem. The system's been run, and we can

1 just go back and verify that.

2 Again, we have to be careful, if this meeting is
3 being transcribed, that we don't leave loose statements on
4 the transcript. We have to come back and cover those kinds
5 of things. We're going fast, and we may forget that some
6 things are being said that are not quite accurately said,
7 and we need to recover that.

8 MR. BUCKLEY: Could you give me an example?

9 MR. ANDERSON: Well, we often say things like do
10 you have any similar problems, when we have just gone
11 through the fact that we don't think we have a problem.
12 On the transcript that comes out, you know, we're trying to
13 say -- if we want to response to that properly, we're trying
14 to say that yes, there was a problem.

15 We want to be careful that we get this on the
16 record properly.

17 MR. BUCKLEY: Well, right now we don't know if
18 there is a problem, so we can't say either way.

19 MR. ANDERSON: We have no indication right now
20 there is a flow problem, because we have tested the system
21 and we will go back and take a look at that.

22 MR. BUCKLEY: Picking up again, Ed, do you -- Jerry
23 asked you a while ago, do you plan on assuming single
24 failure in group "C", going your pre-OP? Is that what
25 you're contemplating?

1 Are you going to let "C" open when you run the
2 pre-pumps? If you are, do you plan on doing any monitoring
3 of that?

4 MR. CONNELL: Well, we haven't gotten that far in
5 our test plan, but off-hand, I'd say that that's -- I don't
6 know if that's relevant. You know, we're going to be looking
7 at flow regimes -- I don't know. We haven't gotten that
8 far.

9 MR. BUCKLEY: Is it standard operating procedures
10 when you run a pre-OP to assimilate the single failure
11 criteria?

12 MR. CONNELL: Oh, yes. That's standard, but I'm
13 not talking about a pre-OP test. What I'm talking about is
14 instrumenting the heat exchanger.

15 MR. BUCKLEY: I'm calling it pre-OP.

16 MR. CONNELL: That wouldn't be a -- the pre-OP
17 test would be where one would measure the parameters that
18 one would need on the system level. You would measure the
19 flow. But this is instrumenting the particular component
20 to get mode shapes. That's different, and I'm not sure
21 what range of flows we will go through to get the mode
22 shapes.

23 MR. BUCKLEY: But you are going to confirm that
24 whatever flow you use to demonstrate heat movement
25 capabilities are, in fact, achieved?

1 MR. MOORE: Yes, Bart, and I believe, you know --
2 I can't give you an exact answer.

3 If we could break for a coffee break here, I will
4 get people working on getting the start-up tests reports,
5 but I think in those test reports you will see where the
6 system has been tested whenever possible to demonstrate that
7 it meets design.

8 Obviously, you have trouble some of the heat
9 loading situations during a pre-OP test, but with regard to
10 flow, I believe -- now, I'm going to confirm that as soon
11 as we get the results of the test reports -- that the
12 various scenarios that this system has to operate under were
13 tested.

14 MR. BUCKLEY: Do you plan on doing the flow test
15 on both component cooling heat exchangers, or just one?

16 MR. CONNELL: I believe the pre-OP's already been
17 done.

18 MR. BUCKLEY: The pre-OP's have been done on both,
19 I'm sure, okay.

20 The new test -- call it what you may -- do you
21 plan on monitoring both heat exchangers for --

22 MR. CONNELL: If we are -- off-hand, I would say
23 not. If you're talking about -- we're perhaps getting these
24 tests mixed up. As far as measuring the flow in the system,
25 then yes, you do that for the whole system which includes

1 both heat exchangers in different operating configurations.

2 But as far as we're talking about, a test
3 specifically to look at this vibration concern, and that --
4 I would think off-hand, since the heat exchangers are made
5 the same way, that you would do it on one heat exchanger.
6 The idea would be to measure the mode shapes, and from that
7 go back and calculate the stress of the tube, and from
8 that calculate, you know, if it's a fatigue problem, what
9 the effect on the life of the heat exchanger is. And that
10 you would only have to do on one.

11 But as far as something on a pre-OP test, where
12 you're measuring the whole response of the system, then you
13 do it on both heat exchangers.

14 MR. BUCKLEY: But you're still developing, you're
15 thinking about it. You're not really quite sure?

16 MR. CONNELL: No, we've talked on and off a
17 couple of days ago when we were with our -- well, they call
18 them research and engineering people. We're still planning.

19 MR. BUCKLEY: Do you think this is a
20 complicated test, or do you think it's a pretty simple test?
21 It doesn't sound complicated to me.

22 MR. CONNELL: No, I think the test is fairly
23 straight forward. There are some interesting questions,
24 you know, where do you measure, and this type of thing, but
25 it's not.

1 MS. VIETTE: Okay. Do you want to take a ten
2 minute coffee break?

3 MR. CONNELL: I do.

4 MR. MOORE: Yes.

5 (Short recess)

6 MR. WERMIEL: Back in the April 4, 1983 letter,
7 where you identified Case 3 as the most limiting case from
8 the standpoint of heat injection, heat performance for the
9 component cooling water system, on table 1 where Case 3
10 is identified -- in other words, I think this was meant to
11 be a sort of failure modes and effects analysis, and you
12 identify there what Case 3 was; what it constituted.

13 The number of component cooling water pumps that
14 was assumed there is three, and the single failure that was
15 taken is in one of the auxilliary salt water pumps.

16 It's my understanding that the tech specs allow
17 one component cooling water pump to be out of service
18 indefinitely. What would be the difference in Case 3 from
19 the standpoint of heat load, if only two component cooling
20 water pumps were operating?

21 As I understand it, the limiting conditions for
22 operation are geared only to two out of the three
23 component cooling water pumps, and that one can be down
24 indefinitely.

25 MR. BUCKLEY: We realize that this will require

1 some thought on your part. You may not be prepared to
2 answer right off the bus, but perhaps you may.

3 MR. CONNELL: I appreciate that, because I'm
4 thinking right off the top of my head here, and it's subject
5 to rethinking later.

6 It seems to me that if your flow is going to be
7 less, "C" heat transference system's going to be less.

8 MR. BUCKLEY: So we may actually have a higher
9 temperature than what was assumed?

10 MR. CONNELL: Wait a second.

11 MR. MOORE: Let me suggest that we take that
12 question, and at lunch we'll have a caucus with the
13 Westinghouse fellows and the budget fellows to think that
14 through, and give you something a little bit more than just
15 right off the top of the head.

16 Maybe we can also take advantage of this time,
17 though, to explain, if you have any questions, on how we
18 arrived at this case. We've got a lot of people here to
19 explain that, and if I could ask the group to kind of be
20 thinking in the back of their mind about the question that
21 was asked, we'll pick it up a little bit later.

22 MR. WERMIEL: I think we'd like to hear it, just
23 for our own information.

24 MR. WARD: Well, obviously if you have two pumps
25 you're going to have less flow, right, through the CCW

1 system. However, if you look at -- if you draw a picture
2 of a system curve for the system, and you draw --
3 superimpose that over a set of pump curves, you'll see that
4 with two pumps in operation your flow is not going to drop
5 significantly over -- or less than the three pump operation.
6 We didn't analyze for that, so I can't tell you
7 analytically what effect that's going to have on the
8 temperature exactly. However, the flow is not appreciably
9 less. I can tell you that much.

10 MR. WERMIEL: Okay. Since that can't be answered
11 right now, why don't you just go ahead and tell us what
12 went into determining that Case 3 was most limiting?

13 Can you summarize the analysis that you went
14 through in order to answer the question that was asked, on
15 determination of the most limiting single failures, from
16 the standpoint of rejection capabilities?

17 MR. WARD: Okay. In general, what we tried to
18 do and what these four cases are representing is, we're
19 trying to look at single failures that would either, one,
20 add heat to the CCW system above the original design case;
21 two, decrease the heat removal capability of the system;
22 or three, do some combination of both.

23 Now, if you look at Case 1, that's basically the
24 original design case, if you want to go back and reverify
25 that.

1 Case 2 is the single failure of one containment
2 spray pump. And that, in effect, causes indirectly more
3 heat to go into the CCW system, as much as the CCW
4 containment heat removal system and the containment spray
5 system, in conjunction to take heat out of containment
6 post loca.

7 So, by taking part of the containment spray
8 system out of service, the single failure, you're
9 essentially adding to the burden of the CCW system.

10 On Case 3, that would be a limitation of the heat
11 removal capability system, where you've got the five fan
12 coolers operating without the single failure of the
13 containment spray. You do have the two containment sprays,
14 and with the simultaneous failure -- single failure of an
15 auxilliary salt water pump, which is the heat rejection
16 portion of the system. So, we wanted to consider that.

17 Case 4, we looked at to determine the effects of
18 the C-header loads, C-header heat loads on the CCW system.
19 We did that by the failure of the electrical bus "H".

20 Simultaneous with that Case 4, since, you know,
21 that bus also had a containment spray pump on it, which
22 would then again cause more heat to the CCW system. So,
23 that's basically the four cases we looked at.

24 As far as input to the analysis, we would go
25 through and we would provide -- we would determine the flows

1 for the number of CCW pumps that were in service, determine
2 the flow for the number of ASW pumps in service, and we
3 provided this information to Westinghouse and they did the
4 analysis on it.

5 Now, maybe Jim would like to talk about the
6 analysis a little bit.

7 MR. SCHLONSKI: For each of the cases that he
8 described, Westinghouse ran a coco computer on it, and
9 determined the pressure and temperature that we would get
10 inside the containment for each of those cases.

11 It should be noted that the Westinghouse Coco
12 model, or computer model, is an NRC approved code that was
13 used in the Diablo Canyon FSAR. ...

14 The analytical model, the input in the assumptions,
15 we assumed that the mass and energy release into the
16 containment -- we looked for the worst case condition for
17 an accident, which turned out to be a double-ended pump
18 suction piping guillotine break. We looked at steamline
19 break and it was less limiting as a condition for accident.

20 Other assumptions in the code, such as the
21 performance of the spray system, the fan cooler performance
22 and the heat sinks that we take credit for inside the
23 containment, were the same assumptions that we used in the
24 FSAR analysis.

25 As Chris pointed out, the component cooling water

1 system performance parameters, such as the flows and the
2 salt water performance parameters, was based on the various
3 cases that we analyzed, whether or not it was two pumps in
4 service or one pump.

5 The -- basically, the Coco computer model
6 conservatively then predicts the pressure transient and
7 the temperature transient inside containment for each of
8 those cases. And that data from the code, then, was used
9 to calculate the component cooling water supply temperature
10 transient, the results of which we reported to you.

11 Through the calculation method that we used,
12 basically the fan cooler heat load is a function of the
13 temperature inside the containment, and the supply
14 temperature to the fan coolers. Okay, that determines how
15 much heat input from the fan cooler system.

16 And we started out initially with an initial
17 component cooling water supply temperature of 80 degrees,
18 which is the maximum expected steady state operating
19 temperature in the component cooling system that you have
20 normally, prior to any accident.

21 We would add to that, then, that the head load
22 from the fan coolers would be added to the head load from
23 the other users in the component cooling water system, and
24 we would calculate then a supply temperature to the
25 component cooling water heat exchanger.

1 Knowing the supply temperature for the component
2 cooling water heat exchanger, the service water temperature
3 and the tube size, and also knowing the flows through that
4 heat exchanger, both on the shell side and the tube side,
5 the UA heat exchanger, we can then calculate the exit from
6 the component cooling water heat exchanger, which is again,
7 the new supply temperature now, the higher supply temperature
8 now, to the various users as well as back to the fan cooler.

9 A calculation was done to determine how long it
10 would take for the entire loop to heat up, and the
11 conservative estimate of loop transport time was made as
12 three minutes. So then the calculation was repeated then,
13 each three minutes thereafter, out until 1200 seconds,
14 which corresponds to the 20 minutes that we are using here
15 for operator action.

16 MR. BUCKLEY: This is using three pumps?

17 MR. SCHLONSKI: The analysis was done for each
18 of the cases, and I'll go through those cases.

19 So, basically then, we came up with results for
20 each case -- a plot of the temperature versus the time,
21 the supply temperature transient.

22 Case 1, which basically is the same case that
23 appears in the FSAR in terms of single failure assumption;
24 it's the failure of a diesel to start, coincident with the
25 loss of off-site power, it verified the limit that was

1 indicated in the FSAR; that is, component cooling water
2 supply temperatures maintained below 120 degrees.

3 Case 2, which was the failure of a single spray
4 pump, turned out to be less severe than case 3, which was
5 the failure of a single salt water pump as the single
6 failure.

7 Case 4 was very close to case 3 in terms of the
8 temperatures, just slightly less than case 3. Case 4 was
9 the single failure of one of the busses, considering the
10 bus as the single failure. Assuming off-site power was
11 available for that case, adding into the calculation the
12 head loads that we would get from the C-header, which were
13 higher than the -- the additional heat load would then be
14 higher.

15 However, case 4, as a result of bus failure, there
16 was only four fan coolers in service, so that that case did
17 come out slightly less than case three.

18 That was basically the results and the analytical
19 methods we went through to calculate.

20 MR. WERMIEL: So, you have assured yourself that
21 case 3 bounds the others? In other words, case 3 --

22 MR. SCHLONSKI: Case 3 is definitely the bounding
23 case, or gives you the highest supply temperature, which is
24 on the order of 132 degrees.

25 MR. WERMIEL: Okay. I understand that.

1 There are two more things that relate to that.
2 They are not specifically involved, I guess, with the
3 analysis that was done as much as some of the assumptions
4 that went into it, and the first of that has to do with
5 something we've talked to Buckley and other people on the
6 phone about. That seems to be apparent change in the
7 assumption for auxilliary salt water temperature, and that's
8 ocean water temperature.

9 The requalification that I understand you're going
10 through now, based on case 3, has assumed an ocean water
11 temperature of 64 degrees, which results in a peak bulk
12 supply temperature for component cooling water of 132.

13 The original assumptions in the FSAR were for 70
14 degree ocean water temperature which, under the case 3
15 assumption, as I understand it, result in a bulk supply
16 temperature for component cooling water of 137.

17 But I understand that 132 is the number that you
18 now want to assume as most limiting, and that will mean that
19 the 64 degree water temperature for the ocean must be
20 submitted and approved by the appropriate people of the
21 staff, the NRC staff.

22 MS. VIETTE: Before Jerry can accept the
23 information that have here, if you plan to change that ocean
24 water temperature to 64 degrees as opposed to 70 degrees
25 referenced in the FSAR, our hydrology people are going to

1 look at that and we're going to have to have them look at
2 records, ocean water temperature records, and the in-take
3 cove and recirculation effects before Jerry can even
4 approve what you have here.

5 MR. MOORE: I'm confused. The licensing basis
6 for this system is very clearly spelled out in the FSAR,
7 okay, and it is the case, I believe, if I remember
8 correctly, case 1, which had a full set of assumptions
9 identified. We selected the worse case scenario and that's
10 the licensing basis.

11 Additional questions were asked, okay, and we
12 felt it prudent, as engineers, to review those questions,
13 and we felt -- to satisfy everyone that there was not a
14 safety concern or an issue about the plant. We have done
15 that. I don't think the project has ever committed to
16 change the licensing basis for this system, okay.

17 Now, if we're proposing to do that, then we would
18 have to not look at 70 degrees and 64 degrees, but the entire
19 section that addresses this system.

20 Now, once again, I look at these analysis as
21 being further, more rigorous confirmation of the original
22 system design; not a design basis analysis by which the
23 plant is licensed.

24 MR. WERMIEL: I'm confused now, Gary. I thought
25 that's exactly what we were doing here. The design basis

1 in the FSAR for the component cooling water system indicates
2 that given a single failure, I can supply proper component
3 cooling water system temperature, or whatever I need, to
4 safely shut the plant down. I can take a single failure
5 following following a loca in an auxilliary salt water pump,
6 and as I understand it from your analysis, I'll get a
7 temperature.

8 I must now assure myself that with that
9 temperature, I can safely shut the plant down, and I thought
10 that's exactly what this was trying to prove to me.

11 MR. MOORE: And we feel that we have provided that
12 assurance that is different from, okay, this being the
13 design basis, or the licensing basis for this system.

14 MR. WERMIEL: And again, I don't understand that.
15 The licensing, as stated in the FSAR, is that if I take a
16 single failure somewhere, the component cooling water
17 can do it's job and safely shut the plant down.

18 MR. MOORE: It is not that loosely stated, Jerry.
19 It is very clear what the basis is. In the worst single
20 failure, it was not in the component cooling water system,
21 but was taken on a unit basis.

22 MR. WERMIEL: Okay. Then pardon the staff. The
23 staff unfortunately made an error in it's original review,
24 because it obviously did not pick up this particular point
25 that has now been picked up, and must now assure itself

1 that given this single failure, the system will do it's
2 job.

3 MR. MOORE: So, you're asking us to change the
4 licensing base of this system? That is news to me.

5 MR. WERMIEL: I sure don't see it that way, but
6 if that's the way you guys see it, then that's fine.

7 MR. PARR: That is not what we're asking.

8 MR. WERMIEL: What I'm asking is, as I understand
9 it, I thought, and I believe that was what the staff
10 thought when it approved the component cooling water
11 system, was that following a loca, given a single failure,
12 whatever that might be, the component cooling water system
13 can perform it's safety function and assure a safe shut-down.

14 That's the way it's broadly worded in our
15 evaluation. If we have erred in our broad evaluation, we
16 must correct that.

17 MR. MOORE: Well, I guess where I'm coming
18 from is we feel we've done that, and we have done that in a
19 fashion that we have used, not FSAR design basis, but a set
20 of rational assumptions to demonstrate rigorously to the
21 staff that we feel we don't have a concern here.

22 MR. BUCKLEY: Well, I think that's where we're
23 coming from; to give that rationalization, you ought to be
24 able to support the 64 degrees instead of 70. I think
25 that's what we're asking for here.

1 In other words, some meteorological or
2 hydrological measurement showing that the ocean water --
3 in your environmental report, you had about four years of
4 data in there that shows that the temperature of the water
5 was 61 -- the maximum temperature was 61 or 62; I forget.

6 We need some sort of confidence that the 64
7 degrees is the maximum ocean water temperature.

8 MR. MOORE: We'd certainly supply that.

9 MR. BUCKLEY: I thought that's what we were
10 asking.

11 MR. ANDERSON: We don't want that to be
12 considered the licensing basis. We're looking at things
13 beyond the licensing basis as conditions beyond the
14 licensing basis. We are looking at additional accident
15 scenarios than were described in the FSAR -- if we are,
16 we ought to be able to use reasonable information and data
17 in evaluating those conclusions.

18 MR. WERMIEL: You will have to explain to me why
19 any single active failure following an accident is beyond
20 your licensing design basis.

21 MR. MOORE: Okay. To be very simplistic, Jerry,
22 it's my understanding that the licensing basis is as
23 described in the FSAR. Now, I may be mistaken in that, but
24 that was a set of assumptions that were -- or scenarios
25 that were mutually agreed upon, in some fashion, between

1 the applicant and the NRC. Now, I did not participate in
2 those and I don't know everything that went into that.

3 MR. WERMIEL: I didn't either.

4 MR. MOORE: But I'm assuming that the people
5 that put that package together were prudent and did it
6 correctly, and that's why I call that the licensing basis,
7 and we assume, you know, that's where our starting point is
8 from, and we're not being asked to go back and recreate the
9 situation. The plant has an operating license.

10 MS. VIETTE: When you submitted this new data,
11 you changed -- you changed it from 70 degrees to 64 degrees.
12 Why did you change it?

13 MR. MOORE: Because we also changed the accidents
14 that we're analyzing, the conditions.

15 MR. BUCKLEY: I think getting back to the
16 question --

17 MR. WERMIEL: You will provide the support for
18 the 64 degree temperature. We just need to see that, okay,
19 so that the right people can look at that.

20 That answers the question.

21 And then we'll go to the last one. In the
22 April 4th letter, there's some interesting discussion in
23 there relative to assurance of adequate NPSH with the
24 component cooling water pumps, and I believe it's based on
25 a return water temperature of 216 degrees; something like

1 that.

2 Can we see a little more specifics on the
3 calculation that went into verification of the NPSH,
4 available versus that required for the pumps? Is some of
5 that information available?

6 MR. CONNELL: Sure.

7 MR. WERMIEL: I think I'd like to see that.

8 MR. WARD: You can see any of our calculations.
9 I've got the calculation right here.

10 MR. WERMIEL: Okay.

11 MR. WARD: I'd be happy to answer any questions
12 about it.

13 MR. WERMIEL: I'm really mostly curious, I guess,
14 about what the friction loss is in the -- up from the
15 sewage tank up through the suction of the pumps itself.

16 MR. WARD: Okay. Well, maybe if I described it
17 to you it might be a little easier than --

18 MR. WERMIEL: Okay.

19 MR. MOORE: Chris, when you're drawing the
20 picture, please make it clear where the flow occurs and
21 where the flow doesn't occur.

22 MR. WARD: Yes. I'm not putting any detail in
23 the rest of the system, because that's not really what
24 we're concerned about here.

25 The CCW surge tank, which is right here, is up

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1 on the roof of the auxilliary building, and -- let me just
2 change this a little bit.

3 Now, the flow in the system goes through this
4 piping down here. There's no flow in this line here. This
5 is basically a static line.

6 MR. BUCKLEY: We're not talking about the water
7 in the surge tank?

8 MR. WARD: No, there's no flow here. This is
9 just basically a static line. The entire purpose of the
10 surge tank is to pressurize the system so all points of
11 the system are under certain pressure, and also take
12 expansion and contraction of the cooling system when it
13 gets hot or cools down.

14 This tank is dented up here.

15 When I did the calculation, the calculation is
16 based on the low water level of the surge tank. I don't
17 know what the number is -- a 170, or something like that.

18 So, basically what the surge tank does is it gives
19 you constant pressure from this part of the system, and if
20 we take -- neglecting any friction losses for the time
21 being -- now, they're included in the calculation -- what
22 you've basically got is 171 feet up here and 75 feet down
23 here, so that gives you 95 feet, 95 feet of static head
24 and suction, that pump neglects friction losses.

25 This is extremely favorable suction conditions

1 for -- not only this pump, but for any pump you'd want to
 2 put in the system. So, in the calculation what we did was
 3 we looked at the flow from this point here, which I'd say
 4 is the constant pressure point, took the friction loss up
 5 to the pump suction and then we used this standard NPSHA
 6 type calculation to subtract off the vapor pressure at any
 7 other terms in the equation.

8 And I think you'll find from the calculation that
 9 the pressure dropping here is fairly small. I don't want
 10 to give you any numbers, but it's not of large value.

11 MR. MOORE: Chris, can we just take the time to
 12 get that number of the calculation?

13 MR. WARD: The frictional?

14 MR. MOORE: For the record --

15 MR. WARD: Okay. The calculation doesn't have
 16 specific numbers for the friction loss. Okay. We've got --

17 MR. MOORE: Maybe you can just write down the
 18 equation.

19 MR. WARD: The total friction loss is -- oh, I'll
 20 write down the NPSHA. All right. This is basically your
 21 static head term. This term subtracts off your vapor
 22 pressure, and this term subtracts off your friction losses.

23 This number is very small, because these flows
 24 we're talking -- I did this compilation for the flows -- in
 25 excess of any actual pump flow -- let's say the flows were

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1 zero to 15,000 GPM, which is -- the manufacturers certify
2 the pump curves go up to about 15,000 GPM. So you can see
3 that this friction loss term is just going to be fairly
4 small. If we had a calculator, we could put some numbers
5 in there.

6 MR. MOORE: Maybe we could just bound that. Does
7 somebody have a calculator?

8 MR. WARD: I think we have some curves here which
9 show the kind of margin we have on the NPSHA pumps, and the
10 curves really speak for themselves. I'm going to draw you,
11 so everybody can see it -- does anybody want to look at this
12 anymore?

13 MR. MOORE: 4.7?

14 MR. WARD: I'm going to show you basically what
15 this NPSH curve looks like. Here's flow, and here's
16 NPSH. I've got the vendor's NPSH curve on here. It looks
17 something like this. And what I did was I looked at a
18 number of different return temperatures. I just wanted to
19 get bounding cases on here.

20 And if you go to -- let's say we start at 100
21 degrees farenheit, this would be the available curve and
22 this would be the point.

23 In my calculation I considered all the way from
24 100 degrees to 250 degrees return temperature. In the CCW
25 system, 250 exceeds absolutely any value that we would have

1 in the system.

2 The 250 curve -- in the 250 degree case, it comes
3 down something like this. Now, for any of the conditions
4 that we analyzed, or any condition you're going to have in
5 the CCW system, your pump will be operating back on it's
6 curve somewhere, and you can see that anyplace below this
7 15,000 GPM, you've got an extremely large margin of NPSH
8 available, above the NPSH requirement for that pump.

9 This surge tank up here puts enough static
10 pressure on the system, on that pump suction, that you'd
11 recover way in excess of what you'd ever need for that
12 system.

13 And I'd also like to add that this surge tank does
14 another thing, which is to submerge the suction of these
15 pumps. There is no case where you're ever going to have to
16 worry about the air -- these things are always going to be
17 flooded.

18 MR. MOORE: Jerry, to answer your specific
19 question when you started up. if you'll accept the friction
20 drop -- not the term, the factor, but the drop, that works
21 out to be about 11 feet.

22 MR. WERMIEL: Just 11 feet?

23 MR. WARD: I used 15,000.

24 MR. WARD: So, I don't know if you have any
25 specific questions about this, but, you know, we have looked

1 at this and there's really no problems.

2 MR. BUCKLEY: Could I ask you a question? Is the
3 temperature at the exit tank cooler -- 216 degrees. How
4 many degrees are you sub-cooled at that elevation?

5 MR. WARD: I don't know. It's in the FSAR,
6 chapter 9. I don't know off the top of my head.

7 MR. BUCKLEY: Apparently, it would not be flashing?

8 MR. WARD: No.

9 MR. WERMIEL: This draws pressure off the pump?

10 MR. MOORE: It's basically -- the head that you
11 have, it's the differential head between the fan cooler
12 discharged and the surge tank, is the head that you have to
13 work with.

14 MR. WARD: I would like to add in the FSAR, they
15 do take, you know, they don't consider the temperature down
16 here. They do consider the temperature right there at the
17 exit of the CFC's and at the elevation of fan cooler.

18 MR. MOORE: And I believe that the situation at
19 the discharge of the fan cooler is a different case than
20 we've been studying here. It goes back to the original
21 licensing basis, for fear of upsetting Jerry again, of
22 three fan coolers. You get a higher discharge temperature
23 when you have the three fan coolers than when you have the
24 five fan coolers.

25 So, with regard to that little part of the

1 problem, that's an area that was more severe or limiting.

2 MR. BUCKLEY: I guess -- let me ask you this
3 question. If it is 216 degrees, there is a sufficient
4 pressure drop to cause flashing, and I am told the answer is
5 no, it will not flash.

6 MR. CONNELL: That's correct. As Chris was
7 saying, it's in the FSAR, and we looked at the calc that
8 supports the FSAR.

9 MR. BUCKLEY: Thank you.

10 MR. MOORE: Jerry, were you satisfied in our
11 resolving what looked to be an apparent discontinuity between
12 some numbers in the FSAR? I think it was really reflecting
13 two different situations.

14 MR. WERMIEL: Yeah, I understand now that, again,
15 "the design basis" for which you originally licensed, or
16 assumed licensing for the plant, is different from that
17 which is assumed now. And, therefore, cooling water
18 temperatures will, of course, be different.

19 Let me just read this part of the letter one more
20 time, to make sure there's nothing else.

21 Gary, just to make sure -- case 3 of the new
22 analysis, the exit temperature from the fan coolers is 210,
23 as opposed to the 216 for that case in the FSAR, is that
24 correct?

25 MR. MOORE: Yes.

1 MR. WERMIEL: Okay. I just wanted to make sure
2 I understood that.

3 MR. MOORE: And we did not -- did we give them
4 a new temperature for the mixing case?

5 MR. WARD: No, it's in the FSAR. I didn't feel
6 it was necessary to go over that again.

7 MR. WERMIEL: That being the same, of course?
8 That case has not changed?

9 MR. WARD: No. You mean the case that's given in
10 the FSAR with three fan coolers, and the discrepancy between
11 the fan cooler outlet temperature and the CCW heat
12 exchanger?

13 MR. WERMIEL: That's right.

14 MR. WARD: That would still be valid.

15 MR. WERMIEL: In other words, that's -- the
16 mixing is caused by -- maybe you can refresh my memory, I
17 don't recall.

18 MR. MOORE: Three-fifths flow split.

19 MR. WARD: Basically on a LOCA signal, you've got
20 five fan coolers available. The original FSAR single
21 failure assumption took two of those out of service, in
22 terms of their motors operating and removing heat.

23 Now, the CCW system is insensitive to that kind
24 of a failure. It's going to supply each fan cooler with
25 it's design flow. So, essentially you've got three fan

1 coolers with their full design flow, mixing with two fan
2 coolers that have a full design flow but no additional
3 temperature, and those are going to mix on the way out.

4 MR. WERMIEL: Okay. And that's where the 171
5 degrees, I believe, comes from?

6 MR. WARD: Yes.

7 MR. WERMIEL: Okay. Now I understand.

8 MR. MOORE: And the five fan cooler case is
9 essentially the discharge temperature of the fan coolers.
10 If there is some fraction of flow that doesn't go through a
11 fan cooler, that mixes back in, but it's relatively
12 insignificant.

13 MR. WARD: It's just the pump coolers, basically.

14 MR. MOORE: Jerry, getting back to your earlier
15 question, and I don't know if this changes your question,
16 and maybe the Westinghouse fellows can correct me, and
17 maybe this isn't the same thing you were saying earlier,
18 Chris, that you hadn't calculated it, but maybe Westinghouse
19 has calculated the number.

20 Their case 1 was two component cooling water pumps,
21 and the flow was 11,300 GPM's. The case 2 and 3 were
22 three component cooling water pumps, and the flow was
23 11,600 GPM.

24 Do those numbers allow us to say now that the
25 difference in flow between the two pump case and the three

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1 pump case is 300 GPM?

2 MR. WARD: Yes, fine. I'm just saying that we
3 haven't analyzed the temperature part of it on a lower flow.

4 MR. MOORE: I'm wondering if that changes
5 Jerry's question at all, when we point out that the flow
6 difference is 300 GPM out of roughly 11,000?

7 MR. WERMIEL: There's only a 300 GPM difference
8 between two and three component cooling water pumps
9 operating?

10 MR. MOORE: That's correct. And just on an
11 engineering judgment basis, that small percentage change in
12 flow, I would not expect a significant difference in
13 temperature results, even though we haven't calculated it.

14 MR. WERMIEL: I wouldn't either, but why is it
15 so small? Is that because the piping is so oversized?

16 MR. WARD: No. Let me show you that also.

17 MR. MOORE: I'm just wondering; maybe you don't
18 want to ask the question anymore, based on this new
19 information?

20 MR. CONNELL: That's a good thing to bring up,
21 because I guess I was having a hard time understanding when
22 we were talking about the flow -- maybe Chris can show
23 you this, but the difference in the flow between two and
24 three as it goes through the single, is -- granted, it's a
25 few GPM, but relative to a piece of equipment, it doesn't

1 make any difference.

2 MR. WARD: When you've done a calculation like
3 this, when you use a system resistance curve, that system
4 resistance curve will increase the flow. Your pressure
5 will increase as the square of flow, and with our pump
6 curves with the CCW pump, what's happening is your curve
7 is steep enough -- your Q square curve is steep enough that,
8 you know, the difference between one, two and three pumps
9 is not that widely disbursed.

10 That's why when you get up to the two and the
11 three pump case, you're not significantly increasing the
12 total system flow.

13 MR. MOORE: Jerry, to answer your question, yes,
14 the piping in the equipment are very close to their
15 maximum flow capability, and even though you provide another
16 pump to the system, the system's operation doesn't reflect,
17 you know, a one-third pumping addition, and it's because of
18 where you are in the system characteristics.

19 MR. CONNELL: Let me tie that in to the earlier
20 question of the flow through the heat exchanger on the
21 C-loop.

22 You asked the question have we gone through and
23 tabulated each of those components to see if it was
24 specified with the three pumps pumping rather than the two,
25 and my answer was I didn't know, and I guess -- I hadn't

1 gone through and tabulated it because I know as far as a
2 heat exchange is concerned, the difference in flow is small
3 enough so that it's not going to make a difference to the
4 component.

5 I mean, you're talking, you know -- I don't know
6 what the numbers are -- 11,000 versus 11,300, or something
7 like that. You're talking two, three, four percent.

8 MR. WERMIEL: With that in mind, I can see where
9 you're somewhere or some way on the way to answering both
10 concerns with flow and with the temperature in case 3, with
11 only two component cooling water pumps operating. It's an
12 essentially negligible difference.

13 I didn't realize the system curve was so steep
14 at that point, and that, I gather, was by design?

15 MR. WARD: I couldn't answer that. I don't know.

16 MR. MOORE: Once again, not having been a part
17 of that, I'm not sure what you gain --

18 MR. WERMIEL: Well, I guess I do know what you
19 gain with three pumps. What you gain is from the standpoint
20 of your tech specs. It allows you to have one down
21 indefinitely.

22 MR. WARD: That's correct.

23 MR. WERMIEL: Gary, I'd appreciate something that
24 explains that, since I perceived it as an oversight, and
25 apparently it wasn't necessarily an oversight, and even if

1 it was, it's not significant, and I sure would appreciate
2 some explanation of that.

3 MR. MOORE: So, you would like to have us add
4 an additional -- let me just think out loud.

5 You're interested in some words that would address
6 an additional case --

7 MR. WERMIEL: Or how about case 3 with a note
8 relative to the third column on the number of pumps? And
9 that would involve, both from the standpoint of two versus
10 three pumps having insignificant effect on CCW performance
11 for this design case, because the system curve is such that
12 heat load is not effected and flow is not effected.

13 MR. MOORE: I'm looking to Ed to make sure he's --

14 MR. WERMIEL: That curve, from the calculation,
15 would be highly helpful.

16 MR. CONNELL: That's really what you want, to get
17 on the blackboard with something that says --

18 MR. WERMIEL: I don't think I -- usually --
19 particularly when you're trying to gain some heat transfer
20 capabilities with three pumps, it's usually much more
21 broad

22 MR. BUCKLEY: I thought you were going to have
23 18,000 GPM's.

24 MR. WARD: Now, there's something that is a
25 little different here.

1 This case assumes that the C-header isolates,
2 all right? Now, your normal system configuration has a
3 C-header, and the system curve is much more strung out,
4 all right? But now when your C-header isolates, which is
5 this case 3, that changes your system characteristic and
6 does bring that curve way up because your flow path is
7 drastically changed. You've got much less, or many less
8 components which you're providing flow to.

9 MR. MOORE: A smaller system.

10 MR. WARD: A much smaller system, right.

11 And if you didn't have the C-header, the curve
12 would be flatter on that.

13 MR. WERMIEL: That would be very useful. And,
14 of course, that would explain away the problem that was
15 noted with respect to the tech spec not governing the
16 operability of three pumps.

17 MR. MOORE: So, we ought to give this as just
18 additional information. We ought to try to tie in the tech
19 spec, and we ought to also try to see if this addresses the
20 incremental flow increase on other components?

21 MR. WERMIEL: Yes.

22 MR. MOORE: Okay. Maybe we can use this
23 additional information to answer those three questions.

24 MR. WERMIEL: Okay. I guess -- let me make sure,
25 now. Normally, only one of three pumps is operable, right,

1 is operating?

2 MR. MOORE: Yes.

3 MR. WERMIEL: Okay. So, from one to two there
4 will be some difference, but that, of course, -- and two
5 to three will be somewhat more, but that part being
6 insignificant, the increase from one to two would still need
7 to be accounted for.

8 On a safety injection signal, all pumps come on,
9 although, you know, the increased flow going from two to
10 three may not be a significant contributor, when the second
11 pump comes on the 20 minutes prior to opening the other
12 heat exchanger, that flow needs to be accounted for,
13 correct?

14 MR. MOORE: In terms of flow --

15 MR. CONNELL: Oh, yes. I agree.

16 MR. MOORE: I was going to ask the same question,
17 just to make sure I got what Ed got.

18 We're not going to address the one to two case
19 with regard to temperature.

20 MR. WERMIEL: No.

21 MR. MOORE: So, we had those three questions.
22 We need to get Gary Tidrick back down here if we want to
23 pursue a little bit more -- I want to make sure that we
24 understand exactly what you'd like to see from us on the
25 64 degrees, you know, for additional information.

1 MR. WERMIEL: Hopefully, the licensing people can
2 help me out there.

3 MR. MOORE: Right after lunch -- let's not do
4 it now. Let's get the guy down so we can hear.

5 We're pursuing start-up tests right now. That's
6 what he's doing. That's why he's not here.

7 What else did we have in terms of action items
8 before?

9 Of course, we have the pressure bound -- the
10 remaining component that has not -- the pressure boundary --

11 MR. WERMIEL: The pressure boundary question, I
12 guess we'll call it, and associated question with
13 instrumentation.

14 MR. MOORE: And that we sti-1 owe you, and
15 depending on how that comes out, we'll owe you whatever
16 that results in. I don't know what that's going to come
17 out to.

18 MS. VIETTE: I realize right now I don't expect
19 you to give me a schedule of when you're planning on
20 submitting these, but I assume that you will be sending me
21 something with a schedule of when these will be coming to
22 NRC, so that we will know when we will be able to resolve
23 the entire CCW matter?

24 MR. MOORE: Okay. We did -- we left it open-ended
25 in our last submittal with regard to the one component, if

1 I'm not mistaken?

2 MR. CONNELL: I'm predicting two weeks from
3 tomorrow. I don't know what I said earlier.

4 MS. VIETTE: We're just seeing those for the first
5 time. We had not received that April 15th letter.

6 MR. MOORE: Okay. I couldn't remember. I thought
7 we left it open-ended, and we did. Ed hinted at maybe
8 we're looking at two weeks, and we will send you a
9 submittal outlining our schedule for this additional
10 information.

11 I would also like to raise before the group an
12 idea. What I would be proposing on this next submittal is
13 to try to separate old from new, and encroach our submittal
14 in the sense that this information completes the request
15 for additional information with regard to the original
16 concerns raised in the allegation, and hopefully, that
17 will be the complete package. And then have a separate
18 series of communication to address these new issues that
19 have been identified in the resolution of those older
20 issues. kind of separate the two areas.

21 If that's acceptable, we would also propose to
22 do that.

23 MS. VIETTE: Yes, it is.

24 MR. WERMIEL: You and I talked about this, Gary,
25 and I don't see a problem with that. I think again, we're

1 going to have to consider that, but I don't see that that
2 approach causes any difficulty.

3 MR. BUCKLEY: That's fine.

4 MR. MOORE: You don't have any problem with that,
5 do you?

6 MR. LEW: Well, I guess I'd like to get some
7 agreement here about what are the old issues. I think
8 we generally know what those are; and what are the new ones,
9 so that we can at least agree here on what the split is and
10 that that split is adequate with the staff.

11 MR. MOORE: Let me propose that. That's a good
12 point.

13 One of the issues being what is -- perform further
14 analysis to determine the worse case condition of component
15 cooling water temperature, due to a new set of signal
16 failures.

17 MR. BUCKLEY: Are we talking about old now?

18 MR. MOORE: Yes. These, in my mind, are the
19 issues that comprise old; namely, study the whole area of
20 excess heat loads.

21 Study the validity of our 200 GPM leak assumption
22 and the pressure boundary question; that's two.

23 And I would propose to answer the flow question
24 with regard to the old issue as putting forward the
25 certified manufacturers information that were part of the

1 design; namely, the 18,000 CPM.

2 New issues being how we're going to address this
3 new information we've gotten from the manufacturer, the
4 6000 GPM, and the issue of pneumatic operated valves.

5 I think that's it, isn't it, Ed?

6 MR. BUCKLEY: And the 64 degrees.

7 MS. VIETTE: The 64 degrees.

8 MR. MOORE: The 64 degrees would have to be part
9 of the old, right. You've asked for our basis for 64
10 degrees.

11 MR. WERMIEL: What's the pneumatic valve question?

12 MR. MOORE: Well, it has to do with -- we're
13 looking at -- there are some pneumatic valves that are
14 within the system, that it's not clear today their operation
15 on loss of off-site power, and in terms of how that effects
16 systems flows, and we're looking at that.

17 MR. CONNELL: We're looking at that, I guess, on
18 a plant basis. We're looking at that on a generic basis
19 throughout the plant. CCW will happen to be one system, so
20 that's involved.

21 MR. WERMIEL: It has to do with assumed failure
22 mode on loss of air? Is that it?

23 MR. CONNELL: It's how quickly it gets to the
24 failure mode. How that effects the flow.

25 MR. WERMIEL: Okay.

1 MR. CONNELL: I guess that's it. We're not
2 questioning the failure mode itself, but what happens to the
3 flow.

4 MR. MOORE: Once again, Jerry this is an attempt
5 to put to rest once and for all, any questions that ever
6 could be asked with regard to this system.

7 As we mentioned to Tom on the phone the other
8 day, we're trying to make sure --

9 MR. WERMIEL: That's a noble goal.

10 MR. BUCKLEY: We didn't let you finish, though,
11 Gary. Were you going to say something else?

12 MR. MOORE: I see that as being the split, and
13 we -- the latter two issues are the same type of thing that
14 we would be finding on any of our work, you know, if you
15 were to come along and a question be raised on a project.
16 I think, in my mind, it's clearly separate.

17 MR. LEW: I was going to bring up the 64 degrees
18 again, and let me try to clarify the situation.

19 First of all, setting aside the question of
20 whether 64 degrees is changing our licensing basis or not,
21 I think is probably best left with attorneys who specialize
22 in that type of thing, but as part of our requirements to
23 satisfy Regulation 50/71E, which is the FSAR update, there
24 states -- there are two sentences in there which are
25 particularly relevant. It says -- I'm paraphrasing now --

1 the emphasis of our update shall contain all changes
2 necessary to reflect information and analysis submitted to
3 the Commission by the licensee.

4 In addition, it says the FSAR update shall provide
5 all analysis of new safety issues performed by or on the
6 behalf of the licensee at the Commission request.

7 So, I think it's clear, in terms of being in --
8 satisfying our regulatory obligations, that the information
9 we're discussing today on CCW, whether or not it is part of
10 our licensing basis, will be included as part of our FSAR
11 update. And in particular, it will be consistent with the
12 form and depth of the FSAR.

13 I hope that clarifies.

14 MS. VIETTE: Yes.

15 MR. LEW: If this is an appropriate time to break,
16 Gary, we've arranged for a buffet across the street, 77
17 Beale, room 301. I guess they're set-up for noon. Would
18 we propose to be back by 1:00?

19 MR. WERMIEL: That would be fine.

20 MR. LEW: What does our agenda look like in the
21 afternoon?

22 MR. MOORE: I just want to make sure that we have
23 a clear understanding of the information that the staff is
24 looking for on 64 degrees, and I think we've kind of
25 answered the two pump, three pump case, or at least we have

1 a way of answering that question. Then I would be prepared
2 to answer any further questions the staff might have, after
3 lunch.

4 MR. CONNELL: You know, Gary, I never got a chance
5 to get my two cents worth in on this 64 degrees.

6 MR. MOORE: All right. Go ahead.

7 MR. CONNELL: We'll send the information, but I
8 just want to leave -- I don't want to leave the impression
9 that this is going to be some kind of fantastic gymnastics
10 to support 64. It's clear from the record that this is an
11 appropriate temperature to use, and we'll simply submit to
12 you the record over a number of years where --

13 MS. VIETTE: That's exactly what we need.

14 MR. CONNELL: All right. I just want to let you
15 know that what you're getting is going to, you know, it
16 may not be the highest temperature that it's absolutely
17 possible to get out there, but looking at the record, you
18 won't see that temperature out there too often. You won't
19 swim in this water. This is cold water.

20 MS. VIETTE: That's exactly what we need. We need
21 temperature records at the in-take cove, and this is
22 probably information that you do have available to you just
23 to send in and evaluate the effects of recirculation.

24 MR. CONNELL: Yes, we have -- there's model
25 studies on recirculation, and there's temperature records on

1 there, and of course we looked at them before we picked this
2 number up.

3 MS. VIETTE: This was brought up in the
4 environmental report and in the hearing before.

5 MR. WERMIEL: I just had a thought. When you
6 supply that curve on the flow for one, two and three pumps,
7 can you also show on that curve the difference with the
8 C-loop not isolated?

9 MR. MOORE: Just the curves?

10 MR. WERMIEL: Yes, and appropriate discussion of
11 what difference that makes with respect to flow rate through
12 the system. I understand what difference it makes with
13 heat load.

14 MR. MOORE: If the staff wouldn't mind, what I
15 would propose we do is to pull that together, put our words
16 together, and then place a conference call with the staff
17 and read to them the description that we're proposing to
18 put in, and make sure that we haven't lost something in the
19 translation.

20 MR. WERMIEL: That's fine.

21 MR. MOORE: We'll make sure we do that.

22 MR. WERMIEL: That also may reflect whatever
23 additional consideration, I guess, was going into this new
24 issue with respect to what does the flow mean, and I will
25 keep that in your new category.

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MR. MOORE: What I'm proposing is when we pull this next submittal together, is to place a phone call and discuss it prior to us submitting.

MR. BUCKLEY: Should we break?

MS. VIETTE: Yes.

MR. BUCKLEY: We'll return at 1:00.

(Whereupon, at 11:50 a.m., the meeting was recessed, to reconvene at 1:00 p.m. the same day.)

AFTERNOON SESSION

1:10 p.m.

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MS. VIETTE: We're ready to begin now. Were you able to gather some information for us over the lunch hour? Were you able to --

MR. CONNELL: I was trying to get ahold of the instrumentation engineer to talk about Jerry's earlier question. He's meeting with his chief right now. He'll be back -- not on this topic but something else. I don't know when he'll back, whenever he gets out of there, so presumably within an hour or something like that.

If I understood your question correctly, Jerry, you wanted to know that, on these level indicators on the surge tank, notwithstanding that they meet REG Guide 197, you're saying if some seismic event caused them to be inoperable, how would you restore them, is that right?

MR. WERMIEL: Yes, I guess, assuming that when you finish the analysis for the requalification for the C-Loop, you don't need to take credit for operator action performing a safety function. In otherwords, assuring availability of make-up to the surge tank, but that the indications, the level of instrumentation on the tank only has to retain its pressure boundaries.

Eventually, you're going to want to know or want to diagnose the level in the surge tank and how the component

1 cooling water system is behaving. Can you somehow restore
2 to functionality --

3 MR. CONNELL: I'm going to have to leave that
4 specific question to him but if I understand correctly,
5 what is there, a sight glass on the tank?

6 MR. GIFFEN: There's also two sight glasses,
7 one on each side.

8 MR. WERMIEL: Okay, is that what you think you
9 might do, is just have somebody periodically look at the
10 sight glass, something like that?

11 MR. CONNELL: Certainly, that's a possibility?

12 MR. WERMIEL: Okay, that's what I think we would
13 just want to know, I guess as, you know, what means is
14 available for say, keeping track of the surge tank, follow-
15 ing an SSE, given that the functional capability of the
16 automatic instrumentation isn't apparent or is not accounted
17 for or is not going to be available. The sight glass I
18 assume would be there because that's part of the pressure
19 boundary. You have to have fluid in it so, I assume it
20 would have to be.

21 Are there sight glasses going to be qualified?

22 MR. WARD: Actually, the sight glasses normally,
23 we show it as normally valve --

24 MR. WERMIEL: Would you then do something to
25 assure that they would be available?

1 MR. WARD: Well, you'd have to, I mean, if
2 you want to go up there and use it you'd just valve it
3 in when you wanted to use it. Obviously if it were broken
4 or something --

5 MR. WERMIEL: Oh, you'd just replace it.

6 MR. WARD: Open the valves up and --

7 MR. WERMIEL: So you would just replace the
8 glass?

9 MR. GIFFEN: Yes, the valves are normally shut
10 both of them and it should be the code bound reactor
11 valve.

12 MR. WERMIEL: Yes, that's correct. It should be.
13 The valve should be qualified.

14 MR. BUCKLEY: Is there any reason why it is
15 valve qualified? I'm just curious.

16 MR. GIFFEN: Probably because you can't qualify
17 the glass. That's a guess. I'm not sure.

18 MR. WERMIEL: I'd be surpris --

19 MR. GIFFEN: It's a remote sight glass.

20 MR. WERMIEL: Usually they use plastic now, right?

21 MR. CONNELL: Of course, on the other hand,
22 all you have to do is turn on your make-up supply. Then
23 you know you've got it.

24 MR. WERMIEL: Okay well, all right, the automatic
25 level control system will also not be available now, right?

1 MR. CONNELL: No, we weren't talking automatic
2 now, right? You were saying some long term, right?

3 MR. WERMIEL: Well, all right, yes, but now,
4 somebody is going to have to keep track of make-up,
5 assuring he has enough make-up, assuring I guess that
6 the tank level is where it's supposed to be. Is there
7 going to be some means and what exactly is it that will
8 utilize it for a longer term.

9 (Pause.)

10 MR. CONNELL: There are so many things you
11 can do here in the system. It's hard to answer this
12 question. One thing, you still have your flow indication
13 in the CCW System itself which tells you if you're losing
14 water in the system itself.

15 MR. WERMIEL: Would there be sufficient time
16 to react to a condition like that, restore additional
17 make up or take whatever action is necessary once you've
18 got that indication?

19 MR. CONNELL: Certainly it's my judgement but
20 I don't know exactly what the events are you're postulating.

21 MR. WERMIEL: All I'm really postulating is just
22 a simple case where functionally the instrumentation
23 normally available to the operator that he's used to
24 having is not going to be available following an SSE and
25 for some time he's not going to know readily what's going

1 and I'm just really asking after some time, what can he
2 do or what would he do with whatever instrumentation is
3 available to assure himself that he has properly operable
4 component cooling water system and I'm thinking mostly
5 from a standpoint of the surge tank since that's the,
6 such a major part of what constitutes a good operation
7 in the component cooling water.

8 MR. CONNELL: The indication that the system
9 itself is full, is seismically qualified and it's 1-A
10 components, I believe, that is -- I guess that's pressure
11 and flow.

12 MR. WERMIEL: Off the pump.

13 MR. CONNELL: Yes. That tells him the system
14 itself is working. You know, beyond that, to keep the
15 surge tank full, if you wanted, as I said, you can always
16 just cut in, you can look on the sight glass, if the
17 sight glass isn't there you can open the valve and see if
18 you've got water in the tank. You can put in your
19 category 1 make up supply.

20 MR. WERMIEL: What you're saying is, you really
21 feel then that there is sufficient instrumentation
22 available for performing diagnosis in the long term
23 following an SSE?

24 MR. CONNELL: It sure looks to me --

25 MR. MOORE: Certainly, Jerry, the sight glass alone

1 by virtue that it's l-C has to maintain its integrity
2 so you always have this direct indication.

3 MR. BUCKLEY: That was slightly different from
4 what I thought I just heard and that is the sight glass
5 may not be there and that's the reason that it's valved out.
6 Now, can someone correct me if I'm wrong?

7 MR. WERMIEL: No, I think what they said, Bart,
8 was that if it wasn't, they would replace it. They
9 already said that.

10 MR. BUCKLEY: Well, I didn't hear that part of
11 it.

12 MR. MOORE: Bart, I would have to go back and
13 look at that drawing that we had this morning, but I
14 believe the l-C boundary went around the whole gang of
15 instruments. That would tell me that mechanically, if
16 I could use that term, that pressure boundary has been
17 maintained.

18 MR. BUCKLEY: I thought I heard a different
19 response a few moments ago. I asked the question, why
20 was it valved out? The valves are shown as closed and
21 the response I thought I heard was that the gauge glass
22 may not be --

23 MR. GIFFEN: Yes, it was may not, did not
24 say yes or no, felt that maybe the reason that it's
25 valved out is because it may not be and I did not know the

1 qualification of the sight glass, per se.

2 MR. BUCKLEY: And the latest information on
3 the drawing indicates that that whole little rectangle,
4 the transmitter level indicator and the level of signal
5 are all class 1-C and are seismically qualified?

6 MR. MOORE: Qualified to maintain pressure
7 boundary.

8 MR. BUCKLEY: Right.

9 MR. MOORE: That's what I believe. Do we
10 still have those drawings there?

11 MR. BUCKLEY: Yes, that's what I understand.

12 MR. MOORE: Is there something else shown on
13 those drawings?

14 MR. CONNELL: No, Gary.

15 (Pause.)

16 MR. MOORE: I stand corrected, Bart. The sight
17 glass is -- I stand corrected. The sight glass is Class 2.
18 So it's valved out because it isn't seismically qualified
19 so I stand corrected. I was in error.

20 MR. WERMIEL: So in order to use it you'd have
21 to replace it again, is that what you're saying?

22 MR. MOORE: If it fails.

23 MR. CONNELL: Well, obviously if the sight glass
24 failed and you opened that valve, you would know whether
25 the tank was full or not. You may not know the level but

1 you know --

2 MR. BUCKLEY: That it's a low level.

3 MR. CONNELL: Right.

4 MR. BUCKLEY: I would presume, would it be
5 correct to say that if there was a leak, that a chap
6 was going out to check to see if the gauge glass is working,
7 that he would also detect a leak? Is there any -- I mean,
8 would he just go up to the surge tank and see if the,
9 opens up the valve to see if water comes out, he only
10 knows at that point in time that the tank is full, right?
11 Are there any procedures for him to inspect around it?

12 MR. GIFFEN: If you're losing level in the
13 system without being able to say what the procedure is --
14 that stands like good operating practice that if you're
15 losing water, that the supervisor is going to send the
16 operator out to find out why so he can isolate that
17 component and continue saving the water.

18 MR. CONNELL: To go back to that procedure
19 we talked about this morning, the procedure does say
20 that when you've lost, I don't know if it's pressure or
21 flow in the system itself that you cut in, that you bring
22 in your back up.

23 MR. GIFFEN: Yes, it says that.

24 MR. CONNELL: Could you put it in your
25 category on make-up?

1 MR. GIFFEN: If you're losing for whatever
2 reason water or pressure, then you check and assure that
3 the automatic actions have taken place -- if they have
4 not, then you go and use the manual actions which would
5 be to cut in the seismically qualified back up, make-up
6 water supply.

7 MR. CONNELL: So the procedure does in fact
8 cover this?

9 MR. GIFFEN: Yes.

10 MR. CONNELL: Jerry, we had something that we
11 were thinking might have been said this morning. We're not
12 sure it is but we want to clear up the record if it
13 needs to be and that is on how many pumps are operating
14 during normal operations.

15 MR. GIFFEN: It seems like you said one component
16 cooling water pump is running.

17 MR. WERMIEL: I think that's what the FSAR says.

18 MR. GIFFEN: Well, operating procedure says
19 that two will normally be running and one pump an automatic
20 stand-by.

21 MR. WERMIEL: I see. Because I think that the
22 FSAR says one is normally operating, as I understand it.
23 So you're saying two will normally be operating with one
24 on automatic stand-by?

25 MR. GIFFEN: Correct.

1 MR. WERMIEL: That's difficult to meet based
2 on the current tech specs which allow one to be down
3 indefinitely, right?

4 MR. GIFFEN: Well, it's three pumps.

5 MR. WERMIEL: Right, but if one is down indef-
6 initely then you don't have one on automatic stand-by.

7 MR. GIFFEN: The procedure says, I believe,
8 I don't have it in front of me but it says, in the normal
9 operations, two component cooling water pumps will be
10 running and the third a stand-by.

11 MR. FRIEND: You guys better back up and clarify
12 that. You've got -- apparently we have contradictory
13 statements.

14 MR. WERMIEL: I've got the FSAR section here.
15 Let me point out where I thought where I saw the words.

16 MR. FRIEND: I'm not saying that you're incorrect
17 but if you're correct you need to modify the FSAR.

18 MR. MOORE: You're not looking at the note
19 on table 92-7, are you?

20 MR. WERMIEL: I don't recall, Gary. Let me
21 take a look. Yes, on page 9.2-8(d), item 1 at the bottom
22 of the page, normal operation. "During normal operation,
23 all loops are in operation. One or two component
24 cooling water pumps and one component cooling water heat
25 exchanger are in use and are capable of serving all operating

1 components." Are we now saying it should just say two?

2 MR. GIFFEN: No, no. It says during normal
3 operation, we normally run with two but that does not
4 prohibit us then from running one.

5 MR. FRIEND: You were just clarifying what
6 you would normally be doing in the normal configuration
7 of a plant.

8 MR. GIFFEN: Yes.

9 MR. MOORE: Jerry, I think as we talked about
10 it this morning, the tech spec will let you operate
11 indefinitely with one of the three pumps out of
12 service, the design basis being two, the second pump
13 being -- is there to provide redundancy. The system
14 only needs one pump to operate correctly. I believe
15 that's a correct statement.

16 There is a preference to have more than one
17 piece of equipment in service at the same time because
18 it helps you on cool down rates, I believe, but only
19 in the sense of how long it takes you. It's not a
20 required type of situation. I think that we're not
21 in conflict. I think one is a clarification of the
22 other or how the operating department actually shows to
23 implement this licensing basis.

24 MR. BUCKLEY: Let me ask you one question about
25 that. When you say one or two component cooling water

1 pumps are running during normal operation, normal operation
2 could be during shut down where you might require two
3 pumps whereas, at full power you may only require one
4 pump. Is that a --

5 MR. MOORE: I believe you only are required to
6 have one pump --

7 MR. WARD: Yes, I mean, it's desirable during
8 shut down to have two pumps. However, you can cool the
9 plant down and like Gary says, it takes longer but you
10 can cool the plant down with one pump.

11 MR. BUCKLEY: Let me ask you again. Are there
12 two pumps running during normal full power operation?

13 MR. GIFFEN: Yes, normally. The tech specs, I
14 believe says that's a two operable train of vital
15 equipment. The technical specifications say that you will
16 have two trains operable.

17 MR. BUCKLEY: Are you reading into that then,
18 that both pumps are running because I could read --

19 MR. GIFFEN: Available. I believe operable,
20 the definition is that it must be available.

21 (Pause.)

22 MR. WERMIEL: I have nothing else.

23 MS. VIETTE: Gary, do you have a person here
24 from hydraulics that --

25 MR. MOORE: Well, he's not from hydraulics but I

1 wanted to make sure that everyone was clear on what it
2 was that we were going to supply the staff that was the
3 basis for our 64° temperature assumption and maybe Ed
4 can propose what he thinks is needed and Gary, I think the
5 data is probably going to come out of your work or in
6 your area so I wanted you here to hear this, so Ed,
7 why don't you go ahead and describe what you're posing
8 to send in.

9 MR. CONNELL: We have a record that indicates
10 temperatures being taken in the cove as well as a nearby
11 area over some period of years and we're simply going to
12 send you that record that gives you temperatures versus
13 how often they're sampled and up until after the FSAR
14 was submitted, no temperature ever recorded was a size
15 64°. After that there's one excursion where they get
16 up to a couple of degrees higher than that when there
17 were some Ecuadorian currents came North for whatever
18 reason and we're going to describe that to you in the
19 duration and also a description of the location of the
20 census and the fact that some of the census's were
21 measured via surface water so it was higher than,
22 presumably higher than what you'll see.

23 MS. VIETTE: Will you also be taking into
24 effect an analysis or sending in an analysis on
25 recirculation effects?

1 MR. CONNELL: I think, Gary, maybe you should
2 say something but we had some early model studies over
3 at Berkeley where we did, as you probably know the in-take/
4 discharge structures are relatively well separated and
5 there has been some model studies on that that show there's
6 insignificant mixing. Maybe you can say something a
7 little more, Gary.

8 MR. TIDRICK: Yes, there's two different
9 patterns to the ocean currents. During part of the year
10 there's ocean currents that move from South to North so
11 they move in the direction from in-take to discharge. Those
12 are during the warmer water months. And during the colder
13 water months, they're moving the other way so you could
14 have waters that could move from the discharge in the
15 direction of the in-take. The NPDES hearings that
16 we had about a year ago, we had the person that operates
17 the model and was responsible for the design of that
18 answering questions about recirculation for the regional
19 water quality control board. His judgement was that during
20 the time when there was some possibility of recirculation,
21 that it would be a very minor effect and might result
22 in some increase over non-recirculation and maybe a
23 fraction of a degree but as I said, that's during the
24 cold water months. During the warm water months when
25 we're talking about temperatures in the low sixties or

1 something like that, there's no recirculation so if you
2 take that basis, the most conservative you don't need to
3 consider recirculation.

4 MS. VIETTE: Okay, all right. But we would
5 like you to send that in, exactly stating that.

6 MR. MOORE: Ed, just to make sure. You mentioned
7 this record. Is this data that was collected as part of
8 some program? Can we identify the data a little more
9 precisely than taken for the record?

10 MR. CONNELL: Sure. Chris, you want to?

11 MR. WARD: Some of the data will be from
12 environmental reports, which the DER, Department of
13 Engineering and Research for PG&E has put together. I
14 did talk to those people yesterday and I don't know if
15 I can tell you exactly what document that data comes in,
16 however, they do present this document to whoever state
17 regulatory boards they report to on water temperatures
18 in the Diablo Canyon area and they do have data from
19 a number of different stations including the station
20 that we are using to represent in-take water temperatures.

21 MR. MOORE: So it's data taken as part of our
22 environmental impact program that's an ongoing monitoring
23 program?

24 MR. WARD: Yes, it's an on-going monitoring
25 program and we'll be monitoring it through the life of the

1 plant. I'm sorry, I can't give you the exact title of
2 this document but it's all document.

3 MS. VIETTE: That's fine.

4 MR. BUCKLEY: Do you plan on extracting some
5 of that data and attaching it as an appendix?

6 MR. WARD: If you wanted to we could do that.

7 MR. BUCKLEY: I think that would be --

8 MR. CONNELL: Attached to what?

9 MR. WARD: To this letter we're sending.

10 MR. CONNELL: To the letter.

11 MS. VIETTE: Right.

12 MR. MOORE: And we'll reference the document
13 that it came out of.

14 MR. CONNELL: We have one other thing.

15 MR. WERMIEL: Yes, you were going to look back
16 I think on some of the pre-op test data and information.

17 MR. CONNELL: I guess we have two other things.
18 That wasn't the one I had in mind.

19 MR. WERMIEL: I remember, Gary, you said you
20 might be able to find something.

21 MR. MOORE: We'll have to ask --

22 MR. TIDRICK: I talked to the resident start up
23 engineer just after lunch and they went back and checked
24 the records. The testing of the CCW system, they didn't
25 test it in the mode of operation of three pumps running.

1 However, in the testing of the safety injection system
2 they did have the three pumps running in that case, the
3 difference being they weren't fully instrumented to
4 measure operating pressures and flow rates for the
5 safety -- the CCW System for the safety injection test
6 but they did verify that it was lined up so that all of
7 the flow was through one heat exchanger and that three
8 CCW pumps were running which is the case we're talking
9 about. We didn't have any major time duration of the
10 operation but probably they would have been something
11 like five or ten minutes. That was just his estimate.
12 It was done probably four or five years ago, would be
13 my estimate.

14 MR. WERMIEL: And as far as you know, none
15 of that was by any chance done with the C-Loop not
16 isolated?

17 MR. TIDRICK: He would have the conditions
18 under which it was run, all the valve alignments.
19 I imagine it was isolated but I'm just wondering.

20 MR. MOORE: Why don't we go ahead and get the
21 copy of that report and summarize the start up procedure
22 as it was run and explain the tested conditions that
23 we're aware of and their durations and things like that
24 as a demonstration that the design has been operated
25 in some of these configurations.

1 MR. WERMIEL: I think that would be useful,
2 at least to know what was done.

3 MR. WARD: My question is, what are we looking
4 for when we tell you that. Are we looking for just the
5 max flow through the heat exchanger?

6 MR. WERMIEL: This is going back I guess again
7 to the question of the design basis for the flow through
8 the system. In what way did you assure yourself that
9 the flow rate that you will actually see following the
10 safety injection signal is that which the heat exchangers
11 have been qualified or verified to accept functionally.

12 MR. WARD: So you're talking about all the
13 heat exchangers in the system or basically the CCW heat
14 exchanger?

15 MR. WERMIEL: We're talking about the CCW heat
16 exchanger and the remaining ones in the system. Primarily
17 I'm concerned I guess with the CCW heat exchanger but
18 I think we also need to know about the others and of course,
19 if I take a single failure that will include those on
20 the CD, which should be isolated but which may not
21 be.

22 MR. MOORE: Chris, I think the other component
23 as far as Conne answered in two pieces the way I see it,
24 the start up test is one demonstration of that and --

25 MR. WERMIEL: Plus whatever comes out of this.

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MR. MOORE: Right.

MR. WERMIEL: That's right. That is an additional piece of information that you'll be supplying as I understand it with hopefully supporting engineering discussion.

(Pause.)

MS. VIETTE: And did you say there was one more thing?

MR. CONNELL: Let me say it differently. There's at least one more thing. We talked about -- we've got our instrumentation engineer here, Tom Crawford and perhaps you could, although I think I've told Tom the question, maybe you could restate it one more time and let him have a try at it.

MR. WERMIEL: Okay, I guess this goes back to the original assumption that assuming that in the end product of the result of the requalification of the equipment in the component cooling water system, assures you that you will get no leakage from the system following an SSE and therefore the l-C classification for the surge tank instrumentation does not change. Following an SSE, it's pressure boundary may be maintained but the functionality of it will not be and I'm just asking the question, what does the operator have to assure himself that the component cooling water system is still functioning

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1 satisfactorily following an SSE even though he doesn't
2 need to take any immediate actions to do anything,
3 he's still going to want to know in the long term that
4 a surge tank is doing okay and the normal means of pro-
5 viding him that information is not available.

6 MR. CRAWFORD: Okay, first off, we have all of
7 the instrumentation which meets the requirements for
8 Regulatory Guide 1.97 for monitoring the functionality
9 of the system and by that, we monitor the flow and the
10 temperature. Monitoring the surge tank level doesn't
11 tell you anything about the functionality of the system.
12 It tells you about whether it is on a trend that will
13 allow it to continue to be functional. In other words,
14 you lose the level in the surge tank, the system still
15 works up until some point you continue to lose level until
16 you no longer have it. The regulatory requirement is
17 to monitor the operability of the system, not the
18 potential of the failure of the system. We have the
19 capability with qualified equipment which meets all of
20 the regulatory requirements to monitor the functionality
21 of the system. What, in actually by the design of the
22 equipment we also have the capability although not
23 classified as such because of the regulatory classification
24 to monitor the surge tank also but in terms of the
25 classification point of view and what we consider maintained

1 official qualifications of that equipment, there's no
2 requirement to monitor the surge tank level. That just
3 tells you about the potential for the loss of the system.
4 It does not monitor the condition of the system itself.

5 MR. WERMIEL: Let me ask you the second question.
6 If that instrumentation which is qualified, the flow
7 indication, the pressure indication, that type of thing,
8 does tell you you're starting to have a problem, do
9 you have sufficient time to take appropriate action?

10 MR. CRAWFORD: It depends obviously to the
11 extent of the problem. If one has got an integral system,
12 the design of the system is such that one has long term
13 single passing failure proof system that is isolated
14 so the design basis of this system is such that once
15 they're isolated like that, you can lose one train.

16 MR. MOORE: This is the ability and I believe
17 we described this operational line up and how the
18 system accomodates long term passing failures is by
19 dividing loop A from loop B which makes it in all respects
20 a completely redundant system and I believe that's what
21 Tom is referring to.

22 MR. CRAWFORD: Yes, that's exactly what I'm
23 saying.

24 MR. MOORE: Including the make up system -- if
25 that surge tank, although it looks calm and it is separate.

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1 MR. WERMIEL: I don't have anything else on
2 that. Do you have anything else?

3 MR. CONNELL: No, I don't/

4 MR. WERMIEL: I don't either.

5 MR. CONNELL: I'd just like to say maybe in
6 closing that I think we've answered all of your questions
7 except for a couple we've taken home with us but maybe
8 our art of letter writing may not be all it is. It
9 ought to be. I would just like to say if you've got
10 any questions technically about what we're doing, please
11 call us. We welcome any working level meetings and
12 we welcome phone discussions and I want to let you know
13 day to day what I'm doing if you're interested.

14 MR. WERMIEL: We appreciate that.

15 MS. VIETTE: Yes, we appreciate that.

16 I guess if we don't have anything, do you feel
17 that it's necessary to summarize the --

18 MR. WERMIEL: I think Barclay answered in
19 the affirmative.

20 MS. VIETTE: Okay, do you want to go --

21 MR. BUCKLEY: Do you want to start it or --

22 MS. VIETTE: Why don't you start with what we
23 need as far as technically --

24 MR. WERMIEL: As I see it?

25 MS. VIETTE: Yes.

1 MR. WERMIEL: Okay, eventually you will be
2 submitting the final results of the seismic requalification
3 that is currently under way with any necessary and
4 appropriate commitments to upgrade the surge tank level
5 instrumentation depending on what the results of that
6 requalification come up with.

7 Item 2, you will be submitting the system
8 and pump curves for 1, 2, and 3 component cooling water
9 pump operation with both the C-Loop isolated and not
10 isolated and appropriate discussion identifying the
11 effects of the flow rates on the system and component
12 performance and I think you were going to include with
13 that some of the information that you've been able to
14 gather relative to the pre-op testing that was done.

15 Item 3, you will be submitting a letter with
16 appropriate data and supporting justification regarding
17 the 64° ocean water temperature assumed in the heat transfer
18 analysis for the component cooling water system.

19 MR. BUCKLEY: Are we going too fast?

20 MR. WERMIEL: Are we?

21 MR. BUCKLEY: I don't know. I wasn't able to
22 keep up with you.

23 MR. WERMIEL: And that's all I have in the way
24 of action items.

25 MR. MOORE: The only thing that I would add to

1 that, Jerry, is that probably the first thing that we
2 owe you is the schedule in which we're going to provide
3 that information would be the other item that I picked up.

4 MR. WERMIEL: And I also believe with that you
5 were going to propose your new versus old item identifica-
6 tion skills.

7 MR. MOORE: I thought that when we submitted
8 the information, as we closed basically the whole subject
9 area of the allegation, we'd make a statement that we
10 felt that that issue had been addressed and we felt that
11 it would be closed and then glued to these new areas
12 versus putting it in the schedule letter. That's the
13 only point that I wanted to make a difference on.

14 MR. BUCKLEY: Jerry, I thought you mentioned
15 pre-ops there. I wasn't sure what you meant. You want the
16 results of --

17 MR. WERMIEL: Summary and results of what
18 information they do have on the pre-op testing that
19 was done that relates to the concerns that were identified.

20 MR. MOORE: We've run a series of tests both
21 flushing tests and start up tests for this system and
22 this system in conjunction with testing of other safety
23 systems and we can -- we'll summarize and describe those
24 tests as further evidence of the system and it's proper
25 operation, you know, with the three pump situation and

1 some of these high flow situations.

2 MR. BUCKLEY: I presume one of the component
3 cooling water pumps is running right now. Would that
4 be correct?

5 MR. WARD: That's probably correct. They
6 generally run a pump down there.

7 MR. BUCKLEY: No, I mean normally just --

8 MR. WARD: No, I don't know if there's a reason
9 or not but you know. They're generally running a pump.

10 MR. BUCKLEY: There's no plant equipment like
11 air-conditioning, this isn't required for air-conditioning
12 or control room cooling or anything?

13 MR. WARD: No.

14 MR. CONNELL: In the number of times I've been
15 there, a lot of times its running and a lot of times it
16 isn't. Sometimes it isn't.

17 MR. WERMIEL: Howard, you came at a good time.
18 I think the meeting is --

19 MS. VIETTE: I think we're about ready to close
20 here unless anybody has any more comments.

21 MR. MOORE: Just from the project standpoint
22 I'd like to thank you for coming out and I will second
23 Ed's statement that if at any time you have some questions
24 or confusion in your mind whether it be technical or
25 from the project side of the house, please give us a call.

1 We'll try to address it. Hopefully the other thing that
2 you've kind of seen here that in the attempt of trying
3 to answer all possible questions which is our goal here
4 we have gotten into some areas that we had originally
5 not anticipated and we hope you now better understand
6 why it's taking us a little bit longer than we initially
7 estimated.

8 MR. BUCKLEY: I would suggest that if you are
9 going to communicate with the Staff, I would appreciate
10 it going through Barclay so that we have a common path.

11 MR. MOORE: That's how we handle all communications
12 with the Staff.

13 MR. BUCKLEY: Thank you. Howard, do you --

14 MR. FRIEND: I guess I want to comment that
15 we were surprised you decided to transcribe this meeting.
16 The evidence that earlier this morning, I'm not going to
17 reiterate it, our fellows get a little inhibited and I hope
18 you were able to get what you wanted inspite of their
19 inhibitions as a result of this. We might have planned
20 our presentations a little differently and so forth had
21 we known and I hope you have gotten everything that you
22 need and I want to reiterate what Gary said. If you
23 haven't, please call, write, phone, send us a telegram,
24 whatever. We want to answer your questions so that
25 you gain the confidence you need in the system. That's

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all I have.

MS. VIETTE: Okay, I think we're all set.

Thank you very much.

(Whereupon, at 1:45 p.m., the meeting was adjourned.)

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CERTIFICATE OF PROCEEDINGS

This is to certify that the attached proceedings before the
NRC COMMISSION

In the matter of: Diablo Canyon Public Meeting

Date of Proceeding: April 19, 1983

Place of Proceeding: San Francisco, California

were held as herein appears, and that this is the original
transcript for the file of the Commission.

Margaret Miller

Official Reporter - Typed

Margaret Miller RSC

Official Reporter - Signature

MEETING SUMMARY

APR 28 1983

Document Control (50-275)

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