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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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 In the Matter of: :
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 SACRAMENTO MUNICIPAL UTILITY DISTRICT : Docket No.
 :
 (RANCHO SECO) : 50-312
 :
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Conference Room W-1140
United States Federal Building
2800 Cottage Way
Sacramento, California

Thursday, May 3, 1980

The above-entitled matter came on for hearing,
pursuant to recess at 9:05 a.m.

BEFORE:

ELIZABETH S. BOWERS, CHAIRMAN
DR. RICHARD F. COLE, MEMBER
MR. FREDERICK J. SHON, MEMBER

APPEARANCES:

On Behalf of the NRC Staff:

STEPHEN LEWIS, ESQ.
RICHARD L. BLACK, ESQ.
Office of Executive Legal Director
Washington, D.C. 20555

On Behalf of SMUD:

THOMAS A. BAXTER, ESQ.
MS. NANCY NOWLES
Shaw, Pittman, Potts and Trowbridge
1800 H Street, N.W.
Washington, D.C.

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APPEARANCES, Continued:

On Behalf of the California Energy Commission:

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California Energy Commission
Office of General Counsel
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<u>WITNESS</u>	<u>DIRECT</u>	<u>CROSS</u>	<u>REDIRECT</u>	<u>RECROSS</u>	<u>BOARD DIRECT</u>	<u>BOARD CROSS</u>
J. N. Donohew	3167	3,69	3209	-	-	-
R. J. Rodriguez	-	3216 3246	-	-	-	-

<u>EXHIBIT</u>	<u>DESCRIPTION</u>	<u>IDEN</u>	<u>REC'D</u>	<u>WITHDRAWN</u>
CEC 40	Abnormal Occurrence Report	-	3215	-
CEC 41	letter from NRC to SMUD, May 1, 1980	3179	-	-
CEC 42	Memo from Mr. Mau to All Licensed Operators, Undated.	3270	-	-
CEC 43	Procedural Change Approval Form, Revision 14	3280	-	-
CEC 44	letter from NRC to all opera- ting nuclear power plants, October 17, 1979	3296	-	-
CEC 45	Letter fr. D.G. Eisenhut to Mr. Mattimoe, dated 4/3/80.	3303	-	-

AFTERNOON SESSION: Page 3246

P R O C E E D I N G S

(9:05 A.M.)

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MR. LEWIS: Mrs. Bowers and members of the Board, I call to the stand Jack N. Donohew, who was just sworn, who will be offering supplemental testimony on CEC Issue 5-1.

Whereupon,

JACK N. DONOHEW

was called as a witness, and having been first duly sworn, took the stand, was examined, and testified as follows:

DIRECT EXAMINATION

BY MR. LEWIS:

Q Dr. Donohew, you have in front of you a copy of a document entitled NRC Staff Testimony of Jack N. Donohew on Changing the Systems Outside Containment to Vent Into Containment Building.

A Yes, sir.

Q And do you have attached to that document a copy of your professional qualifications statement?

A Yes.

Q Were these documents prepared by you?

A Yes.

Q And are the statements contained therein true and correct to the best of your knowledge and belief?

A Yes.

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MR. LEWIS: Mrs. Bowers, I would ask that the testimony of Dr. Donohew be admitted into evidence and incorporated into the record as if read.

MRS. BOWERS: Mr. Baxter?

MR. BAXTER: No objection.

MR. LANPHER: No objection.

MRS. BOWERS: The document you identified will be physically incorporated into the transcript as if read and will be admitted into evidence.

MR. LEWIS: I have supplied copies to the reporter for that purpose.

(The document referred to follows:)

Q4. Have you reviewed the NRC Staff Testimony of James Wing on Changing the Systems Outside Containment to Vent into Containment Building (CEC Issue 5-1), Tr. following 2740, and the answers given by Dr. Wing under cross examination and questioning by the Board, Tr. 2741-2778?

A4. Yes, I have.

Q5. Do you have any clarifications and additions to offer to that testimony?

A5. Yes, I do.

Q6. What is the present status of SMUD's compliance with Short-Term Lessons Learned requirements 2.1.4 (containment isolation) and 2.1.6.a (integrity of systems outside containment)?

A6. As documented in the NRC Staff's "Evaluation of Licensee's Compliance with Category 'A' Items of NRC Recommendations Resulting from TMI-2 Lessons Learned" for Rancho Seco, SMUD has satisfied these requirements. The Staff does, however, have under further review the isolation provisions for certain systems. Verification of the implementation of SMUD procedures and of the plant modifications required will be done by the Office of Inspection and Enforcement.

Q7. Please describe the actions taken by SMUD in response to requirement 2.1.4.

A7. The NRC lessons learned requirements concerning containment isolation direct the licensee to: a) determine whether systems penetrating containment are considered essential or non-essential to safety; b) modify containment isolation circuitry to automatically isolate all non-essential systems by diverse parameters; and c) modify containment

isolation circuitry to assure that clearing of the containment isolation signals does not cause the inadvertent opening of containment isolation valves. In addition, the isolation system was reviewed to assure that certain systems which are isolated but might be desirable to use following an accident or transient, can be reopened; and to assure that operator controls of containment isolation are not gainged to reopen multiple systems with a single operator action.

The licensee has identified the essential systems as a) those systems required immediately after a Safety Features Actuation Signal (SFAS) and b) those systems whose continued operation will not cause accident recovery problems and whose continued operation may aid in accident recovery. Non-essential systems are those not required immediately after an SFAS signal.

Systems included in category (b) above are the RCP seal supply lines, the complement cooling water (CCW) inlet and outlet lines and the control rod drive (CRD) cooling water lines. The RCP seal supply and the CCW provide cooling for RCP seals to prevent seal damage that could result in a small LOCA. The seal return is isolated and check valves prevent back flow from the seal injection line. Thus, primary coolant would not be released via this route. The CCW and CRD cooling water systems are closed systems not in contact with primary coolant, with capability for manual isolation if required.

As described in the Rancho Seco FSAR, the isolation provisions of the CCW, CRD supply and return, and the RCP seal injection include automatic

isolation on SFAS. The licensee subsequently, under the provisions of 10 C.F.R. § 50.59, which do not require prior Commission approval of certain proposed changes, eliminated the automatic isolation portion of these systems. The Staff is presently reviewing whether the licensee will be required to reestablish automatic isolation of these systems. Because of the special requirements for use of these systems following certain upset conditions, isolation based on a minimum of a single parameter may be acceptable.

The SFAS signal which isolates all other non-essential systems is generated by diverse parameters: a) RCS pressure less than 1600 psig or b) containment pressure greater than 4 psig.

Penetrations controlled by remotely operated valves receive containment isolation signals, whether they are open or closed during normal operation. Penetrations controlled by local manual valves which are closed during normal operation are locked closed. The containment isolation valves do not reopen automatically if the containment isolation signal clears. Manual action is required.

The automatic containment isolation valve controls utilize a manual/automatic mode select switch and an open/close select switch mounted together for each valve. Following containment isolation, the operator can reopen any valve by first selecting manual mode and then pushing the open button. This is possible whether or not the containment isolation signal has cleared. Selection of manual mode does not in itself open the valve.

- Q8. What are the NRC Staff's specific conclusions with respect to the acceptability of SMUD's actions under requirement 2.1.4?
- A8. We conclude that the licensee has satisfied the requirements of this item. Review of the CCW, CRD supply and return, and RCP seal injection isolation provisions is continuing. Verification of the adequacy of the procedures will be performed by the Office of Inspection and Enforcement and will be documented in an appropriate inspection report.
- Q9. Please describe the actions taken by SMUD in response to requirement 2.1.6.a.
- A9. The licensee has listed the plant systems outside containment which would or could contain highly radioactive fluids during a serious transient or accident. These systems are the makeup and purification system, decay heat removal system, high pressure injection system, reactor building spray system, waste gas system, reactor coolant sampling system, hydrogen purge system and appropriate parts of the miscellaneous radwaste system and coolant radwaste system. The licensee has implemented an immediate leak reduction program for these systems to reduce their present leakage. The licensee has measured and reported the "as-corrected" leakage for these systems except for the makeup and purification system, high pressure injection system and the reactor coolant sampling system. The licensee will measure the leakage from these three systems before startup from the present refueling outage and will report the measured leakage within two weeks of startup.

The licensee has established a permanent leak reduction program to keep future leakage from the above systems to levels which are as low as reasonably achievable. This program includes integrated leak rate tests once per refueling cycle, identification of leakage by means of visual surveillance by plant personnel and responses of area and effluent radiation monitors, and the plant preventive maintenance program.

The licensee has reviewed the plant design for potential release paths from the above systems due to design and operator deficiencies. As a result of this review, the licensee will make two changes to the plant. The relief valves for the make-up filter and the reactor coolant pump seal return will be routed to more suitable tanks or sumps instead of to open floor drains and the grade level of the Auxiliary Building will be changed in a manner to prevent contaminated water from a spill from leaving the building. These changes should be completed by January 1981.

Q10. What are the NRC Staff's specific conclusions with respect to the acceptability of SMUD's actions under requirement 2.1.6.a?

A10. Based on the above considerations, we conclude that the licensee has met the requirements of this item. Verification of the procedures which implement the licensee's permanent leak reduction program and the plant modifications discussed above will be performed by the Office of Inspection and Enforcement and documented in an appropriate inspection report.

Q11. Does the licensee's compliance with Lessons Learned requirement 2.1.6.a mean there will be no leakage during an accident from systems outside containment that might contain high radioactivity?

A11. No, some leakage may occur. 2.1.6.a was imposed to assure that leakage would be as low as practicable and definitely lower than was the case at TMI-2.

Q12. Is the Rancho Seco Radwaste System designed for a Design Basis Accident?

A12. No. The radwaste system was not designed for design basis accidents, e.g., loss-of-coolant. The assumption was that containment isolation would prevent radioactive fluids from travelling outside the containment during an accident to add to whatever burden was on the radwaste system prior to the accident. Implementation of requirement 2.1.4 at Rancho Seco (certain of whose provisions were already met by the facility) will lend greater assurance that containment isolation will prevent an undue burden being imposed on systems outside containment which may contain radioactivity.

Q13. Would the radwaste system at Rancho Seco be capable of accommodating the quantities of waste that were produced at TMI-2?

A13. I believe the Rancho Seco radwaste system would be capable of accommodating these quantities of waste. This belief is based on the fact that compliance with requirement 2.1.4 will prevent the uncontrolled pumping of water from the containment sump into the radwaste system.

This source of water was a large contributor to the radwaste system at TMI-2 and contributed to the overflowing of several tanks. This circumstance should not occur at Rancho Seco because containment will isolate earlier (on low reactor coolant system pressure or high containment pressure) and it requires two manual actions to reopen containment penetrations following the clearing of a containment isolation signal. Additionally, compliance with requirement 2.1.6.a should assure that leakage from systems outside containment that might contain high levels of activity will be lower than that which occurred at TMI-2.

Q14. What is the status of the proposal to vent back into containment systems outside containment which may contain radioactivity as a result of an accident?

A14. The Staff has proposed to the Commission that the possibility of having the capability to vent certain systems outside containment back into containment be considered as part of a coordinated program aimed at exposure reduction following accidents. The Staff proposals are still in the process of revision, but it can be said that they no longer specifically focus on the letdown/makeup system nor the concept of placing that system within an enclosure with venting back to containment, as did Task III.D.2 of the December 10, 1979 Revision 1 of Draft NUREG-0660. Whatever conclusions are reached on this aspect of the proposed study will have to take account of the associated backfit problems for operating plants. The Staff is proposing that the Commission include radwaste system improvements growing out of the study described above in its proposed rulemaking on degraded cores.

Q15. Do you believe that systems outside containment at Rancho Seco, which were identified as contributing to releases during the TMI-2 accident, should be changed at this time to vent back into containment?

A15. No. It is not clear at the present time that venting back into containment should be imposed as a requirement. A determination on whether to impose such a requirement should be made as part of the coordinated review of all actions that could reduce releases of radioactivity during an accident, as described above in the answer to question 14.

JACK H. DONOHEW, JR.
PROFESSIONAL QUALIFICATIONS
DIVISION OF OPERATING REACTORS
OFFICE OF NUCLEAR REACTOR REGULATION

My name is Jack N. Donohew, Jr. I am a Senior Nuclear Engineer in the Operating Reactors Assessment Branch in the Division of Licensing, Office of Nuclear Reactor Regulation, U. S. Nuclear Regulatory Commission (NRC). My duties include the review of rad-waste treatment systems and engineered safety feature ventilation systems for operating reactors.

I received a Bachelor of Engineering Physics Degree from Cornell University in 1965, a Master of Science Degree in Nuclear Engineering from Massachusetts Institute of Technology in 1968, and a Doctor of Science Degree in Nuclear Engineering from Massachusetts Institute of Technology in 1970. I received my Professional Engineers License in Nuclear Engineering from the Commonwealth of Pennsylvania in 1974.

After graduation, I worked for Stone and Webster Engineering Corporation as an engineer in the Radiation Protection Group. I was responsible for estimating source terms, release rates and resulting doses for the Safety Analysis Report, Environmental Report and response to NRC questions for boiling water nuclear reactors. I was also responsible for shielding design for the reactor water cleanup system.

In February 1973, I became a Power Engineer in the Process Engineering Group, Stone and Webster Engineering Corporation. I was the responsible process engineer for the Shoreham Project and the equipment specialist for all Stone and Webster nuclear plants for the containment iodine spray removal system, ventilation filter assemblies, and gaseous waste treatment system.

In June 1975, I joined the Nuclear Regulatory Commission as a senior nuclear engineer in the Effluent Treatment Systems Branch. I was involved in rad-waste system licensing reviews of nuclear power plants. I have conducted generic studies of the degradation of charcoal adsorbers in ventilation filter assemblies.

In December 1975, I joined the Environmental Evaluation Branch in the Division of Operating Reactors. I am now a member of the Operating Reactors Assessment Branch of the Division of Licensing.

Between October 1979 and the present time, I have been a member of the Lessons Learned implementation team for Babcock & Wilcox operating reactors. In this capacity, I have visited all of the B&W operating units to determine compliance with the Category A short-term Lessons Learned requirements within my area of competence.

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Board Panel
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Stephen H. Lewis

Stephen H. Lewis
Counsel for NRC Staff

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1 MR. LEWIS: Let me say preliminarily, Mrs. Bowers,
2 that after its review of the transcript of the last session
3 and the cross examination of Dr. Wing, staff felt that
4 there were questions posed by the Energy Commission to which
5 Dr. Wing was not able to satisfactorily respond, and for
6 that reason we decided to have Dr. Donohew supplement and
7 clarify as he thought appropriate both the direct prepared
8 written testimony of Dr. Wing and answers given by Dr.
9 Wing on cross examination, and that then was the purpose
10 for which we are offering Dr. Donohew.

11 He had contained within his testimony more or less
12 excerpts from a report which we did send to the Board and
13 parties on compliance with 0578 items as they relate to
14 his area, so his testimony is self-standing in that aspect
15 and we hope it answers the questions that were from our
16 point of view left unanswered in the last session.

17 With that prefatory remark, I would make Dr.
18 Donohew available for cross examination.

19 MRS. BOWERS: Mr. Baxter?

20 CROSS EXAMINATION

21 BY MR. BAXTER:

22 Q Dr. Donohew, would you turn to Page 4 of your
23 testimony?

24 In the last paragraph on that page, you are
25 discussing the operator's ability to reopen the containment

1 isolation valves following containment isolation. Is this
2 in your view a desirable capability from the standpoint
3 of safe plant operation? And please explain the reasons
4 for your answer.

5 A I believe the answer is yes. The nonessential
6 systems are isolated, but I believe it is well worth while
7 for the operators in terms of the specific transient to be
8 able to use all the facilities that are available at the
9 plant, and this allows the non-essential system to first
10 be isolated, and upon the operator's understanding of what
11 is going on during the transient to be able to reopen a
12 penetration to such a system, but this would not be an
13 automatic action. It is a thought-out action, a manual
14 action by the operator.

15 DR. COLE: Dr. Donohew, could you bring the
16 microphone a little bit closer?

17 THE WITNESS: Yes, sir.

18 MR. BAXTER: That is my only question. Thank you.

19 MRS. BOWERS: Mr. Lanpher.

20 BY MR. LANPHER:

21 Q If I could follow up on the answer you just gave,
22 in deciding whether to deisolate a non-essential system
23 after isolation has occurred, an operator would have to
24 exercise substantial judgment. Is that correct?

25 A The operator would have to use judgment, yes, sir.

1 Q And if he did exercise that judgment and de-
2 isolate a system, then that system would at that time
3 constitute a potential pathway out from the containment to
4 the auxiliary building, presumably, for radioactive
5 releases.

6 A It could. If activity was in the coolant water and
7 the penetration was open to allow the coolant water to go
8 out, the radioactivity would go with it.

9 Q Is the letdown system one of the non-essential
10 systems which is isolated on an SFAS signal which might
11 subsequently be needed by the operators?

12 A The letdown system is considered a non-essential
13 system by the licensee. It is isolated on diverse
14 containment signals. The SFAS includes the high contain-
15 ment pressure and high reactor vessel pressure. The
16 question about should that system be reopened, I do not
17 think I can answer that question in the fact that it is not
18 my area of expertise to know if letdown must be reopened
19 or in what scenarios of transients it would have to be
20 reopened.

21 So, I do not think I can answer your question
22 concerning the fact that the letdown would have to be
23 reopened.

24 Q I did not mean to imply that it would have to be
25 reopened under any particular transient. I was merely

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1 asking whether that is one of the systems that perhaps might
2 be reopened.

3 A It perhaps could be reopened, yes.

4 Q Was it one of the pathways for releases from the
5 containment at Three Mile Island?

6 A That is correct.

7 Q And were some of those releases through the letdown
8 system --did they occur subsequent to containment isolation
9 when the operators subsequently used the letdown system?

10 A At Three Mile Island the containment was isolated
11 under containment isolation and I believe from reading the
12 events from Three Mile Island it was very shortly opened
13 by the operators.

14 Q And is it not true that that was probably the most
15 significant pathway from the containment to the auxiliary
16 building for radioactivity?

17 A I believe so.

18 Q Dr. Donohew, do you have a copy of CEC Exhibit
19 28, which was previously marked, I believe, during the
20 examination of Mr. Dieterich? It consists of the AIF
21 Subcommittee recommendations.

22 A Is that a November 29, 1979 letter -- Excuse
23 me. I am sorry. I guess the answer is, no, I do not have
24 that document.

25 (Whereupon, counsel handed the document to the

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1 witness.)

2 A Okay, I have a copy of that now.

3 Q For the record, there are several enclosures in
4 this document.

5 I would like you to turn to the second enclosure.
6 It starts just after Page 8, and at the top of that page,
7 it is dated September 14, 1979. And then it starts
8 numbering again.

9 I would like you to turn to Page 3.

10 A Okay. I believe I am on the page.

11 Q Are you familiar with this document?

12 A Yes, sir.

13 Q And is it true that this document contains a
14 recommendation, and I quote, "PWR plant should have the
15 capability to use the containment as a surge volume for
16 waste gas post-accident?"

17 A That is correct. That was one of the recommendations
18 of the AIF.

19 Q Do you agree with its recommendation?

20 A I agree with the recommendation in that this should
21 be considered. I guess I disagree in the fact that I do not
22 think this is something that is obviously one that should
23 be immediately done at a plant.

24 Q Does that complete your answer, sir?

25 A This was one item that was considered by NRC.

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1 I think the problem I have, I guess, in answering this, I
 2 was not involved at NRC in the lessons learned task force
 3 that came with NUREG- 0578, but this item was one thing
 4 that was considered, and yes, I think this is one that
 5 should be considered. I think the question to me is the
 6 fact that this should -- this specific one as opposed to
 7 other items that would end up doing the same thing, not
 8 doing those but doing this one, I think the answer is no.
 9 I think this has to be taken in the context of the entire
 10 problem.

11 Now, this in my testimony, this item is one which
 12 is going to be involved in the proposed rulemaking on
 13 degraded cores, and this is a matter which should be
 14 handled. This is one that should be considered. And I think
 15 because this was done by AIF, that the licensee, SMUD, would
 16 have had knowledge of this, and it is something that should
 17 be considered, but as to me saying this should be done, no,
 18 I do not agree with the fact of saying it should be done.

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1 Q When you say you believe it should be considered,
2 are you saying that this is a proposal that needs to be
3 analyzed to determine whether the cost and benefits in
4 feasibility are such to make it a worthy item of incorpora-
5 tion into a PWR system?

6 A I think also you have to -- I think you have to
7 consider other items which are more important, and the fact
8 that you are going back -- you are introducing gasses or
9 liquids back into the containment.

10 The containment is one of the barriers for releasing
11 activity to the environment. You are talking about other
12 penetrations or openings or existing penetrations to do this.

13 I think this is something that has to be considered.
14 To me, there are other areas besides just the ones you men-
15 tioned that have to be considered, that have to be considered
16 that involve the containment.

17 I do not think it is obvious the fact that this is
18 more than something that has to be considered. It has to be
19 thought out before a decision is made on the fact that this
20 is done or not done.

21 Q Would one of the things that needs to be analyzed
22 be to determine whether there are existing containment
23 penetrations which might be available to be utilized for this
24 kind of a system?

25 A There probably are existing containment penetrations

fm2

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1 blanked off that could be used. What I was referring to is
2 the fact of -- where you would be setting up other lines,
3 maybe several lines again that are going back into the
4 containment.

5 So, you have more -- you now have what I consider
6 more penetrations to containment that may end up in a review
7 of all the scenarios of accidents, of being a reduction of
8 safety, not an increase of safety.

9 Q Is it true that if a system such as this were
10 designed, there would be site-specific considerations or
11 reactor-specific considerations such as what containment
12 penetrations at a particular reactor might be available for
13 this kind of a system?

14 A Yes, sir.

15 Q Do you envision that the rulemaking which you
16 referred to in a previous answer would address those site-
17 specific considerations?

18 A I do not think I can answer that. I do not know.

19 Q That rulemaking has not yet formally commenced.
20 Is that correct, in terms of public notice?

21 A To my knowledge it has not.

22 Q Dr. Donohew, at page 2 of your testimony, you are
23 asked the question "Do you have any clarifications and
24 additions to offer to that testimony?"

25 That testimony is referring to that of Dr. Wing.

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1 You respond, "Yes, I do."

2 You go on to make certain clarifications and
3 additions, particularly relating to certain of the NUREG-0578
4 items, which have been implemented.

5 When you prepared this testimony, had you reviewed
6 both Dr. Wing's written testimony and the cross-examination
7 and redirect examination of the April 17 hearing in this
8 matter?

9 A Yes.

10 Q Is it fair to say that if you did not make an
11 addition or a clarification with respect to certain questions
12 that were asked to Dr. Wing, that you do not -- you either
13 agree with those answers or where he stated that he had no
14 knowledge, that you likewise have no knowledge?

15 A In terms of his affidavit -- in terms of his
16 statement that was written testimony, in the review of that
17 I believe -- I do not believe there is any major disagreement
18 with what he wrote.

19 In terms of the testimony at the hearing, I believe
20 most of it, I would not have given the same answer. I would
21 not have agreed with what his answer was. I believe in
22 certain areas where he referred to the fact that he was
23 not aware of something, I could have given an answer -- that
24 would not have been my answer.

25 Q Are all those areas reflected in your written

1 testimony, or only some of them?

2 A I think it is only some of them.

3 (Pause.)

4 Q At page 2745 in this proceeding, I asked the
5 following question: "We have heard testimony in this
6 proceeding that a release of radioactivity similar to that
7 that occurred at TMI-2 would be unlikely to occur at
8 Rancho Seco because of a different containment isolation
9 system. They have the SFAS isolation. Could you please
10 describe the sequence by which isolation would occur at
11 Rancho Seco?"

12 Dr. Wing replied that that was beyond his
13 expertise. Is that beyond your expertise to respond to
14 that question?

15 A I am aware that the non-essential systems are
16 isolated on diverse signals. In the case of Three Mile
17 Island, that was not true. So, containment isolation occurred
18 I believe several hours after the accident, whereas in the
19 case of Rancho Seco, they would occur with the pressure
20 below 1500 psig.

21 Therefore, it would be very soon into the accident.
22 So, there is a difference between Rancho Seco and Three
23 Mile Island.

24 Q When a reactor isolation signal is given for either
25 the reactor coolant pressure level or the containment

bmf5

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1 building pressure, what mechanical or valving actions need
2 to take place in order to successfully effectuate isolation?

3 A I believe the answer to that is two valves -- a
4 single valve or two valves will close in the penetration.

5 Q On each penetration?

6 A No, on the non-essential system penetrations.

7 Q On each of those non-essential system penetrations?

8 A That is correct.

9 Q Is it true that there are a large number of those
10 non-essential penetrations?

11 A I do not think I can answer that.

12 MR. LANPHER: Mrs. Bowers, Mr. Ellison is going
13 to distribute a document which we would like marked for
14 identification as CEC-41.

(The document referred to
was marked CEC Exhibit No.
41 for identification.)

15 MR. LANPHER: It is a May 1 letter, May 1, 1980
16 letter to Mr. Mattimoe of SMUD from Mr. Reid of NRC.

17 MR. LEWIS: That Reid is R-e-i-d.

18 BY MR. LANPHER: (Resuming)

19 Q Dr. Donohew, is there an attachment to that letter?

20 A There is an attachment about the evaluation of
21 licensee's compliance with category A items of NRC recommen-
22 dations resulting from TMI-2 Lessons Learned. Is that what
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1 you are referring to?

2 Q Yes.

3 A Yes.

4 Q Are you familiar with that attachment?

5 A Yes.

6 Q What was your role in preparing that attachment?

7 A I was one member of what was called the B & W
8 implementation team for the Lessons Learned items. I was --
9 had the responsibility of review of the radiological items
10 of this document.

11 That means, I was the lead person responsible on
12 the items of 2.1.6 (a) and (b), 2.1.3 (a), (b), and (c). I
13 had the responsibility of the items 2.1.5(a), (b), and (c).

14 I wrote those specific items that went into the
15 evaluation as being on the implementation team. I was
16 involved with discussions with everyone else on the team
17 in terms of the other items, also.

18 Q For the purpose of clarity in the transcript,
19 when Dr. Donohew refers to items like 2.1.5., it should be
20 a decimal point between each of the numbers and the letters.

21 A That is correct.

22 Q Dr. Donohew, did you state in your previous
23 response that you were responsible or worked on 2.1.4
24 entitled, "Containment isolation"?

25 A I stated I was not the lead engineer on 2.1.4 on

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1 containment isolation. However, I was involved in the
2 discussions of what are the requirements of that item. What
3 had the licensee done.

4 I reviewed the licensee's submittal in that area,
5 but I did not have the responsibility of writing that
6 particular section.

7 Q But you are familiar with that section and the
8 underlying documents which were reviewed in connection with
9 preparing this evaluation report?

10 A Yes, sir.

11 Q In review of those underlying documents and in
12 your discussions, did you have occasion to determine whether
13 there were a large number of non-essential penetrations in
14 the Rancho Seco containment?

15 When I say non-essential, it is with quotation
16 marks around it.

17 A That is not my problem. The problem is in terms
18 of when you say "large number of penetrations." I am aware
19 of the systems that were designed as non-essential, and
20 that did meet the requirements that we had on the item
21 2.1.4.

22 I believe that was on the order of, I guess, ten
23 or fifteen systems. I do not know the specific penetrations
24 that are associated with those systems; whether there are
25 two penetrations or four penetrations, or six penetrations.

1 I am not sure -- I guess I have a little bit of a
2 problem with what is a large number. There are something
3 like ten to fifteen systems. That may end up meaning twenty
4 penetrations. I do not know in terms of "Is this a large
5 number of penetrations for the containment."

6 Q Fine. Thank you. The NRC review did not include
7 an analysis of whether those valves associated with the
8 various non-essential penetrations would in fact operate as
9 intended. Is that true?

10 A Yes, that is true, because the problem exists
11 independent of the Lessons Learned actions. That is the
12 problem which NRC has been concerned with.

13 You know, it just would not have been part of
14 this because that particular problem does not have anything
15 to do with the Lessons Learned actions.

16 Q Is it true that the Lessons Learned actions, as you
17 refer to them, at least in this regard were concerned with
18 ensuring effective containment isolation in the event of an
19 accident so that we do not get release paths such as occurred
20 at TMI?

21 A Basically, the answer is yes, but I would qualify
22 in terms of saying effective. What we were concerned about
23 was the fact of making sure that those systems which would
24 be considered non-essential were isolated; and that in terms
25 of a containment signal clearing, they would not reopen or

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1 in terms of operators opening them, that it would not be an
2 automatic action. It would be a manual, knowledgeable action.

3 In terms of effective containment isolation, in
4 that would those valves, when they close, work? As I say,
5 that was something that was independent of this. It was not
6 made part of this Lessons Learned action.

end tP-2

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tP-3

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1 Q Did the NRC in its communications with the licensee
2 regarding essential and non-essential systems define
3 criteria by which to determine what systems were essential
4 and what systems were non-essential?

5 A NRC did not define what were essential and non-
6 essential systems. What we did is, we requested the
7 licensee to do that, to give to the NRC a list of what
8 were classified as non-essential systems, to explain to
9 NRC what was the basis for that classification, and then
10 we reviewed the list of non-essential systems, and with that
11 came the essential systems, and the definition of them, and
12 then as we had disagreements or wanted clarification or a
13 better understanding, we discussed it with the licensee.

14 Q The initial burden then was for the licensee to
15 go through its own systems and to sort them out, so to
16 speak, to define essential and non-essential.

17 A Very definitely true. The licensee is the most
18 knowledgeable of the plant. The list of essential and non-
19 essential systems would be a plant specific list, and we
20 would review what the licensee gave us.

21 Q To your knowledge, did the licensee prepare either
22 a failure mode and effect analysis or a reliability study
23 on its containment isolation system?

24 A No.

25 Q At Page 6 of your testimony, you state that the

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1 licensee has reviewed the plant design for potential
2 release paths from the above systems due to design and
3 operator deficiencies, and I believe the systems that are
4 being referred to there are the rad waste systems. Is that
5 correct?

6 A No, the request for this review was a letter
7 which -- it was a letter which was sent to the licensee
8 last year and was made part of 2.1.6a of lessons learned,
9 and it was not specifically to rad waste systems other than
10 systems that would contain radioactivity outside containment.

11 Q Fine. That clarifies it. You are talking about
12 systems outside containment here, though?

13 A Yes, sir.

14 Q To your knowledge, did the licensee perform a
15 failure modes and effects analysis or reliability study
16 concerning the systems outside of containment?

17 A I do not know. Not to my knowledge.

18 Q Is it true that the results of this -- as a result
19 of this review, the licensee has instituted a leak
20 reduction program for systems outside of containment?

21 A He has such a program. I think the little bit of
22 confusion in my mind is when you say instituted. I do not
23 remember specifically the time when you say the program
24 was in effect. He had a program. There was a concern we
25 had on the formality of the program in which I was in the

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1 -- was on the review team that came in March to review the
2 licensee's actions and responses to 2.1.6a. He has such a
3 program, and it has met our requirements. My only problem
4 is, when you say he has instituted such a program, the time
5 period of that.

6 Q Subsequent to the 0578 requirements being
7 communicated to the licensee, he has upgraded that program
8 or re-evaluated that program, and that is something that
9 NRC in turn has reviewed as part of CEC 41. Is that
10 correct?

11 A Yes, we have reviewed that program.

12 Q Notwithstanding this program, is it correct that
13 some leakage may still occur from systems outside of the
14 containment?

15 A That is true. Let me qualify my last answer in
16 terms of review. I think you pointed out the adequacy --
17 It is mentioned on our evaluation which you have submitted.
18 The adequacy will be reviewed by the I&E inspector. What
19 we reviewed was the overall concept of the program in terms
20 of the -- not the specifics of the procedures. I do not
21 mean we read his procedures and we agreed with his
22 procedures. That is a separate action that will be taken
23 by NRC through inspection and enforcement, but the overall
24 concept of the program was reviewed and accepted.

25 Q In a number of places in the evaluation report

1 contained in CEC 41, reference is made to the fact that
2 procedures will be verified or analyzed by inspection and
3 enforcement. Is that correct?

4 A That is correct. The manner in which NRC is
5 broken down into different offices -- The Office of
6 Inspection and Enforcement is that part of NRC which
7 inspects the plant to see that either commitments are met
8 or the tech specs are met, or whatever. In the office which
9 I am in, the Nuclear Reactor Regulation Office, it does not
10 do that.

11 So, when a team from the office I am in goes out,
12 there is a certain level which we do not go beyond, and
13 that point which is the fact that the adequacy of the
14 procedures -- that is handled by separate people in a
15 separate Office of Inspection and Enforcement.

16 Q Do you know whether this I&E review or audit of
17 these short-term items will take place before Rancho Seco
18 is restarted from the present refueling outage?

19 A I cannot answer that.

20 Q Do you know whether it has taken place yet?

21 A In our evaluation, there are several references
22 to inspections. The matter of which the Office of
23 Inspection and Enforcement, to my knowledge, those are the
24 people who would do that. How they would set it up, I do
25 not know, so I cannot answer all of the procedures that we

1 referred to being reviewed would be done before the plant
2 started up. As I say, I think that is a separate action
3 taken outside of the office that I work for.

4 Q In response to an earlier question, you stated
5 that notwithstanding this leak reduction program which is
6 in effect, there may be still leakage in systems outside
7 of containment.

8 A That is correct.

9 Q If there were a capability to vent that from
10 systems outside of the containment into containment, would
11 it be possible to control that leakage so that releases to
12 the atmosphere would be minimized?

13 A The answer is yes, but that cannot be the only
14 thing that you have to consider. There are other con-
15 siderations besides that, but yes, the answer is yes.

16 Q Those other considerations were things that you
17 were talking about in response to one of my earlier
18 questions.

19 A That is correct.

20 Q But that would be the purpose of a vent-back
21 system, to ensure that if leakage or overboarding occurred
22 in systems outside of the containment, that there would be
23 an ability to handle those wastes without substantial
24 releases to the environment. Is that the way you under-
25 stand the vent-back concept?

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1 A Yes, sir.

2 Q What vent-back ability is not present at Rancho
3 Seco at this time. Is that correct?

4 A That is correct.

5 Q On Page 7 of your testimony, at Question 13, just
6 to paraphrase, you state that the Rancho Seco radwaste
7 system would be capable of accommodating the quantities of
8 wastes associated with the TMI accident. Are you assuming
9 in that response that containment isolates as it is supposed
10 to at Rancho Seco, in other words, effectively isolates so
11 that the vast majority of the wastes from a TMI type
12 accident would be contained inside the containment building?

13 A Yes. However, I have looked at the tankage
14 available at the plants, and they have what I would
15 consider an above average amount of tankage for power
16 plants. So, basically the answer is yes. But there is a
17 large amount of tankage available at the site.

18 Q Would that be sufficient tankage to handle the
19 quantities of waste associated with the TMI accident if
20 containment did not isolate as expected?

21 A I cannot answer that. I do not remember the amount
22 of water that came in at the Three Mile Island -- plus
23 there was water outside the plant also that would not
24 -- that -- the ones you are referring to from containment,
25 so I cannot answer that.

1 Q And your response to Question 13 at Page 7, and
2 your response goes on to Page 8, also assumes, does it not,
3 that containment isolation is not subsequently defeated by
4 operators exercising their judgment to operate certain
5 systems, for instance, a letdown system. Is that correct?

6 Let me just clarify that question for you just a
7 bit. It assumes the continued isolation of containment.

8 A I think the answer to your question basically is
9 yes. The problem comes in in the fact that there is more
10 at Three Mile Island than just the problems at Three Mile
11 Island which is just the amount of water coming in, and I
12 think basically going and trying to take and looking at
13 Three Mile Island reviewing that, reviewing what Rancho
14 Seco had, basically we in answering this question -- is the
15 fact that the 2.1.4 requirements -- 2.1.4 requirements would
16 give better control of keeping water inside containment, and
17 basically this is the main thing in saying that the Rancho
18 Seco will be able to accommodate a similar accident, but
19 there are other -- the problem is I can't -- I guess I do
20 not want to leave it as strictly that being the only thing,
21 but I think it is, I guess -- the problem is, it is getting
22 too detailed, I guess.

23 Let me rephrase it and say yes. Basically what
24 we are saying is, that is correct.

25 Q At present, at Rancho Seco, when containment

1 isolates and if operators need to sample primary system
2 coolant, do they need to operate the letdown system to
3 perform that sampling?

4 A Yes, they would.

5 Q Is it also true that this is something that the
6 licensee has proposed to change some time in the future?

7 A That is correct.

8 Q Do you know what the timetable is for such a
9 change?

10 A I think, I guess, from memory I believe they have
11 referred to the 1981 refueling period, and I believe
12 that we wanted it done at an earlier time.

13 Q This is mentioned at the bottom of Page 9 of
14 the evaluation report, and there is no time period stated
15 there, I believe.

16 A No. Look on Page 10.

17 Q Okay.

18 A In which we say "plant modifications are a
19 Category B requirement which should be completed by
20 January, 1981."

21 Q So a revised sampling procedure should be in
22 effect by January, 1981.

23 A Not a revised procedure, but a new sample tap.
24 Physical plant modification. It is that which we are
25 asking to be changed concurrent with that with NBA revision

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of procedures to be able to use that tap.

Q Would this new tap be a containment penetration dedicated only for sampling?

A I believe they are going to tie the piping from that new tap to piping from another one, so that -- and an existing penetration already used for sampling would be used, and there would not be an additional penetration to containment.

(Pause.)

Q Dr. Donohew, do you have a copy of Dr. Wing's testimony?

A No, I do not.

(Whereupon, counsel handed the document to the witness.)

A I have now been given a copy.

Q I would like you to refer to Page 8 of Dr. Wing's testimony, Question 12, and the answer to that question relates to the ventillation filter systems at Rancho Seco. Are you familiar with that question and answer?

A Yes, I am.

Q Was there a similar ventillation system at TMI?

A Yes, sir.

(Pause.)

Q Dr. Donohew, Mr. Ellison is providing you with a copy of CEC Exhibit 30, which is a January 7, 1980, letter

1 from SMUD to the NRC, and I would like you to look at Page
2 13 of that.

3 A Yes, sir.

4 Q The lower half of that page, under a heading
5 entitled Improved Post Accident Sampling Capability, is it
6 true that the proposal -- the design proposal which is set
7 forth by SMUD for a new or a revised post-accident
8 sampling system involves the use of a letdown system?

9 A Yes, sir.

10 Q Would it be true, then, that if this proposal is
11 finally implemented by the licensee, that the letdown
12 system will continue to be used for post-accident sampling
13 purposes?

14 A When the licensee proposed this, it was a matter
15 of -- it was a matter of upgrading his existing sampling
16 system for the fact that under high radiation -- high
17 concentrations that he was required to look at, that his
18 existing system would be -- he would be unable to use them
19 because of high radiation levels.

20 So in terms of this proposal, he was doing it in
21 terms of what he had existing at the time. Now, with the
22 new sample tap with him having to upgrade his sample
23 system, then he in the future when the new sample tap
24 is available and the lines were available he would not have
25 to use a letdown line to take a sample.

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1 Also in this drawing, as you all notice on the
2 line, the horizontal line at the top part of the drawing
3 which is the letdown line, there is an isolation valve
4 between the line to the sampling system and the remaining
5 part of the letdown line and make-up and purification, which
6 is not shown, so he would be able to take a sample without
7 introducing reactive water beyond the second isolation
8 valve with respect -- When I say isolation valve, it is not
9 a containment isolation valve. It is a valve that can be
10 closed. It would be outside containment and allow the water
11 only to go through the letdown, and then into the sampling
12 system, so it is not a matter of the fact of having to use
13 it, and it means he has to introduce radioactivity through-
14 out the make-up and purification systems.

15 Q The valve that you are referring to on that top
16 horizontal line is the farthest valve to the right. Is
17 that correct?

18 A That is correct.

19 Q At present, that valve does not exist at Rancho
20 Seco, that farthest valve to the right.

21 A In reading this, I would say the valve does exist.
22 However, I personally am not aware of that.

23 Q Dr. Donohew, have you performed any analyses
24 regarding the benefits and or feasibility of a vent-back
25 system or a vent-back capability for handling waste

1 outside of containment?

2 A No, sir.

3 MR. LANPHER: Mrs. Bowers, I have no further
4 questions.

5 BOARD EXAMINATION

6 BY DR. COLE:

7 Q Dr. Donohew, on Page 13, the diagram you were
8 just talking about, which side is the containment structure
9 on and which way --

10 A The containment -- The containment structure would
11 be to the left of the drawing. There is on the drawing
12 on that -- the upper horizontal line, there is about halfway
13 in the middle of the drawing a vertical line which is not
14 closed, and that is to portray the containment.

15 So, on the lefthand side of that broken vertical
16 line is inside containment. On the righthand side would be
17 outside containment.

18 Q Okay.

19 BY MR. SHON:

20 Q It is true that that applies only to that single
21 line and the whole rest of the diagram is outside?

22 A That is correct. All of the sample system which
23 is on the lower part of the drawing is all outside
24 containment.

25 BY DR. COLE: (Resuming)

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Handwritten initials

1 Q I did not understand what you said then, that
2 you would not be using the letdown system to get samples
3 out.

4 A What I was saying, I was referring to the fact
5 that you would only be using part of letdown, that to my
6 understanding they would have the capability of only using
7 the letdown out to what is designated as the SF valve, which
8 is outside containment. They would open the two SF valves
9 including the one outside containment that would allow
10 water to go up to the line which leads to the sampling
11 system, but there is another valve which would prevent
12 reactive water to go further out into the makeup and
13 purification system.

14 Therefore they could run water through the letdown
15 into the sampling system and then either back to letdown
16 which is their existing system or through the reactor
17 coolant to the reactor coolant system drain tank, which is
18 the interim system, to run enough water so they would get
19 a representative sample from the core.

20 Q All right, sir. I understand. Thank you.

21 BY MR. SHON: (Resuming)

22 Q One other thing. The reactor coolant system drain
23 tank, where is that located?

24 A That is outside containment, but that is part of
25 their -- that is one of the tanks that is listed in the

1 Lessons Learned, Item 2.1.6A.

2 BY DR. COLE: (Resuming)

3 Q On Page 3 of your testimony, Dr. Donohew, the
4 lines or systems that you are referring to in the bottom
5 paragraph, the component cooling water, the control rod
6 drive cooling water lines and the reactor cooling pump
7 seal injection, these are relatively small lines, sir.

8 A I do not know the size of the lines, sir.

9 Q Would that be a consideration, though, the
10 magnitude of the opening?

11 A No, sir. The consideration is whether these
12 lines are essential lines or non-essential lines, and as
13 the evaluation says, this matter is under review by the
14 staff as to whether they would be isolated by at least a
15 minimum of one signal to the valves. It is not a matter of
16 the size of the penetration.

17 MR. LANPHER: Dr. Cole, I believe on CEC Exhibit
18 29, which is that table of penetrations, the size of some
19 of the penetrations are set forth. For instance,
20 component cooling line, water inlet penetration is listed
21 -- the line size is 12 inches. That is Penetration Number
22 Three.

23 DR. COLE: Okay.

24 BY DR. COLE: (Resuming)

25 Q On Page 4, still referring to these same lines,

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1 Dr. Donohew, the last sentence, I guess it is Line 6 on
2 Page 4, you say "Because of the special requirements for
3 use of the systems following certain offset conditions,
4 isolation based on a minimum of a single parameter may be
5 acceptable." What do you mean by that, sir?

6 A Well, I think in the past you had one of two
7 systems for penetration to the containment, an essential
8 system which is needed after an SFAS signal and non-
9 essential system which is not needed, particularly through
10 the -- in terms of my personal knowledge, particularly
11 through the review of the licensee's actions in meeting
12 the Lessons Learned requirements.

13 I think a gray area has come up, maybe what I
14 think -- maybe what I would call semi-essential systems,
15 where there are, for example, the reactor coolant pump.
16 The seals have to be protected, if the -- while the pump
17 is operating. You may in a recovery from an accident want
18 to use your reactor coolant pump, so you have to protect
19 the seals.

20 Therefore, having penetrations for systems that
21 would do that is not-- it does not become obvious that the
22 fact that those would be classified as non-essential
23 systems -- and I think what the licensee did in his
24 definition of essential systems was to say there are
25 certain lines for systems that would aid in recovery of the

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1 plant that should be kept open, and these are three. One
2 he lists is for the control rod drives. One is for the
3 reactor coolant pump. It is for the staff to decide if the
4 licensee should be required to isolate them at least on one
5 signal, and then if he decides that they should be
6 reopened, to then reopen them.

7 And I think the -- I do not know what the answer
8 to that review will be, but I do want to make you aware
9 of the fact that I do not think there is any longer a
10 division between systems which are just strictly what you
11 call essential and which are to aid in the transient
12 versus systems that may aid in the recovery which the
13 paths strictly considered non-essential would be isolated
14 and there would be no confusion.

15 This matter has come up in the review, and I think
16 this is one -- this is the -- this licensee's approach to
17 this and the final determination of whether this is
18 acceptable will be made in the future.

19 Q All right, sir. So the staff is evaluating that
20 based upon the possible need for these systems immediately
21 following an accident.

22 A That is correct, and I think in the matter that
23 there is -- it is not obvious the answer is one way or
24 another -- is why an answer hasn't been -- you know, why
25 this is in the process of being reviewed and a decision

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1 will be given later.

2 Q It is not clear to me what the staff is
3 considering there. Is that to be included in the automatic
4 isolation with capability to reopen being facilitated by
5 a system, or are you -- I do not know why -- the thrust of
6 this last sentence seems to me isolation based on a
7 minimum of a single parameter. Is it you are thinking about
8 isolation, yes, but should we base it on one signal or
9 multiple signals?

10 A It would be automatic isolation. What this sentence
11 is supposed to be explaining is that -- excuse me -- that
12 the automatic actuation does not obviously have to be on
13 diverse signals, which was a requirement in Lessons Learned
14 Items 2.1.4, that the special needs that these lines may
15 meet, that the staff may end up deciding that yes, there
16 will be an automatic isolation of the valves, but it would
17 be only on one signal as opposed to diverse signals.

18 Q So it will not rest upon a decision of, say,
19 whether it is essential or non-essential. If it is
20 essential you might not want isolation to begin with. Is
21 that correct?

22 A That is the position of the licensee. In his
23 definition of essential systems, he included these lines,
24 so therefore he did not have either diverse signals or a
25 single signal to close the valves on those penetrations.

1 What the staff is going to do is look at that
2 and in their mind decide if that is acceptable, and we
3 have just called out these particular lines, because what
4 the staff is saying is that it is not obvious to the staff
5 that they can be defined as essential systems to be left
6 open without any automatic isolation of them.

7 Q All right, sir. On Page 6 of your testimony, Dr.
8 Donohew, in the second paragraph, the last sentence, next
9 to the last sentence in that paragraph, you indicate that
10 the grade level of the auxiliary building will be changed
11 in a manner to prevent contaminated water from a spill
12 from leaving the building, and I did not understand that.

13 A Excuse me. Are you saying that I implied that
14 the grade level of the plant would be changed?

15 Q Let me read the sentence. "The release valves
16 for the makeup filter and the reactor coolant pump seal
17 return will be routed to more suitable tanks or sumps
18 instead of to open floor drains, and the grade level of
19 the auxiliary building will be changed in a manner to
20 prevent contaminated water from a spill from leaving the
21 building."

22 (Pause.)

23 A I understand what you mean, sir.

24 Q All right.

25 A It was not intended to change the grade level.

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1 What was intended was the fact of pointing out certain
2 items that the licensee had brought up in his review of
3 the letter from the staff concerning North Ana or related
4 incidents concerning releases through designer operated
5 deficiencies. What was intended -- What was pointed out is,
6 he could get water at the grade level auxiliary building
7 and actions will be taken to correct that.

8 So that the fact that there might be leaky --
9 water released to that level and then released outside
10 would be changed, corrected, so that would not occur.

11 Q How would you want to change that sentence, sir?
12 If I understood you correctly, it might simply be changed
13 instead of to open floor drains or to the grade level of
14 the auxiliary building. Is this --

15 A What is being referred to is that, as I remember
16 the second part, the part that says, "and the grade level
17 of the auxiliary building will be changed in a manner to
18 prevent contaminated water from a spill from leaving the
19 building," it should be "plant arrangements" or "plant
20 structures on the grade level will be changed."

21 In other words, as I visualize it, inside the
22 auxiliary building, there is a path, there is a physical
23 path which would allow -- if you have a water spill, that
24 would allow the water to run out of the building, so there
25 is going to be some modification of the plant. A dike.

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1 A lip at the door. Something like that. So the plant
2 structures at the grade level will be changed.

3 BY MR. SHON: (Resuming)

4 Q I understood when I read this statement that you
5 simply meant that the floor slope or floor grading of the
6 building would be altered by dikes or additional slopes in
7 such a manner that it would not slope towards doorways and
8 windows and things. Is that what you did mean? That is
9 what I assumed.

10 A That is correct, sir. In a manner like that. The
11 final fix has not been proposed by the licensee, and that
12 we will still be getting, and then his implementing of
13 that fix.

14 Q It would arrange floors and such so that if you
15 spilled something on the floor it would not run out the
16 door and into the world?

17 A That is correct.

18 BY DR. COLE: (Resuming)

19 Q On Page 7, in response to Question 11, the second
20 sentence of your response, you say 2.1.6.A was imposed to
21 assure that leakage would be as low as practicable and
22 definitely lower than was the case at TMI 2. Was the
23 problem at TMI 2 one of leakage or was it failure to
24 isolate? There were several things at Three Mile Island,
25 and that was the problem I was having. We have too much

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1 knowledge to try to bring everything down to one simple
 2 answer. Besides the problem of containment isolation and
 3 leakage, there is problems in the radwaste system
 4 equipment. The Lessons Learned Requirement 2.1.6.A,
 5 2.1.6.A, was imposed. It is only one of the items, and it
 6 was imposed for the problem that at TMI Unit 2, there was
 7 large amounts of leakage from systems outside containment
 8 that caused problems, severe problems, and the thrust of
 9 this requirement was to make sure that at other plants --
 10 not only for the same type of accident or some other
 11 accident -- that that specific -- that one problem of
 12 several would not occur.

13 We would have much more assurance that it would not
 14 occur.

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1 Q So it was much more than just failure to isolate
2 containment; it was actually a large leakage of the systems
3 outside.

4 A Yes. And as I say, there were several items.
5 It's difficult to, I think, call out one specific item.
6 There were many items which, when you look at all the Lessons
7 Learned items, you'll see there's a whole spectrum of problems
8 that for the short-term Lessons Learned items which the
9 licensees were required to meet by the first of this year
10 and will be required to meet for the first of next year.
11 These were to answer a whole spectrum of problems. So there
12 wasn't one -- like, containment isolation isn't one -- I guess
13 the major item of a lot of smaller items.

14 Q Still on the same page, question 13, the question,
15 "Would the rad way system at Rancho Seco be capable of
16 accommodating the quantities of waste that were produced at
17 TMI 2?" And you responded affirmatively to that, but a strong
18 part of your basis for that was that isolation of containment
19 would be achieved. Is that not correct, sir?

20 A That was the response to this question which I was
21 referring to just shortly before about having trouble answering
22 the question with a simple answer. That was one reason why,
23 before coming to appear at the hearing, I looked at the tank-
24 age that the plant had available and they have -- I believe
25 I added up something over 300,000 gallons of tankage that if

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1 it would not be available immediately with present piping
2 arrangements, could be made available, as was done at Three
3 Mile Island Unit 2.

4 I think the question is as I read it, what I seem
5 to be answering is that if all the water that came outside
6 of Unit 2, Three Mile Island Unit 2, during the accident
7 came out, would Rancho Seco be able to handle that. I don't
8 think I can make that statement because I don't think I've
9 done enough of a detailed study that I would want to say the
10 answer is yes.

11 I think from looking at the tankage, the answer
12 may be yes, but basically, for what I intended to answer in
13 terms of this question, is knowing the Lessons Learned items
14 which we imposed on the licensing, specifically I refer to
15 2.1.4; I think that gives I guess what we call adequate
16 assurance or reasonable assurance, I think even more than
17 adequate assurance, that Rancho Seco, given an accident, would
18 have the capability onsite of handling the rad way's volumes
19 that would come during that scenario. Which because of
20 containment isolation should be less than what happened at
21 Three Mile Island Unit 2.

22 DR. COLE: I have no further questions, thank you.

23 BY MR. SHON:

24 Q I have one question. On page 3 of your testimony,
25 the first full paragraph, there is a definition, which

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1 definition seems to jive with that given in one of the CEC
2 exhibits that you have been looking at, as to what are
3 essential and what are non-essential systems.

4 The definition, though, is, in my view, somewhat
5 ill-worded. It is not clear to me whether Condition A; that
6 is, those systems required immediately after a safety feature
7 actuation signal, and Condition B, those systems whose con-
8 tinued operation will not cause accident recovery problems
9 and whose continued operation may aid in accident recovery,
10 are mutually exclusive both requirements or systems satisfy-
11 ing either of these requirements or essential systems. Just
12 what did you mean? If the system satisfies both or does it
13 have to satisfy both to be essential, or need it satisfy only
14 one to be essential?

15 A The definition A and B which is given here is the
16 one which is given by the licensee. In responding to our
17 requirements on Lesson Learned Item 2.1.4, the licensee was
18 required to not only tell us what the non-essential systems
19 were and therefore what the essential systems were, but also
20 to define what he meant by non-essential, and in this case,
21 what are the essential systems.

22 Now what was written here is the licensee's defini-
23 tion. It's not meant to be the definition of NRC's view of
24 essential systems. So what was written here in the licensee's
25 letter to NRC January 17, 1980 I believe, this is under

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1 Lessons Learned Item 2.1.4 -- this I think is probably almost
2 verbatim what the licensee stated.

3 Q Is it clear in your mind whether it is meant that
4 an essential system must satisfy both conditions or need
5 satisfy only one?

6 A It's the fact that their essential system which is
7 listed in that letter, that they would meet A or B. If they
8 A or if they met B, then they would be listed as essential
9 systems, and the three penetrations for systems which are
10 called out in the staff's evaluation of Lessons Learned
11 Item 2.1.4, the one that we discussed previously, they would
12 fall under B in the licensee's mind.

13 Q They then further say that non-essential systems
14 are those not required immediately after an SFAS signal,
15 and thus, they seem to say that all non-essential systems
16 are, so to speak, non-A and not necessarily non-B. Is that
17 true?

18 A No, because the licensee does not isolate systems
19 that meet their definition A or definition B. Their non-
20 essential systems are closed on diverse signals, which meant
21 they didn't meet A or B.

22 Q And lastly, what is meant by the word "immediately"?
23 It appears as if there are some systems that will be needed
24 after an SFAS signal but perhaps not immediately. They seem
25 to be in a kind of an odd category.

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1 A Okay. In responding to this, in my mind, what
2 they mean is the fact that there are -- well, I guess what
3 I'm going to have to do is defer to the licensee. They are
4 the ones that wrote the definition. I guess the items which
5 they would list under that definition A would be the ones
6 which I believe NRC would have no confusion as to defining
7 essential systems like high pressure safety injection and
8 would probably be thought of in terms of a large break, a
9 large accident, as opposed to a transient. It might also
10 cause the SFAS signal.

11 Q But there does seem to be some confusion yet about
12 things like the control rod drive cooling water and the
13 component cooling water. Is that right?

14 A There's no doubt that there is confusion, and that
15 is why they were specifically called out in the evaluation as
16 items that would be acted on in the later decision by the
17 staff.

18 MR. SHON: Thank you, I have no further questions.

19 MRS. BOWERS: Mr. Lewis?

20 MR. LEWIS: One question on Redirect.

21 REDIRECT EXAMINATION

22 BY MR. LEWIS:

23 Q You may have clarified this later on, Dr. Donohew,
24 but at one point you were referring to the two containment
25 isolation signals, and I think you referred to high reactor

1 coolant system pressure as one of them. Did you mean low
2 reactor coolant system pressure?

3 A Low reactor coolant pressure.

4 MR. LEWIS: Thank you.

5 MR. BAXTER: I have nothing further.

6 MR. ELLISON: Nothing further.

7 MRS. BOWERS: The Board has no further questions.

8 MR. LEWIS: May he be excused?

9 MRS. BOWERS: The witness is excused. Thank
10 you.

11 (The Witness, Dr. Donohew, was excused.)

12 MRS. BOWERS: We think it would be a good time
13 to take a 10-minute break.

14 (A short recess was taken.)

15 MRS. BROWERS: We'd like to resume. Let's talk
16 about CEC Exhibit 40. We've had a chance to go through the
17 whole thing and find it is as Mr. Ellison characterized it
18 yesterday. They are the Abnormal Occurrence Reports.
19 Mr. Baxter, you were reluctant to stipulate to it coming in.
20 Is that still your position?

21 MR. BAXTER: I'm not sure it was ever formally
22 offered; it more in the nature of a challenge to expedite
23 the proceeding.

24 MRS. BOWERS: When you were objecting to Mr. Ellison's
25 procedure of having Mr. Rodriguez read through and identify

1 and discuss each report, at that time I think Mr. Ellison
2 said he would stop all that if you would agree to having it
3 come in.

4 Now, are we correct that these are business
5 letters in the SMUD file?

6 MR. BAXTER: They are certainly letters on SMUD
7 stationery to the NRC. It looks like they've been taken from
8 the local public document room of the NRC.

9 MRS. BOWERS: Well, let me ask the staff. Are these
10 part of the official NRC records?

11 MR. LEWIS: I'm sure they're part of the docket,
12 yes. It's a little bit hard for me to tell whether that is
13 exactly the case with respect to the ones -- the older ones
14 where they're not under any covering letters and there's no
15 indication of their coming from the local public document
16 room. So I can't be 100% certain, but obviously, the ones
17 that are stamped "Local Public Document Room" are part of
18 the official docket.

19 MRS. BOWERS: Mr. Baxter, let me go back to you.
20 Is it still your position that each report has to be identi-
21 fied and discussed?

22 MR. BAXTER: My concern yesterday was that many of
23 these occurrences may have only a remote bearing on the subject
24 matter of the proceeding. If the idea is to establish that
25 a given number of reportable occurrences indeed have taken

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1 place, and that the events described herein took place, I
2 guess I have no objection to that as it relates, however so
3 distantly perhaps, to management competence.

4 But if they're to be used, for instance to argue
5 that today a certain procedure that was found to be slightly
6 inadequate back in 1975 still is, I questions its usefulness
7 in that respect. I certainly can stipulate its admission for
8 the fact that these events did occur, as they're described in
9 the report.

10 MRS. BOWERS: Mr. Ellison?

11 MR. ELLISON: Mrs. Bowers, we would certainly stipu-
12 late to the admission of this document for the truth of the
13 matters stated herein at the time that they were stated.

14 MRS. BOWERS: Staff?

15 MR. LEWIS: I'm not sure what the import of what
16 Mr. Ellison just said is. I reviewed them last night, too,
17 and I think there is a question about materiality. First of
18 all, apparently these are not all of the Abnormal Occurrence
19 Reports but they are selected Abnormal Occurrence Reports,
20 so they don't serve to demonstrate how many abnormal occur-
21 rences have occurred. And assumedly, they were also selected
22 because CEC believed they prove something. I'm not sure
23 what a stipulated admission that doesn't get to that point
24 accomplishes. I mean, it seems to me what we have to find
25 out is do these prove anything. But in doing so, I don't see

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1 that there's any tremendous relevance in going through all
2 the facts of each of these particular instances indepth
3 because I'm not sure that that will productive of anything
4 relevant.

5 It seems to me that what we're trying to get at is
6 whether or not these indicate some kind of a pattern,
7 assertedly. So I am not sure that simply stipulating in
8 some very limited way to their admission accomplishes
9 anything. I think they have to be probed if they are to mean
10 anything.

11 MR. ELLISON: Mrs. Bowers, first of all, our
12 position, as I stated earlier, is that we would be moving
13 the admission of these things for the truth of the matter
14 stated at the time that it was stated and with no further
15 limitations.

16 Let me respond first of all to Mr. Lewis' comment
17 that these don't represent all of the Abnormal Occurrence
18 Reports. That's certainly true. The reason for that is
19 that we attempted to go through the Abnormal Occurrence
20 Reports and pull out the ones that we thought were material
21 to this proceeding and to Mr. Rodriguez's testimony. And
22 these are the ones that pertain to operations errors or
23 misinterpretations of procedures or misinterpretations of
24 technical specifications.

25 And I think in that sense, they are, on their face,

1 quite material to the questions about whether the training
2 is adequate at Rancho Seco, whether the management competence
3 is adequate and that sort of thing.

4 If they were admitted, there would be no need for
5 us to go through and have Mr. Rodriguez identify these
6 documents and confirm or deny that the incidents described
7 therein happened, and we could proceed directly to those
8 few questions that I have on these incidents taken in their
9 entirety.

10 MRS. BOWERS: Mr. Ellison, I don't want to get
11 into your closing argument, but is it your position that
12 there was a higher number, a much greater number, of abnormal
13 occurrences at Rancho Seco than at other plants?

14 MR. ELLISON: Mrs. Bowers, I have two problems.
15 The first one is that I represent a five-member commission
16 who will eventually adopt a position at the end of this
17 and as an interested state, we have not yet taken a position,
18 pursuant to the Commission's rules of practice. So my per-
19 sonal position would be I can not, at this point, speak for
20 the Commission and my personal position would not be very
21 relevant.

22 However, the point of our introducing these things
23 is to show, first of all, that a number of operations and
24 procedural-related errors have occurred; that some of them,
25 as Mr. Rodriguez has admitted, have been serious; and I

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1 believe that that is relevant to the training of the opera-
2 tors and deserves consideration by the Board.

3 Now, all the parties are free to examine this
4 evidence and to compare it to the other evidence and present
5 their views to the Board, and the Board can give it what
6 weight it deserves. That is also true for the Commission
7 that I represent, at the end of this proceeding.

8 But I do think it's something that's relevant and
9 belongs in the proceeding and deserves the consideration of
10 the Board.

11 MR. SHON: Mr. Ellison, do you also propose to ask
12 certain questions about these, even if admitted, which
13 questions will in some way point up exactly how you feel
14 they are relevant and the kind of weight they should be
15 given? Is that the sort of thing you're going to ask?

16 MR. ELLISON: That's correct.

17 MRS. BOWERS: CEC Exhibit No. 40 is admitted in
18 evidence.

19 (The document referred to, here-
20 tofore marked for identification
21 as CEC Exhibit No. 40, was
22 admitted into evidence.)

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Whereupon,

RONALD J. RODRIGUEZ

was recalled as a witness by counsel for SMUD and, having been previously duly sworn, was examined and testified further as follows:

FURTHER CROSS EXAMINATION

BY MR. ELLISON (Further):

Q Mr. Rodriguez, have you had an opportunity to review CEC-40?

A No, I have not had an opportunity to review CEC 40 in its entirety. I have reviewed a few of the reports, taking them in the order where we dropped off yesterday.

Q For the record, could you identify which ones you have reviewed and which ones you have not?

A The report dated April 16, 1975, was the one I believe we were talking about at the close of yesterday's session; I've reviewed that. The reported dated April 30, 1976 I have reviewed. The report dated October 12, 1976 I have reviewed. The report dated December 20, 1976 I have reviewed. The report dated March 14, 1977 I have reviewed. The report dated June 3, 1977 I have reviewed. The report dated November 21, 1977 I have reviewed. The report dated December 8, 1977 I've reviewed. The report dated November 28, 1977 I've reviewed. The report dated December 5, 1977 I have not reviewed. The report dated September 12, 1979 I

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1 have not reviewed. The report dated September 13, 1979 I
2 have not reviewed.

3 In my testimony yesterday I read through and
4 reviewed the report dated January 12, 1979; the report dated
5 January 15, 1979; the report dated February 18, 1979; the
6 report dated December 6, 1974; the report dated October 17,
7 1974; the report dated October 9, 1974; the report dated
8 February 6, 1980; the report dated January 14, 1980; and
9 the report dated January 25, 1980.

10 I need to make a correction. The report dated
11 January 12, 1979 and January 15, 1979 I have not reviewed.

12 Q Mr. Rodriguez, I do have a couple of questions
13 with reference to specific reports. The first one is the
14 January 12, 1979 report which unfortunately, you stated you
15 hadn't reviewed, so could you take a moment and briefly
16 review that one?

17 A Certainly.

18 (Short pause.)

19 I've completed it.

20 Q This report describes an operations error involving
21 the starting of a pump without suction, is that correct?

22 A That is correct.

23 Q Yesterday, we were discussing the event that
24 occurred December 6, 1974, in which you described, if you
25 recall the discussion, a very competent operator that had

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1 made essentially the same error. Is that correct?

2 A That is correct.

3 Q Are operators instructed not to start pumps without
4 ensuring that there is suction to the pumps?

5 A That is correct.

6 Q Following the December 6 event which I believe you
7 stated yesterday the pump was destroyed or at least required
8 rebuilding, was there any change in the training of operators
9 to emphasize the importance of suction for pumps to minimize
10 these types of errors?

11 A No, because the training of operators with regard
12 to starting a pump without suction is essentially one that if
13 you do that, you'll destroy the pump and there was really
14 nothing more that could be said other than, of course,
15 publicize that this incident had occurred and it was a verifi-
16 cation of the concept that running a pump without proper
17 water supply to it can destroy it.

18 Q Could you refer to the event that's dated December
19 5, 1977. I understand this is also one that you have not
20 reviewed, but I'd like you to refer, rather than to the
21 whole thing, just to the third full paragraph on the first
22 page.

23 A This is the December 5, 1977?

24 Q That's correct.

25 A The third paragraph?

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1 Q The one that begins, "On November 11, 1977..."

2 A I've completed reading that paragraph.

3 MR. BAXTER: Mr. Rodriguez, if you'd like to read
4 the entire report, take the time to do so.

5 BY MR. ELLISON (Resuming):

6 Q That's fine, if you'd like to. I will ask the
7 questions and if you want to stop and read the rest of the
8 report, say so.

9 A Fine.

10 Q The second sentence of that paragraph describes a
11 new switch installation procedure that was done completely
12 the reverse of the standard control room practice, "...which
13 has the open indication on top and the closed on the bottom."
14 Do you recall this particular installation?

15 A I recall the circumstances.

16 Q Can you recall when the installation occurred as
17 opposed to when its effect became apparent?

18 A No, I cannot.

19 Q When a switch like that is installed, who reviews
20 the installation of it?

21 A Upon completion of this type of installation, the
22 installation is inspected by an inspector not associated with
23 the individuals actually doing installation. And then a test
24 is run on the component to ensure that it operates per the
25 design and that that's documented by the, in this particular

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1 case, the electrical people.

2 Q Would the operators be given any specific training
3 on the operation of a new switch that was installed in their
4 control room?

5 A Yes, they would be. They would be given specific
6 training on why that installation is being made and then,
7 issue the procedure changes that reflect how to use that
8 installation.

9 Q So would it be fair to assume in this instance
10 that one person installed the switch, a second one inspected
11 it, and that the operators and perhaps others were trained on
12 this switch before anyone noticed that it was upside down?

13 A Well first of all, it would not be fair to say
14 that one person installed it because in an electrical installa-
15 tion like this there are usually two or three people at least
16 that are fully capable of putting in conduit and making actual
17 switch installations.

18 It would be fair to say that one individual
19 inspected it.

20 Would you repeat the last part of your question
21 with regard to the -- I kind of lost track of what it was.

22 Q The last part of my question addressed in addition
23 to those who installed the device, those who inspected it,
24 the operators presumably would have been trained on this
25 switch and that all of these people involved would have failed

1 to notice that it was upside down.

2 A No, I can't make a judgment that all of them
3 noticed that it was -- first of all, I would say that it was
4 not upside down and it was not installed in the same manner
5 that the other switches were installed. There's no right
6 side up or upside down on a particular switch, except with
7 reference to the normal switches or the convention.

8 But I can't say that no one noticed it. Someone
9 may very well have noticed it.

10 Q Would you expect an individual who noticed that a
11 switch had been installed in the reverse of the standard
12 control room practice to report that in some way or bring it
13 to the attention of SMUD?

14 A Some people probably would and others probably
15 would not, depending upon how concerned the particular indi-
16 vidual might be about that switch orientation.

17 Q Is this the type of matter that SMUD management
18 would leave to the individual discretion of the personnel
19 involved?

20 A Well, it's really left to the engineering organiza-
21 tion who does the design. The design is -- the detail of
22 the design is approved by both an engineer and, as far as
23 the classification, an associate or a senior engineer, and
24 ultimately gets approved by a civil engineer prior to its
25 installation.



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1 reporting items that deviate from established criteria or
 2 it can also be used for reporting items that are not func-
 3 tioning properly; and there is a reporting scheme which we
 4 refer to as AP-22 that is used primarily for reporting opera-
 5 tional errors or items that are outside the scope of our
 6 technical specification or items that come under the defini-
 7 tion of REG Guide 1.16, non-conforming reports.

8 Those particular reporting schemes are available to
 9 anyone in the Department. However, primarily it's the super-
 10 vision that generates the paper. It's not expected that the
 11 individual workmen have to go through writing up the paper,
 12 and the primary reason for that is that most individual
 13 crafts abhor paper, and if we required that they write it up
 14 I'm afraid we might not get as viable a reporting scheme as
 15 we get by just having them tell their supervisors and it's up
 16 to the supervisor to fill out the paper and get it moving
 17 through the chain.

18 Q Would you expect personnel within your operation
 19 who noticed this type of problem to alert their supervisor
 20 to it in one way or another?

21 A I 'm just --

22 MR. BAXTER: Objection. That question has been
 23 asked and answered. The witness said some would and some
 24 would not.

25 MR. ELLISON: My question is not whether he --

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1 Q My question is not to the practice of the installa-
 2 tion but rather, to the practice of reporting apparent
 3 errors, misinstallations or deviations from standard practice.
 4 Is that a matter that is left to the individual discretion
 5 of those who notice such errors?

6 A Definitely. Because -- and the reason I say
 7 definitely is it would depend upon the individuals on a
 8 day-to-day task to identify errors. There is no one indi-
 9 vidual or one group of individuals who are assigned the
 10 responsibility for finding problems. Individuals in all
 11 divisions of the Department are expected to report to their
 12 supervision problems that they feel are of a serious nature.

13 Q You testified a moment ago that you felt some
 14 people would report this and some people would not, and I
 15 believe -- and in the last part of your last answer you said
 16 people noticing such errors are expected to report them to
 17 their supervisor. That's really the gist of my question.
 18 Is it -- does SMUD prescribe and instruct its people to report
 19 all such errors of this type that they would notice to their
 20 supervisors?

21 A Our instructions or our procedure for reporting
 22 problems within the plant cover essentially three different
 23 programs. There is a work request program that is normally
 24 used because something is broken or not operating properly;
 25 there is a non-conforming report program that is used for

1 perhaps the word "expectation" is inappropriate. My question
2 is not whether he thinks they will or they won't, but
3 whether he thinks they should.

4 THE WITNESS: If the individual noticed this and
5 felt that this type of arrangement might lead to the kind of
6 error that it did lead to, then yes, I think he should report
7 it.

8 BY MR. ELLISON (Resuming):

9 Q Are there any written instructions on when particu-
10 lar reports that you mentioned should be initiated?

11 A Yes, there are.

12 Q And are they written?

13 A Yes, they are.

14 Q And what would be the designation of those
15 procedures?

16 A Well, I already indicated one was the AP-22. The
17 work request program is -- I think it's AP-4. And the non-
18 conforming report program is in our Quality Assurance Manual
19 and I don't recall the particular procedure number.

20 Q I believe you stated yesterday that you reviewed
21 Abnormal Occurrence Reports such as these before they were
22 transmitted. Is that correct?

23 A I said normally I do.

24 Q These reports have attached to the back of them
25 a form to fill out. One of the categories is "Offsite

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1 Consequences." Could you describe -- some of them say none,
2 some of them say non-applicable, some of them say minimal.
3 Could you describe what the term "minimal off-site conse-
4 quences" would mean?

5 A Can you refer to the specific item that you're
6 discussing, please?

7 Q Certainly. Well, for example, the March 14, 1977
8 one describes the offsite consequences as "minimal to none,"
9 and the April 30, 1976 report describes the offsite conse-
10 quences as "minimal."

11 A And what was the other one after March 14?

12 Q April 30, 1976.

13 (Pause.)

14 A The problem I'm having is there was a change made
15 in how you reported that, probably because of the various
16 ways in which offsite impact was characterized. The minimal
17 and the none I think are the same thing. If you look, -- at
18 least in 1979. I don't know when the change occurred, but
19 in the licensee event reports in early 1979 you'll see that
20 the report format was changed, and it went to activities
21 released and specifically required the amount of activity
22 and the location of the release.

23 P folks
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1 Q So, it would be your opinion it's minimal and
2 none would be equivalent?

3 A Yes. That is right.

4 Q With respect to the reports that are set forth in
5 CEC-40 that you are familiar with, do you know whether
6 SMUD made any attempt to identify the individuals that were
7 involved in any of these incidents?

8 A You will have to expand a little bit on what you
9 mean when you say "Did SMUD make any attempt?" Are you
10 talking about the Board of Directors, the general manager,
11 you know, there are 1600 people in SMUD.

12 Did I identify them publicly? I am not sure what
13 you are driving at.

14 Q I am not referring to the Board of Directors. I
15 am not referring to identifying them publicly. I mean,
16 SMUD management, such as yourself, responsible for the
17 operation of the reactor, but at high level management posi-
18 tions attempting in some formal way to ascertain who is
19 responsible for any of these incidents.

20 A What I have done in this instances as they have
21 occurred in the past is to discuss with a particular group
22 supervisor, the cause of the instance and whether or not the
23 individual that made the error has a history of this type of
24 operation.

25 By history, I mean, he is doing something that is

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1 outside our normal practice, every six months to a year, to
2 the extent of what the individual's name is. I am really
3 no concerned unless it becomes -- unless the answer to my
4 inquiry is, "Yes, this is somebody that we are having
5 prblems with."

6 To date, that has not occurred.

7 Q Is a formal record kept by SMUD of the history of
8 . particular individual and his responsibility for events such
9 as those described in CEC-40?

10 A There is a record kept, an individual's performance
11 evaluations that are made up by his supervisor. Those
12 performance evaluations do not reflect in detail that the
13 individual may have committed some error that resulted in
14 an event report being generated.

15 Q So, would it be fair to say that if you wanted a
16 more accurate record, other than the general impressions of
17 the shift supervisor of a particular individual's association
18 with reportable occurrences, that there would be no formal
19 record that you could go to that would identify whether he
20 was associated with a particular incident or a series of
21 particular incidents?

22 A We do not keep book on the operating personnel.

23 Q Do those responsible for the training of operating
24 personnel routinely see such reports such as these?

25 A Yes, they do.

1 Q Do they see all of them? Do you know?

2 A I cannot state with certainty that they have seen
3 every one that we have ever produced.

4 Q The people you are referring to are shift super-
5 visors or are you referring to those who have been hired
6 specifically to train personnel?

7 A I am speaking about all of those.

8 Q So, it would be true that those hired specifically
9 to train personnel would routinely see these reports. Is
10 that correct?

11 A That is correct.

12 Q Does SMUD management review the performance of its
13 operators at the B & W simulator?

14 A The best way I think to answer that is that the
15 plant superintendant, the operations supervisor, the
16 chairman of the plant review committee, the engineering
17 and quality control supervisor and I, as well as the training
18 supervisor, all participate in the SMUD training simulator
19 program.

20 That participation is normally by one of us going
21 with part of a crew. In that light, we have first-hand
22 opportunity to observe and evaluate their performance.

23 Secondly, the Babcock and Wilcox company returns to
24 the -- to SMUD, a summary of the operations that each indivi-
25 dual had participated in while at the simulator, and some

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1 general comments with regard to his participation.

2 Q Would it be the case -- well, first of all, the
3 crews go back to Lynchburg for their simulator training at
4 various times throughout the year. Is that correct?

5 A That is correct.

6 Q Each crew going once per year?

7 A That is correct.

8 Q Would it always be the case that a crew going back
9 to Lynchburg would have accompanying them a member of SMUD
10 management who was also going through requalification?

11 A Not in every case, no. I think historically so,
12 each crew had either a member of management or a shift
13 supervisor accompanying them.

14 (Pause.)

15 Q Who reviews the report from the B & W people about
16 the performance of Rancho Seco operators?

17 A The training supervisor, in all cases. If there
18 is some apparent problem, he will bring this up with the
19 operations supervisor and/or the plant superintendent.

20 Q Do you know whether any SMUD personnel have ever
21 gone for more than the minimum required amount of simulator
22 training?

23 MR. BAXTER: I believe there is no foundation in
24 the record that there is required simulator requalification
25 training, if that is what the question is going to.

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1 MR. ELLISON: Let me clarify my question.
 2 BY MR. ELLISON: (Resuming)
 3 Q As I understand, the requalification program
 4 requires one week of simulator training per year. Recogni-
 5 zing that after the Three Mile Island accident, there was
 6 some additional training given to operators apart from the
 7 Three Mile Island training. Are you aware of any instances
 8 in which operators have received more than a week -- or
 9 more than the amount of simulator training set forth in the
 10 requalification program.

11 A As far as the requirements are concerned, our
 12 requalification requirement for the one week simulator
 13 course has exceeded what 10 CFR requirements are, historically.

14 That one week that we schedule each year is taken
 15 by all the on-shift licensed operators. There have been
 16 some occasions where a member of management missed a year,
 17 but we have not had any particular reason outside of the
 18 Three Mile Island special training to schedule more than that
 19 for anyone.

20 Q Is the program that operators experience at the
 21 simulator put together by B & W or is it put together by
 22 SMUD personnel?

23 A The simulator program, with respect to the opera-
 24 tion of the simulator, is a B & W program entirely put
 25 together by them. The types of training that occur in the



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1 classroom is also conducted by B & W.

2 However, our training supervisor establishes with
3 the B & W training department what particular items we
4 desire to be covered in that classroom portion.

5 Q Would it be feasible to routinely send operators
6 back to Lynchburg for simulator training for a substantially
7 greater period than one week a year?

8 A Well, if you are using feasible in place of
9 possible, anything is possible, yes.

end tP-5

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tP-6

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1 Q Let me ask you the same question. Inserting
2 reasonable as distinguished from would it provide you with
3 great difficulty, great operations problems?

4 A It would create a burden on the overall staff
5 because while those people are gone, there have to be others
6 to take their places to continue doing what they are doing.

7 Q And that is because you have only five crews and
8 if one is gone, everybody is essentially on shift. Is that
9 correct?

10 A That is correct.

11 Q Is that also in part because the simulator is
12 across the country and it is not reasonable to send someone
13 for simulator training without having them gone for more
14 than a day or so?

15 A Whether the individual is traveling or whether he
16 is at the simulator there has to be somebody back at Rancho
17 Seco doing his job. The traveling makes it a seven-day
18 period that needs to be covered instead of a five-day
19 period.

20 Q Isn't it true that if an individual wanted -- an
21 individual operator wanted some discrete transient or
22 experience at the simulator, that that would be difficult
23 to do because the simulator is so far away from Rancho Seco
24 you would have to fly across the country and fly back in
25 order to get that experience?

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1 A If the operator has some discrete transient that
2 he wants to see at the simulator, he has that opportunity
3 during the week he is at the simulator to ask for it, and
4 I know of no case when the instructors at B&W have not
5 accommodated that kind of request.

6 Q He might have to wait as much as a year for that.
7 Isn't that true?

8 A If he decided that the transient he would like to
9 see came to mind the day after he came back from simulator
10 training, yes, it would be probably approximately a year
11 before he got back there.

12 Q Has SMUD ever done any formal study or considered
13 the idea of constructing a simulator at Rancho Seco to
14 train its operators?

15 A There has been no formal study done for constructing
16 a simulator at Rancho Seco for training operators.

17 Q Do you have any idea what such an effort would
18 cost?

19 A The study or the simulator construction?

20 Q The simulator construction.

21 A Do you want the initial construction cost, or do
22 you want the cost over the life of the facility?

23 Q The initial construction cost.

24 A Approximately \$20 million.

25 Q What is the basis for that?

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1 A The basis for that is that the simulator that was
2 constructed at B&W ten years ago cost approximately \$6
3 million. There would be a considerable upgrade probably
4 because new things have come up since that time. It is my
5 understanding that the more recent simulators that are
6 being ordered today or are being built today are on the
7 order of \$10 to \$15 million, so by the time we got around
8 to ours ordered and installed with the very -- what I
9 anticipate very high activity of other utilities building
10 their own simulators, and therefore the marketplace would be
11 more of a seller's market than a buyer's market, I would
12 estimate you would add another \$5 million to it.

13 So, I am talking about \$20 million. That, of
14 course, would include constructing a building to put it in.
15 Not just the computer control room itself.

16 Q Are you aware that the Diablo Canyon facility has
17 an on-site simulator?

18 A I have not been to Diablo to look at their
19 simulator, no.

20 Q Are you aware that it has one?

21 A I may have heard that. I cannot say that I knew
22 about it or did not know about it.

23 Q Have you or anyone else at SMUD made any attempt
24 to determine what caused PG&E to construct that simulator?

25 A I have not made any attempt to determine that. I

1 don't know if anyone else at SMUD has.

2 (Pause.)

3 Q You stated earlier there has been no formal
4 study by SMUD of the feasibility of installing such a
5 simulator. Has there been an informal study that you are
6 aware of?

7 A Not that I am aware of.

8 Q Do you know whether SMUD has studied the cost of
9 its present simulator training program including the
10 cost of transporting its personnel to Lynchburg?

11 A I know what those costs are. I have not
12 studied them as a result of essentially knowing what they
13 are.

14 Q What are they?

15 A Approximately \$300,000 a year.

16 (Pause.)

17 Q Does that figure -- What does that figure include?

18 A That includes the cost of training personnel
19 to simulator.

20 Q Does it include their travel costs?

21 A Yes.

22 Q Does it include the cost of overtime or whatever
23 for those who are filling in for them while they are in
24 Lynchburg?

25 A No, it does not include the cost of overtime for

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1 the individuals filling in for them.

2 Q So this would be -- Would you characterize that
3 as being the direct cost of transporting people to
4 Lynchburg and the training they received there and bringing
5 them back?

6 A Yes. The primary portion of that cost is the
7 \$500 an hour cost that we pay, approximately \$500 to \$600
8 an hour that we pay for the simulator computer time, which
9 is the major portion of that.

10 Q Was SMUD in the course of establishing, for
11 example, a technical support center on site planning to
12 construct any new buildings at Rancho Seco in the future?

13 A Yes, we are.

14 Q Mr. Rodriguez, I have a technical question for you,
15 which you would probably prefer. If you had a stuck open
16 EMOV, and the temperature of the primary coolant in the
17 pressurizer was on the order of 590 degrees, would you
18 expect that temperature to change as the coolant passed
19 across the open EMOV and encountered the pressure change
20 that would result as it entered the tailpipe?

21 A Yes, I would.

22 Q What would you expect it to change to?

23 A I think it is going to be dependent on the back
24 pressure, but I think some of the calculations that I have
25 seen indicated in the TMI case that the maximum temperature

1 that probably would have been experienced downstream of the
2 EMOV was on the order of about 380 degrees, 360 degrees.

3 Q You stated that was the maximum temperature?

4 A That is what I understand from the piping
5 configuration and the resulting back pressure that could have
6 resulted. That would have been as high as it could have
7 gotten. I don't think it got that high, but that is the
8 calculated maximum that it would have been.

9 Q Would you expect your operators to understand that?

10 A I do not think so. I do not think that the
11 thermodynamic phenomena that occurs in there would
12 necessarily be understood by all the operators. There would
13 be some that might, but I could not say that I would
14 expect any given operator to understand that.

15 Q Referring to your testimony, Appendix 1.D, Page
16 1-2, where you describe the Sacramento State course that
17 is given new operators or was given in the cold license
18 training program, I notice there are classes in fluid
19 mechanics, heat transfer, and that sort of thing, thermo-
20 dynamics as well.

21 Based upon your last answer, would it be fair
22 for me to assume that these classes did not go into the
23 kind of phenomena that I just described?

24 A No, I do not think that would be fair at all. I
25 think my answer was really addressed to, as you can see

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1 here, thermodynamics was 18 hours, and that was given some
 2 number of years ago, in the course of the daily working
 3 efforts, these people do not work with thermodynamic
 4 mathematical relationships, and therefore I do not think all
 5 of them -- and as I said, some might, but I would not
 6 expect any particular one necessarily be knowledgeable with
 7 respect to the maximum temperature which would be on the
 8 order of 360 or 380 degrees.

9 I myself am only knowledgeable about that because
 10 I asked some of the engineers at -- I think it was B&W
 11 whether or not what I had heard was true. Their answer
 12 was yes, that the maximum pressure due to the piping
 13 configuration would be such that the maximum expected
 14 temperature would be on the order of 360 to 380 degrees.

15 MR. SHON: Mr. Ellison, I would like to clean up
 16 one detail with Mr. Rodriguez.

17 When you said you wouldn't expect them to know
 18 that, did you mean you would not expect them to know
 19 quantitatively that it would be 360 degrees, or you would
 20 not expect them to know qualitatively that a fluid
 21 expanding through a valve in a case like that usually
 22 cools off?

23 THE WITNESS: As I said earlier, Mr. Shon, some
 24 of them I would expect would know that, but I would not
 25 expect any individual one to know that, just depending upon

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what his educational background might be.

MR. SHON: Isn't it the way most household refrigerators work?

THE WITNESS: Yes, sir, but you know, there are a lot of people that get rid of their refrigerators because the thermostat is stuck.

MR. SHON: Thank you. That is all. I am sorry, Mr. Ellison.

MR. ELLISON: That is fine.

BY MR. ELLISON: (Resuming)

Q Rancho Seco has operated in the past with a leaking EMOV. Is that correct?

A That is correct.

Q So operators would be conditioned to seeing higher temperatures in the tailpipe thermocouples than the ambient temperatures of the reactor building. Is that correct?

A I would not characterize it that way. I guess what I would say is, because we have had leaks in those tailpipes, operators are more sensitive to the temperature and monitoring that that temperature may be changing as a direct reflection that the leak rate is changing.

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1 Q Would you expect the readings in the tail pipe
2 thermocouple to be through leakage through the PORV? Let me
3 ask you this question.

4 Could they be on the order of 200 degrees?

5 A Yes. I think in our experience that number has
6 gone as high as 200 degrees before we initiated blocking
7 of the EMOV.

8 Q Mr. Rodriguez, do you have Mr. Morisawa's
9 deposition with you? I would like you to refer to page
10 13 of that deposition.

11 At page 13, half way down the page, I asked Mr.
12 Morisawa about this problem and proposed to him the
13 situation where you have a 590 degree coolant in the
14 pressurizer and the PORV is stuck open, and asked him what
15 temperature he would expect to see in the tail pipe.

16 He responded at the bottom of the page that he
17 expected that the temperature would be pretty close to
18 590 degrees.

19 Turning to the next page, after clarifying that
20 he meant 590 degrees, I asked him if he knew that the
21 temperature in the pressurizer was 590 degrees, but saw
22 temperatures in the discharge line more on the order of
23 200 or 300 degrees, would he assume that the perssurizer
24 coolant was not flowing through the PORV.

25 Then, he answered that he would. Is that a correct

1 response?

2 A Excuse me. You jumped around on that page. I would
3 like to read what the line of questioning was.

4 Q All right.

5 (Pause.)

6 A No, that is not the correct response. However --
7 and I was a party to that hearing -- the line of questioning
8 did not proceed as the way I would have thought because
9 there are other indications. There is pressure in the PRT
10 and also level in the PRT that he would be expected to look
11 at to confirm whether or not the EMOV was, in fact, open.

12 Q Mr. Rodriguez, is it true that Rancho Seco is
13 SMUD's only operating thermalelectric plant?

14 A Yes, that is true.

15 Q Do you know of other utilities in the United
16 States whose only operating thermalelectric power plant is
17 a nuclear facility, such as Rancho Seco?

18 A I know of some other utilities that have a single
19 nuclear unit. I cannot say whether or not they have any
20 other thermalelectric generating stations.

21 MR. ELLISON: Mrs. Bowers, that completes my
22 examination of Mr. Rodriguez. Mr. Lanpher has some additional
23 questions with respect to those areas with Mr. Rodriguez that
24 I did not cover.

25 This might be an appropriate time to take a lunch

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1 break, although it is a little bit early.

2 MR. BAXTER: I have a comment on that. Typically,
3 it is not permissible to have two counsel's cross examining
4 a single witness. If there is a clear-cut identification --
5 and I am not sure I can find it -- what parts of Mr. Rodri-
6 guez's testimony we have now covered.

7 I would not object to a definitive delineation so
8 we can know when Mr. Lanpher may be crossing back over.
9 Could we have an identification of what parts of the testimony
10 that cross examination has been completed on? because I
11 do not think it is fair to have double-teaming of counsel
12 with respect to the same testimony.

13 MR. ELLISON: We would be happy to clarify. I am
14 referring to the table of contents of Mr. Rodriguez's
15 testimony. Mr. Lanpher and I have divided up the issues in
16 this way. I have covered Mr. Rodriguez's qualifications
17 in part one and part two of the training.

18 Of part three, perhaps it would just be easier if
19 Mr. Lanpher will cover items B, C, D, G, H, I, and J.

20 MR. BAXTER: The extent of the examination that
21 we had yesterday about all the instruments and controls that
22 have been added since the commercial operation of the plant,
23 since Three Mile Island did not cover item G?

24 MR. ELLISON: No, it covered item F, control
25 room configuration.

1 MR. ELLISON: I disagree completely.

2 MRS. BOWERS: Mr. Baxter, now that the items have
3 been identified, does that clear up the problem you had with
4 Mr. Lanpher proceeding?

5 MR. BAXTER: Except for the item -- one question.
6 Mr. Ellison, since you have identified Roman I and II, does
7 that include also Appendices 1, 2, and 3?

8 MR. ELLISON: Yes, it does. With respect to your
9 earlier comment, Mr. Baxter, perhaps I can clarify. This is
10 how we broke out item F from item G.

11 I asked questions with respect to the location of
12 the instrumentation in the control room, but not with
13 respect to the particular performance of any piece of
14 instrumentation.

15 MR. BAXTER: That is not my memory at all. I
16 remember questions about the width of the scale, the method
17 of failure of the scales, and the instruments and what their
18 purpose was in being added after commercial operation, and
19 since the accident.

20 MR. ELLISON: Basically, it was my intention to
21 concentrate on the human factors engineering of the control
22 room. If that overlaps between the two things, it is my
23 understanding that Mr. Lanpher has very few questions on
24 instrumentation. There is a definite overlap of those
25 two subject matters.

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1 If we have misinterpreted what SMUD meant by
2 dividing those two subject matters, I apologize. I don't
3 mean to cause any disruption in this hearing other than what
4 we have experienced so far to have Mr. Lanpher ask his
5 additional questions, broken out in what we thought was a
6 reasonable way.

7 MR. BAXTER: SMUD did not divide up the issues.
8 They were divided by you. I would be happy to proceed, but
9 it is not a typical conduct of proceedings to have two
10 different lawyers from the same party cross examining with
11 respect to the same testimony and to the respect Mr. Lanpher
12 repeats any aspects of Mr. Ellison's cross examination,
13 with respect to instrument and controls, we will be
14 objecting, but we will wait and see how it goes, I guess.

15 MR. ELLISON: I would simply add that throughout
16 this proceeding we have had, on several occasions, two
17 attorneys from a single party cross examining the same
18 witness.

19 MR. BAXTER: On totally separate pieces of testi-
20 mony, Mr. Ellison.

21 MR. ELLISON: I recall Mr. Black and Mr. Lewis
22 cross examining the same witness. I do not really think it
23 is ap problem. Mr. Lanpher is not going to repeat any of
24 the examination I undertook.

25 So, I do not believe you will have cause to

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object.

MRS. BOWERS: We will break now for lunch.

(Whereupon, at 11:53 a.m., the hearing in the above-entitled matter recessed, to reconvene at 1:00 p.m. this same day.)

AFTERNOON SESSION

(1:00 P.M.)

MRS. BOWERS: Mr. Lanpher, are you ready?

MR. LANPHER: Yes, ma'am.

Whereupon,

RONALD J. RODRIGUEZ,

the witness on the stand at the time of recess, having been previously duly sworn, resumed the stand, was examined, and testified further as follows:

CONTINUED CROSS EXAMINATION

BY MR. LANPHER:

Q Mr. Rodriguez, I want to go back briefly to a number of questions which I asked Mr. Dieterich several weeks ago in which I got over into procedural areas, and he indicated you would be better qualified to respond to certain questions.

My questions pertain to the short-term items in the May 7 order relating to the auxiliary feedwater system. One of those short-term items was to institute procedures for starting the AFW pumps on a loss of offsite power. Prior to the changes or new procedures which were implemented pursuant to that order, did Rancho Seco operators know how to start the AFW pumps on a loss of offsite power?

A We -- I think we had the procedure in the auxiliary feedwater system procedure directing the operator

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1 how to put the auxiliary feedwater pump on the 4A or 4B
2 bus when that bus was being powered by a diesel generator.

3 Specifically the procedure I do not think stated
4 that it was for a loss of off-site power. Of course, that
5 would be normally the condition which you would require that
6 bus to be carried by the diesel.

7 Q So if there had been a loss of off-site power
8 prior to the TMI accident would you have expected Rancho
9 Seco operators to know how to load the auxiliary feedwater
10 system onto those diesel generators?

11 A Yes.

12 Q A second item relating to the auxiliary feedwater
13 system in the May 7 order was to institute surveillance
14 procedures for the cross valves during testing. Did you have
15 procedures prior to the May 7 order to ensure that
16 auxiliary feedwater would be available quickly during -- if
17 a transient occurred during the testing cycle?

18 A The significance to that change was to, I guess,
19 if you will, further improve the margin of safety that was
20 associated with the procedure while we were testing the
21 auxiliary feedwater pumps. The procedure called out for
22 opening, I think it is FWS 055, and had we had an incident
23 occur where the shift supervisor would have needed
24 auxiliary feedwater, the shift supervisor would have told
25 the operators out there running the test to go shut off

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1 FSW 055. The change we made specifically prescribed that
2 an operator be in phone communication with the control room
3 at FWS 055 while that procedure was in operation where in
4 the past we had not been that prescriptive about where
5 he is.

6 Q The third item of those short-term items was to
7 develop procedures for manual steam generator level
8 control if there was a failure in the ICS. My question is,
9 prior to TMI, operators would have been able to take
10 control of auxiliary feedwater and to control the level in
11 the steam generator if there had been an ICS failure?

12 A Prior to the Three Mile Island incident, the
13 procedure did not specifically describe the detailed
14 steps through which an operator would go to control level
15 in the steam generators using the safety features actuated
16 auxiliary feedwater flow control valves. The detailed
17 specifics of the steps to go through doing that were
18 incorporated in a procedure as part of the overall enhance-
19 ment of the auxiliary feedwater system.

20 However, that enhancement was a procedural matter.
21 We did not have to make any hardware changes. The capability
22 to do that was there, and had it been necessary, there is
23 no doubt in my mind that the operators would have used it
24 and used it properly.

25 Q In the time frame prior to these procedural

1 changes?

2 A Yes.

3 Q A further modification pursuant to the May 7 order
4 was to provide verification in the control room of
5 auxiliary feedwater flow to each steam generator. Were
6 Rancho Seco operators able to verify AFW flow to each steam
7 generator prior to TMI?

8 A By observing steam generator level, and that level
9 could be varied by operating the valves, the operator would
10 have been able to verify that he had flow to each steam
11 generator. The enhancement in that particular case was
12 to, in addition to that indication already available to
13 him also, to add actual water flow meters.

14 Q Would it be fair to say that this would, then --
15 that they were able to do it before but this would provide
16 an additional means to verify that the flow in fact was
17 occurring?

18 A They were able to determine whether or not they
19 had control of steam generator level. The addition of the
20 flow instrumentation gave them a direct readout of flow.

21 Q Pursuant to the May 7 order, you also
22 instituted procedures in training for providing alternate
23 sources of water to the suction of the AFW pumps. I assume
24 this is from the reservoir or from the canal. Is that
25 correct?

1 A That is correct.

2 Q Prior to TMI, did Rancho Seco operators know how
3 or were they able to provide such alternate sources of
4 water?

5 A Yes, they were. However -- and I do not recall
6 right now whether or not it was specifically prescribed in
7 a procedure how to manipulate those valves. I think our
8 enhancement was that we would either put that in the
9 procedure or verify that we did have that in a procedure.

10 Q The need for such water would not arise immediately
11 after any transient, would it?

12 A The need for such water would not arise within
13 -- no sooner than 24 hours after a transient.

14 Q You also provided control room annunciation for
15 all auto start conditions of the AFW system. Prior to
16 these changes, would Rancho Seco operators have known when
17 the AFW system had started?

18 A Prior to --

19 What the change really incorporated was
20 annunciation that the pumps themselves had started. Prior
21 to that time, the operator had no audible annunciation. He
22 did have indicating lights that would tell him that the
23 pumps were running.

24 Q Do you know of any occurrence where a Rancho Seco
25 operator was unaware that the AFW pumps were running?

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This is prior to these changes, Mr. Rodriguez.

A I cannot think of any that he would be unaware of.

end p8
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1 2 Related to that, the requirements that you were
2 discussing, the next item of the May 7 order was that
3 procedures will be developed and implemented and training
4 conducted to provide guidance for timely operator verification
5 of any automatic initiation of AFW.

6 Prior to these changes, would operators have been
7 able to verify in a timely fashion automatic initiation of
8 AFW?

9 A Again, that response was with regard to enhancing
10 the auxiliary feedwater system, and addressed documenting
11 the response that prior to that time the operator, as part
12 of his training in diagnosing what he had lost would use to
13 verify auxiliary feedwater.

14 The main change, however, was the fact that an
15 annunciator was installed to alert the operator that the
16 pumps were running. This annunciator is an audible as well
17 as visual annunciation.

18 Then, to follow up with that annunciator, if it is
19 running, that the operator's action was to verify that he
20 had pumps running. Excuse me.

21 If that annunciator annunciated to verify that he
22 had pumps running.

23 2 Mr. Rodriguez, I believe Mr. Dieterich also stated
24 inresponse to a question that you were involved in, I will
25 use the word "negotiation" or the decisions relating to the

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1 selection of the short-term selection items which were
2 contained in the SMUD April 27, 1979 letter to the NRC. Is
3 that correct?

4 A I was with Mr. Mattimoe in Washington when a letter
5 of April 27, 1979 was generated.

6 Q Could you please describe how the specific items
7 which were selected to be included in that letter were
8 determined? Would it help to have a copy of that letter?

9 A Yes, I think so, because I do not have all of those
10 items off the top of my head.

11 MR. LANPHER: This is CEC-25.

12 (Counsel handing document to witness.)

13 (Witness reviewing document.)

14 THE WITNESS: A couple of days prior to this letter,
15 the Nuclear Regulatory Commission had had a meeting with
16 B & W, and B & W owners. At the end of that meeting, Mr.
17 Denton, as I recall, indicated that he was going to go before
18 the Commission the following day and make some recommendations
19 regarding B & W units.

20 At that Commissioners meeting, after some discus-
21 sion, it was decided that -- or he said that, as I recall,
22 that he was going to recommend the operating B & W units to
23 be shut down.

24 There was essentially no restart criteria, what
25 the units have to do to return to power. The following day,

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1 Mr. Mattimoe received a call from Mr. Denton stating that
2 the Duke Power Company had volunteered to shut down the
3 Oconnee Units and make some modifications, both hardware
4 and procedural, which he found acceptable.

5 On completion of those modifications, the units
6 would be able to return to power. As a result of that,
7 Mr. Mattimoe obtained a copy of the letter that the Duke
8 Power Company had proposed to Mr. Denton or sent to Mr.
9 Denton.

10 He and I reviewed that. The Oconee auxiliary
11 feedwater system was considerably different from Rancho
12 Seco's; however, there were a number of items that Oconee
13 had proposed to do to upgrade their system and enhance its
14 reliability.

15 As I recall, in reviewing those enhancements and
16 comparing them to our system, our system already had a lot
17 of that capability.

18 So, I sat down and looked over that list and looked
19 at what kind of items could apply to us and would enhance
20 our reliability, maybe not significantly, but in some cases;
21 in other cases, maybe it would.

22 Myself and Mr. Mattimoe generated essentially the
23 nine items that appear here as those items that we would
24 accomplish with regard to enhancing our auxiliary feedwater
25 system prior to restarting the plant.

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1 Q Does that complete your response?

2 A Yes.

3 Q My question went not to just the auxiliary feed-
4 water items but other items. Let me follow-up on what you
5 said to this point, then we can go on to the other items in
6 the SMUD letter.

7 You said that some of the items in your view did
8 not significantly enhance reliability, but others did, or
9 I believe something to that effect. Could you please
10 identify, in your view, which of the items -- and they would
11 be in enclosure one to that April 27 letter -- which of
12 those items, in your view, significantly enhance the safety
13 or reliability of the plant?

14 MR. BAXTER: The reliability of the plant or the
15 auxiliary feedwater system?

16 THE WITNESS: I probably used a poor choice of words
17 because when I talked about significantly enhance the
18 reliability, at the time that we are talking about this
19 letter, the auxiliary feedwater system had been called upon
20 to operate under test or actual requirements, some 84 times.
21 It never failed to operate.

22 So, enhancing that reliability significantly is
23 a powerful chore. It is 100 percent reliable. So, I think
24 my term "significant" is relative -- needs to be taken in
25 the context of these nine items.

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1 For example, putting in flow meters which we did
2 not have would be a more significant enhancement than
3 verifying the technical specification requirement for how
4 many gallons per minute flow each auxiliary pump was supposed
5 to deliver was correct; because that specification had been
6 dealt with at some length early in the FSAR.

7 I felt confident that it was accurate, that this
8 was just another check. When I talked about significant
9 and less significant, that is the context I was really
10 referring to.

11 Q Fine. Among these nine items, are there any other
12 than the flow indication that you believe stand out above
13 the others as being the most important?
14

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1 A I think the Item Number 2 with regard to
2 having an operator dedicated at FWS 055 when we were
3 testing, that system is also a significant improvement,
4 again in the context of the other items.

5 (Pause.)

6 A I think that the -- relative to some of the other
7 items, the installation of an audible annunciation in the
8 control room to alert the operator that its auxiliary
9 feedwater required was significant, and going along with
10 that is his response to it. I think that although the
11 -- we knew ahead of time the failure mode of those valves,
12 it was significant to verify that they failed in that
13 direction to assure that we had auxiliary feedwater to
14 supply the steam generators.

15 If I ranked these one through nine, those would be
16 the top four, but I think all of these items served to
17 enhance -- enhance their reliability. We could not really
18 improve it because it was already 100 percent.

19 Q Were any of these nine items either not present
20 in the Oconee-Duke Power letter or not substantially
21 similar to items in that letter?

22 A I cannot remember. I would have to have Oconee's
23 letter to compare it.

24 Q In your opinion, if it had not been for Mr. Denton's
25 phone call or maybe not phone call, his statement to the

1 NRC that he was going to recommend a shut-down, would
2 Rancho Seco or SMUD have voluntarily shut this plant down
3 anyway?

4 A No, I do not think so. Let me -- I guess I would
5 like to clarify. As I recall in that hearing there was
6 some disagreement as to whether or not it was required
7 that they be shut down immediately amongst some of the
8 staff members addressing the Commission, and why I say that
9 is that there were some that felt that the units could go
10 a couple of weeks and make some changes in that length of
11 time.

12 MR. BAXTER: When you say hearing, you are
13 referring to the open Commission meeting?

14 THE WITNESS: Yes, the open Commission meeting
15 before the full Commissioners.

16 BY MR. LANPHER: (Resuming)

17 Q If you could turn your attention to the remainder
18 of the short-term items on CEC 25, could you please tell
19 me how those items were developed to be included in the
20 short-term measures to be done before restart?

21 (Pause.)

22 A As I recall, Items B through E were all items
23 that were discussed one way or another in the meeting that
24 we had had initially in the week, I think it was on
25 Tuesday morning, with the NRC staff, the B&W owners and



1 B&W.

2 Q Mr. Rodriguez, can I interrupt just a moment?
3 You are referring to B through E on the first page of that
4 letter. Is that correct? We have B through E on the
5 second page?

6 A Yes, I am referring to those on the first page,
7 the short-term items. I think B&W had by some letter,
8 either that Tuesday or Wednesday, after meeting with the
9 owners' groups, had committed that they were going to
10 conduct a small break analysis and that operating
11 guidelines would be developed from that after the meeting
12 that night.

13 I had called out my plant superintendent and
14 some other people and asked them to look at the high wire
15 control grade trip scheme and see if they could come up
16 with a design that would allow us to install that in a
17 fairly short period of time.

18 We had already determined that we were going to be
19 sending people back to the B&W simulator to observe the
20 Three Mile Island transient, and I knew from an operating
21 standpoint that we could develop the procedures for
22 controlling auxiliary feedwater independent of ICS just
23 simply knowing the system design.

24 We headed in that direction, and I say I had looked
25 at that because those items were discussed in this meeting

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as things that could be done. I think the major problem that bothered Mr. Mattimoe and myself and I think the other utilities was that a shut-down order without any restart criteria made it very difficult to determine what really had to be done before we brought the units up.

Also, the fact that I think in every case these items could be done in a reasonably short period of time, that they would enhance the reliability of the auxiliary feedwater system, the operator's ability to respond to small break loss of coolants, and that shutting down the units in order to install this was not really necessary. However, when Mr. Denton essentially said he was going to shut them down, that kind of precluded the restart when he told us that by committing -- or when he told us that Oconee had committed to shut their unit down and do certain things before they started up.

It was Mr. Mattimoe's decision that we would be better off as an organization, as a utility in meeting our customers' needs if we could get some definitive restart criteria, and as a result of that we generated this letter, and we presented it to Mr. Denton for his review and whether or not he considered it acceptable.

Q Would it be fair to say that the short-term items A through E on the first page of the April 27 letter were selected on the basis of items that would enhance reliability

1 or safety of particular systems involved or would increase
2 operator training and at the same time could be completed
3 relatively expeditiously?

4 A Well, these items in one way or another can be
5 construed to enhance reliability of the auxiliary feedwater
6 system, and the reliability of the operator being able to
7 cope with a small break loss of coolant accident. These
8 particular items were items that could be accomplished in a
9 reasonably short period of time, but my overriding concern
10 and I think Mr. Mattimoe's overriding concern is that there
11 be some criteria established for allowing the units to
12 restart instead of just shutting them down and then start
13 discussing what the criteria would be, from experience, how
14 long that might take.

15 Q When this letter was sent, did SMUD have a tenta-
16 tive timetable on when it thought these items could be
17 completed and thus subject to some NRC review the facilities
18 would be restarted?

19 A Tentatively we thought we could accomplish it in
20 30 to 45 days.

21 Q By mid-June?

22 A By the end of May or early June.

23 (Pause.)

24 Q Mr. Rodriguez, do you have a copy of CEC Exhibit
25 26 up there? It is the NRR status report on feedwater

1 transients.

2 A No, I do not.

3 Q I do not have an extra copy.

4 If you need it after I ask this question, let me
5 know. I just have one question with respect to it at this
6 time.

7 In describing the short -- It says, and I quote,
8 "In the" --

9 MR. BAXTER: Excuse me, Mr. Lanpher.

10 MR. LANPHER: Page 1-7.

11 BY MR. LANPHER: (Resuming)

12 Q At that page, it states, "In the short term we
13 must take all reasonable steps to reduce the likelihood of
14 occurrence of transients at B&W plants and to improve
15 standing instruction in training and emergency procedures
16 available to plant operators.

17 "This can be accomplished by," and it lists
18 several items, one of which is the auxiliary feedwater
19 system, and Item B states, "Reviewing results of FMEA
20 analysis of ICS in taking actions as to reduce its likeli-
21 hood of initiating or exacerbating transients."

22

23 My question is, why did you not include completion
24 of an ICS failure mode and effect analysis as one of the
25 short-term items?

1 (Pause.)

2 A At the time -- I do not think at the time Mr.
3 Mattimoe put this letter together, I do not think we had a
4 firm date on how long such an analysis might take, and I
5 guess my -- at that time, and even now -- I considered that
6 the integrated control system was a reliable system, and I
7 did not feel that we were going to come out with any major
8 revelations that would require significant amounts of
9 changes to that system.

10 Q Were you aware that B&W stated to the NRC, and it
11 was one day after your letter, but in an April 28, 1979,
12 letter to the NRC, B&W stated that it could complete and
13 transmit to the NRC such an FMEA somewhere between June 15
14 and June 27, 1979.

15 MR. BAXTER: Mrs. Bowers, I should note that while
16 this line of examination was introduced as some questions
17 which Mr. Dieterich referred to Mr. Rodriguez, indeed, this
18 line of examination with respect to reasons for not
19 including the ICS failure modes and effects analysis as a
20 short-term item, indeed, the very reference to the NRR
21 status report we just had was asked to Mr. Dieterich by
22 Mr. Lanpher, and these same follow-up questions were as
23 well.

24 So I am not sure whether you have overlooked that,
25 Mr. Lanpher, or why we are repeating the same examination

1 because these questions were asked and answered.

2 MR. LANPHER: I am asking these questions because it
3 is my understanding that Mr. Rodriguez actually participated
4 in that, and I want to make sure that the previous answers
5 were in fact accurate, and I think this is the last question
6 along this line that I have. I am going to go back to Mr.
7 Rodriguez's prepared testimony after this.

8 MR. BOWERS: We would like for the witness to
9 answer.

10 THE WITNESS: Would you repeat the question,
11 please?

12 MR. LANPHER: Mr. Rodriguez, on April 28, or by a
13 letter dated April 28, 1979, B&W advised the NRC that its
14 schedule for completion of an ICS FMEA was between July --
15 June 15 and June 27, 1979. My question is, were you aware
16 of that proposed schedule by B&W at the time you made this
17 decision of what to include in short-term and long-term
18 items?

19 THE WITNESS: I was aware that B&W had committed
20 to, not by letter, but at the time, committed to generating
21 the failure modes and effects analysis. I do not remember
22 whether I was aware of the schedule or not, but I think
23 this -- even had I been aware at that time, I think from
24 what I recall in describing the scope of it that the
25 schedule was probably a little ambitious in that it may

1 extend longer than that, and in that these other items were
 2 items that we contemplated with some reasonable surety that
 3 we could complete in 30 days or thereabouts.

4 So, I do not think I would have included that
 5 anyway, but I do not recall whether or not I knew the
 6 schedule at that time.

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 Bob fol.

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1 Q I would like now to follow up on a completely
2 separate line of questions to Mr. Dieterich. I raised --
3 I made some questions to Mr. Dieterich concerning the standby
4 hydrogen recombiner, which is available for Rancho Seco.

5 Are there procedures for hooking that recombiner
6 up to the containment at Rancho Seco?

7 A No, there are not.

8 Q Would it be fair to say also that operators have
9 not been trained in how that would be done, then, also?

10 A Two answers to your question. The first is that
11 operators would not hook up that hydrogen recombiner. The
12 second answer is that operators are not trained in how to
13 hook up that recombiner.

14 Q Who would hook it up?

15 A It would probably be hooked up by mechanical
16 maintenance personnel, primarily welders under the super-
17 vision of the design engineer that would establish the piping
18 layout to do that.

19 Q That piping layout has not been established?

20 A I do not know that. I don't know if our engineering
21 department has established that layout or not.

22 Q Mr. Rodriguez, my next line of questions is going
23 to concern emergency procedures starting at page 32 of your
24 testimony. As a preliminary, I understand there are four
25 shift crews plus a fifth crew that regularly is on a nine

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1 week shift, doing 8:00 until 4:00. Is that correct?

2 A No, that is not correct.

3 Q Could you please correct me?

4 A There are -- there is a five crew rotation, but the
5 fifth crew, up until very recently, has not been completely
6 filled out. It is not filled out for right now.

7 We are short one -- no, I take it back. The two
8 I have qualified gave us enough licensed personnel. The five
9 crew rotation is set up with four crews that are rotated to
10 cover the 24 hour, seven day a week shift.

11 The fifth crew is on a nine week rotation onto
12 day shift, so you normally have two crews available, Monday,
13 Tuesday, Wednesday, and Friday on day shift.

14 On Thursday, that fifth crew, if you will, stands
15 the control room watch because the normal day shift, or the
16 normal rotation of four shifts takes all four of the other
17 crews off, or takes that day shift off, normal day shift off
18 on Thursday.

19 Q The four crews that are filling out the 24 hours
20 per day throughout, they are each on an eight hour shift?

21 A No. One of those four crews is on days off.

22 Q But they would come on for an eight hour shift on
23 those days?

24 A That is correct.

25 Q Each shift, regardless of the time of day, would the

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1 operators perform the same kind of duties?

2 A Exactly the same? No. Generally the same, yes.
3 By that, I mean in our watch standing routine, we have some
4 functions carried out on the swing shift, or the mid-shift
5 that are not carried out on the day shift, and vice versa.

6 Q For those four crews, do the operators report
7 directly to the control room when they arrive at the
8 facility?

9 A The licensed operators report directly to the
10 control room when they arrive at the facility.

11 Q They will stay on duty in the control room, or
12 at least two of them will stay on duty in the control room
13 for the next eight hours?

14 A If the unit is not in a shut down mode, yes.

15 Q At the end of their shift, do they have any other
16 duties, or do they are they free to leave?

17 A At the end of their shift, they are free to leave.

18 Q Could you briefly describe what the nine week
19 shift does? I understand on Thursdays they will stand a
20 regular 8:00 to 4:00 shift. What would their duties be the
21 other four days?

22 A Those duties vary. They may be involved in some
23 training evolution. They may be involved in the receipt and
24 handling of new fuel. They also supply a cadre of people
25 to cover illness or vacation relief. That fifth crew, nor-

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1 mally, is not whole.

2 By that, I mean normally one or two of those
3 member is off covering illness or vacation or taining
4 assignment relief another crew.

5 Then -- the day shift is usually the busiest
6 shift. There may be other evolutions going on where members
7 of that fifth crew are performing operating evolutions in
8 assisting the normal day shift.

9 Q Would it be normal for most of a licensed
10 operator's regualification training to take place during the
11 time that he is on this nine week shift?

12 A No, what we have found is that due to the vacation
13 relief, sick relief, fuel handling, that the training is
14 normally carried out when the operator is on the swing shift
15 crew by bfining him in four hours early on Wednesday,
16 Thursday and Friday of any particular month.

17 Q So, once a month they will come in for four hours
18 of overtime, in essence?

19 A I think I said yesterday that training does not
20 occur every month.

21 Q Oh, I thought that you sai' in your previous
22 response.

23 A You asked me when they would receive their training.
24 It would be when they are on swing shift or an early calling,
25 but the training does not necessarily occur every month.

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1 Q At line 11 on page 32 of your testimony, you
 2 state that changes to emergency procedures are issued to
 3 operating personnel through the Rancho Seco special order
 4 procedure. Are they always issued that way?

5 A I guess I will never say yes to anything that
 6 starts with always. That is our program for making the
 7 operator aware that there have been procedure changes.

8 There may have been an occasion when the procedure
 9 was not issued under a standing order, but just came out as
 10 a procedure with some direction to read it or the procedure
 11 may have come out from the training supervisor to read.

12 Normally, the method for promulgating those
 13 changes to the licensed personnel is via the standing order
 14 procedure.

15 Q You used the term "standing order." Is that the
 16 same as a special order?

17 A Excuse me. Soecial order.

18 Q Mr. Rodriguez, Mr. Ellison is going to show you
 19 a document labelled CEC-42. I would like you to take a look
 20 at it.

(The document referred to
 was marked CEC Exhibit No.
 42 for identification.)

21 BY MR. LANPHER: (Resuming)

22 Q All you need to look at is the first page for
 23
 24
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1 Now, Mr. Rodriguez. Can you identify the first page of
2 CEC-42?

3 A I am not sure what you want me to do. This is
4 a -- do you want me to read it?

5 Q No. Let me ask it again. Is this the -- is this
6 the way -- does this document represent the way that
7 operators at Rancho Seco would be informed of new emergency
8 procedures?

9 A I think in my answer I said that normally the
10 standing order program, special order program, is used to
11 promulgate procedures to the operating personnel.

12 I also said that there had probably been occasions
13 when it may have come from a training supervisor or the
14 procedures may have just come out under some other memo.

15 In this particular case, Jack Mau -- J. Mau is the
16 training supervisor. These procedures were promulgated under
17 this technique.

18 Now, I cannot specifically state whether or not
19 this was in addition to the special order. It may be that
20 Mau, as a training supervisor, wanted some additional
21 documentation that these procedures had been delivered to
22 each operator.

23 MR. LANPHER: For the record, this document appears
24 to be a memorandum from Mr. Mau to all licensed operators
25 transmitting certain procedure revisions.

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BY MR. LANPHER: (Resuming)

Q Now, this is different than a standing order?

A This is different than a special order, yes. The special order program is a program, I might use the term belongs to the operations supervisor.

Q You stated on line 13 of your testimony on page 32 that under the special order program, the shift supervisor must discuss the contents of each special order with his crew. When will he do that?

A He will do that on shift.

Q If a procedure has been transmitted pursuant to this special order program, is it in effect as soon as it has been transmitted to the control room and put in the manual?

A It is in effect when it is in the manual.

Q Is it possible that a procedure may be in effect when a crew comes on and some time during that crew's shift, the procedure will be discussed among the members of that crew?

A Yes. That is possible. More typically, there is some advance notification if it is a very important procedure change that is coming. Yes, that is possible that the procedure change could be in effect when the crew comes on shift.

Q Is there any testing program to ensure that



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1 licensed operators understand and, in fact, have read new
2 emergency procedures which are promulgated through the
3 special order program?

4 A I think elsewhere in my testimony, I discussed that
5 the operators are tested on some procedures. Not every one
6 every time, but some procedures during the requalification
7 licensing examination.

8 Q Apart from that, my understanding is that
9 particularly in the last year, there have been a lot of
10 changes to emergency procedures. Is that correct?

11 A That is correct.

12 Q As these changes come along, has SMUD taken steps
13 beyond the discussion by a shift supervisor with his crew
14 to ensure that those procedures are fully understood by
15 operators?

16 A The technique for the shift supervisor discussing
17 the operating procedures with his crew is the primary
18 technique for assuring that operators are aware of the
19 procedures and understand them.

20 Also, the simulator program is used to familiarize
21 the operators with particularly the emergency procedures by
22 keeping the simulator set of Rancho Seco emergency
23 procedures up to date so that when the operators go to the
24 simulator, they have our procedures to use as opposed to the
25 simulator procedures.

bfm9

1 Q Do I understand your testimony, also, to state that
2 the shift supervisor will have gained his understanding of
3 an emergency procedure change by talking with the operations
4 supervisor ahead of time?

5 A That is correct.

6 Q When will he have done that? The same day or on
7 shift or --

8 A The operations supervisor's routine is that he
9 comes in about an hour early. by an hour early, I am talking
10 about before the shift turnover.

11 Then, he is there during the day, then he is there
12 a half an hour to an hour after shift turnover, so he sees
13 all three crews during the week. That is the opportunity
14 that he has to discuss with the shift supervisors new
15 procedures that are being implemented.

end tP-11

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1 Q In order for the operation supervisor to have that
2 discussion with each shift supervisor, he has to do that on
3 a number of occasions; he doesn't get them all together at
4 once. Is that correct?

5 A That's correct.

6 Q So, would it be fair to say that to implement a
7 new emergency procedure may take several days in order for
8 the operation supervisor to have had his conference or dis-
9 cussion with each shift supervisor?

10 A Well, it would only apply in the case where that
11 fourth shift was -- say, in the cycle there's a period where
12 they have four days off, and if that procedure comes out while
13 that particular crew was off, then he'd have to wait for that
14 shift supervisor to come back. But typically, the procedures
15 can be discussed the same day with the three shifts that are
16 currently covering the shift, I guess, and the shift super-
17 visor from the fifth shift who's on days.

18 Q When will a licensed operator review the new
19 procedures?

20 A Well, the shift supervisor will review those pro-
21 cedures with the license people or make them available to
22 them to read the day that they are issued. There may be
23 an occasion when a busy day shift might not allow the operator
24 to review it immediately that day and he'd have to wait
25 until the next day. The swing shift and the mid shift which

1 are normally quiet periods are quieter than the day shift
2 and provide for the operator to review the procedures.

3 Q Would it be fair to say, then, that the shift super-
4 visor initially will discuss a change with the members of
5 his crew, the licensed members of his crew, and then those
6 members when they get an opportunity are also expected to
7 review the new procedure independently, or the changes in
8 that procedure, independently?

9 A Well, what more typically happens is that they all
10 will read the procedure and then any discussions that might
11 ensue after they're familiar with it the shift supervisor
12 would discuss with them and answer their questions.

13 Q Does the shift supervisor receive any training in
14 the sense of how to explain new procedures to his crew?
15 Aside from just having the new procedure explained to him,
16 the purpose and background, by the operations supervisor?

17 A No, in the course of an individual achieving the
18 shift supervisory position, he has spent many years explaining
19 to inspectors and to oral examiners procedures and how they
20 apply and how they work. I don't think, just from my personal
21 experience with shift supervisors after they reach that level,
22 that there's any program that I know of that would assist
23 them in explaining what they've been explaining for a long
24 time. Primarily because on the road to getting there, if
25 the individual doesn't explain it very well he either learns

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1 how or he never gets there because that's part of the very
2 important part of how he conveys to others that he can handle
3 his job. And if he has all that information locked in his
4 head and can't explain it to anyone, then you have no assur-
5 ance that he will act properly.

6 Q Is it correct, then, to say that for most procedural
7 changes, emergency procedure changes, they are communicated
8 to operators while they are standing control room shift,
9 and they're discussed while operators are on shift, and in
10 a sense it's on the job learning regarding those changes?

11 A Yes, it's fair to say that in the context that the
12 immediate familiarization is on shift and as I said, they
13 go through the requal program and they have -- procedures
14 are gone over there, they're gone over in the exam and in
15 their required reading procedures. So there are additional
16 reinforcements of the procedures, but their initial exposure
17 to it is while they're on shift.

18 Q Do you know whether the procedural changes relating
19 to the reactor coolant pump trip scenario were handled that
20 way? Do you know what I'm referring to? The reactor coolant
21 pump trip, pursuant to I&E Bulletin 7905C.

22 A I know that the operations supervisor spent time
23 with the crews individually on that particular change because
24 of the necessity to fully explain the reason behind it,
25 because there had been a great to-do about keeping reactor

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1 coolant pumps running, and when this particular procedure
2 change came out, it was necessary that they fully understand
3 the background, not just the action but the background, so
4 that we could change the emphasis. And I say that because
5 there was so much emphasis after Three Mile Island about
6 keeping reactor coolant pumps running and it got thoroughly
7 engrained and they wanted to make sure that now that we're
8 going to change, they fully understand the reason behind it.

9 So that had more activity in that particular change
10 than what I've been describing here recently as more typical.

11 Q So either on the job or at some other time there
12 was some enhanced training regarding that change because it
13 was serious and pretty radical compared to the prior procedures?

14 A Well, it wasn't radical and serious; it was a
15 change following closely on the heels of the emphasis of
16 running reactor coolant pumps. There has always been an
17 emphasis, at least in the Rancho Seco training program, to
18 run reactor coolant pumps. The Three Mile Island 7905 series
19 identified that as one of the reasons the core damage occurred,
20 and as a result, to go through and make the procedure changes
21 emphasizing that at least one reactor coolant pump in each
22 loop is running. We had just gone through that iteration and
23 now it was determined that in further analysis, there are
24 a certain small spectrum of small breaks that, with all the
25 other circumstances being just right, if you lost a pump late

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1 in that incident, you may exceed some design limits on the
2 core. And it was necessary that operators fully understand
3 why so that when the time came and high pressure injection
4 initiated automatically, they would shut off the pumps.

5 Q Did SMUD conduct any testing of licensed operators
6 to insure that they understood the change in procedures,
7 pursuant to I&E Bulletin 7905C?

8 A The follow-on simulator training carried out
9 different type scenarios that tested the operator's response,
10 particularly with regard to shutting off reactor coolant
11 pumps to assure that they knew that was the action to take
12 and took it in a timely fashion. Yes.

13 Q Is that the only testing program that you know of
14 relating to the reactor coolant pump?

15 A That was the testing program that we used to provide
16 some experience to them and reinforce the reactor coolant
17 pump tripping criteria.

18 Q When did that simulator training take place?

19 A That simulator training, as I said earlier, it's
20 an annual simulator training and some operators went, as I
21 recall, in July and some went in September and some went in
22 November, and the one or two that I went with went in
23 February.

24 Q When procedure changes are made, such as you
25 describe in your testimony for emergency procedures, are

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1 unlicensed operators briefed or informed of those changes,
2 also?

3 A No, the unlicensed operator's familiarization with
4 those procedures would come about when the procedures are
5 discussed during the scheduled training that the entire crew
6 participates in.

7 Q Your testimony, which commences at page 32 regarding
8 emergency procedures, does address only the question of how
9 emergency instructions or procedures are transmitted. Is
10 the same special order program used for other instructions or
11 procedural changes?

12 A Yes. My testimony really addresses itself to the
13 fact that the licensed operator initials that he, in fact,
14 has reviewed that. The other procedures are promulgated the
15 same way, and the shift supervisor, by initial, verifies that
16 the crew -- that this has been discussed with the crew, but
17 each licensed operator is not required to initial off that
18 he has reviewed this.

19 Q Mr. Rodriguez, Mr. Ellison is going to give you a
20 copy of a Rancho Seco emergency procedure. It's Procedure
21 D.5, and it's -- there's a cover sheet, it's "Procedural
22 Change Approval Form" and it was Revision 14.

23 (The document referred to was
24 marked for identification as
25 CEC Exhibit No. 43.)

1 BY MR. ELLISON (Resuming):

2 Q Are you familiar with this document?

3 A Yes.

4 Q Referring back to CEC Exhibit 42, is CEC 43 a
5 procedural revision which apparently was transmitted to
6 licensed operators by the memorandum which has been labeled
7 as CEC Exhibit 42?

8 A Yes, it is.

9 Q And is CEC Exhibit 43 the Rancho Seco Emergency
10 Procedure relating to loss of reactor coolant and reactor
11 coolant system pressure, which was in effect sometime in
12 September 1979?

13 A Yes, that's the date on it.

14 Q The reason I'm asking was it in effect then, I can
15 well understand that there may have been further changes
16 which we have not gotten.

17 What is the purpose of this procedure?

18 A The purpose of the procedure is to provide emergency
19 procedures to be followed in the event of loss of reactor
20 coolant and/or reactor coolant system pressure.

21 Q And when will an operator know to utilize this
22 emergency procedure?

23 A The symptoms described in the procedure include
24 pressurizer level and/or reactor coolant system pressure
25 decreasing without associated decrease in coolant average

1 temperature; reactor trip; turbine trip and safety features
2 initiated.

3 Q Maybe we can save having to read all the symptoms.
4 Would the operator determine to use this procedure by verifying
5 that the symptoms listed starting at the bottom of page 1 of
6 this procedure are present?

7 A Not all of them necessarily, but some of them.

8 Q Is there a priority among the systems that the
9 operator should look for?

10 A No, there's no established priority.

11 Q Are some symptoms more important than others?

12 A Yes, some are more important than others.

13 Q Is there anything in this procedure or in the list
14 of symptoms which indicates to operators which symptoms are
15 more important than others?

16 A No, there is not specifically identified which
17 symptoms are more important than others. As I said earlier,
18 there's no priority established for the symptoms.

19 Q Is there any statement to the effect that -- strike
20 that.

21 MRS. BOWERS: Let's take a 10-minute recess.

22 (A short recess was taken.)

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MRS. BOWERS: Let's resume.

BY MR. LANPHER (Resuming):

Q Mr. Rodriguez, we were talking about the symptoms which are set forth at page 1 of this procedure. If only one symptom were occurring, would that nevertheless direct operators to proceed with this procedure?

A No, it would not.

Q Is there any statement in this procedure which tells operators that they must -- strike that. Does that mean that they have to have more than one symptom?

A No, it doesn't mean that. It just means that there may be a symptom listed in here that when that symptom occurs, they do not have to immediately start using the details of this procedure.

Q Is there any instruction to that effect in this procedure?

A You mean an instruction to tell them that if one of these occurs, don't use the procedure? No, there isn't.

Q They would have to exercise their judgment and decide that they have not confirmed the need to use this procedure?

A That's correct.

Q Is that the same with other emergency procedures, that there may be cases where there are one or more symptoms but nevertheless, the operator should exercise judgment and

1 not proceed with the procedure until more symptoms are
2 confirmed?

3 A Yes, I think there are other procedures that fall
4 into that same category.

5 Q Is there a reason that the caveat we have just been
6 speaking about; that is, that just because you get one of
7 these symptoms you do not need to proceed with the detailed
8 steps in this procedure -- is there a reason that that caveat
9 is not set forth in this procedure?

10 A No, I don't think there was any conscious reason
11 for leaving that out of the procedure or not incorporating
12 it in the procedure.

13 Q To your knowledge, do any of the symptoms which
14 are listed for this procedure -- are they also symptoms for
15 other procedures?

16 A Yes.

17 Q Could you identify which symptoms those are, and
18 which other procedures they would be symptoms for?

19 A I have not committed to memory all the symptoms of
20 all the procedures. I just looked down here and I can see
21 reactor trip. The reactor trip does not occur only because
22 there is a loss of coolant accident; it can occur for a number
23 of other reasons.

24 Q So if a reactor trip were to occur, how would the
25 operator know to come to this procedure as opposed to a



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1 different procedure?

2 A By observing his instrumentation and determining
3 what's happening to the various reactor coolant system
4 parameters and making an evaluation of what is the likely
5 cause of what's happening.

6 Q Is this a situation where you want more than one
7 symptom in order to be sure that this is the correct procedure
8 to be following?

9 A That's true. There are, I think, very few transients
10 where there is only one symptom. As a matter of fact, I can
11 only think of one off the top of my head that only has one
12 symptom.

13 Q Do you want to tell us what it is? I'm curious now.

14 A Well, the high startup rate in the initial phase
15 and bringing the reactor critical would be a single symptom
16 that's telling you that you're adding reactivity at too rapid
17 a rate and you would -- there is no other symptom that indicates
18 that.

19 Q Turning your attention to page 2 of this procedure,
20 there is a note which, to summarize, says that LOCA symptoms
21 can be caused by a makeup system malfunction or a steam line
22 rupture as well as a loss of coolant. Steam line rupture is
23 the worst over-cooling event, is that correct?

24 A Yes. The maximum change in reactor coolant system's
25 parameters would come about from a steam line break accident.

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1 Q The loss of coolant accident symptoms also could
2 be caused by an over-cooling event less severe than a steam
3 line break, is that true?

4 A Yes, that's true.

5 Q Is there any reason that such less severe over-
6 cooling events are not also mentioned in this note?

7 A The primary function of the note is to draw the
8 operator's attention to the fact that loss of coolant accident
9 symptoms or some of the symptoms can be caused by situations
10 other than actual loss of coolant, but that until he confirms
11 what the cause is, it's too assume that it's a loss of
12 coolant accident.

13 Q To your knowledge, are there any other events
14 besides a makeup system malfunction or an over-cooling event
15 including a steam line rupture, which could have the same
16 symptoms as a loss of coolant accident?

17 A Well, the over-cooling event that's not associated
18 with a steam line rupture.

19 Q We've identified that one. Any class of over-
20 cooling event and any makeup system malfunction I understand.
21 Are there any other events which could, if you will, mimic
22 a loss of coolant accident?

23 A Not that I can think of, no.

24 Q Is it correct that this procedure really sets out
25 procedures to be followed for three different classes of loss

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1 of coolant accident?

2 A Well, we set up what we called three different
3 cases, yes.

4 Q Could you briefly describe what those cases are?

5 A Well, I guess the briefest way is to read them.
6 The Case 1 is a small break with the incapability of the
7 pump to maintain RCS system pressure and pressurizer level;
8 approximately 120 gallons per minute, which is equivalent
9 to four inches per minute in a makeup tank. Case 2 is the
10 median, such as a letdown failure, OTSG tube rupture or an
11 EMOV stuck open with incapability of the high pressure
12 injection system to control the RCS system pressure and
13 pressurizer level. And the third case is a large rupture
14 in excess of high pressure injection system, and this requires
15 an evaluation of core flood line break.

16 Q Regardless of the symptoms, does an operator
17 always begin with the Case 1 immediate actions? When an
18 operator takes action, presumably after the automatic actions
19 have occurred, does he always begin with the Case 1 actions?

20 A No, none of his actions are taken regardless of
21 the symptoms. The symptoms are what define, and his interpre-
22 tation of those symptoms, are what define the action that he
23 is going to take.

24 Q Did you finish your response?

25 A Yes.

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1 Q If upon review of the symptoms an operator believes
2 that he has a stuck-open EMOV, would he then go to Case 2
3 for his immediate operator actions?

4 A No, I expect he'd shut the block valve.

5 Q Is that procedure set forth in CEC Exhibit 43?

6 A In the Case 2 it talks about stuck-open EMOV.

7 Q My question was whether there is a specific direc-
8 tion in this procedure to shut the block valve if he believes
9 that the EMOV is stuck open.

10 A No, there is no specific direction in this procedure
11 to shut the block valve if the EMOV is stuck open.

12 MR. BAXTER: Excuse me, Mr. Lanpher, I'm sorry to
13 interrupt. My copy of this exhibit is missing page 4.

14 DR. COLE: I'm missing page 4, also.

15 MR. ELLISON: All the copies are missing page 4.

16 MR. LANPHER: I believe that our copy was missing
17 page 9, too. I'm not sure that there was a page 9. I noticed
18 that last night, but it seemed as if it went from page 8 to
19 10 -- the sequence of the numbers seemed to go from 8 to 10
20 in terms of the detailed procedures. Maybe we are. There
21 definitely is a page 4, though.

22 MR. BAXTER: Yes, because that's where the immediate
23 action for Case 2 is.

24 (Short pause.)

25 MR. LANPHER: I'm sorry. We'll just defer further

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1 examination on this. We'll try to get the copies.

2 For the record, the NRC staff has Revision 15 of
3 this procedure and maybe we can get this copied.

4 BY MR. LANPHER (Resuming):

5 Q Mr. Rodriguez, I'm going to direct my next set of
6 questions to the section of your testimony regarding feedback
7 on operating procedures starting at page 34. Who decides
8 what data are communicated to operators?

9 MR. BAXTER: Can you get a little bit more specific?

10 BY MR. ELLISON (Resuming):

11 Q Yes. What data relating to operating experience,
12 either at Rancho Seco or at other plants or significant NRC
13 documents; for instance, perhaps I&E bulletins, that kind of
14 thing, who decides whether such data should be communicated
15 to operators?

16 A The source of data from operating experience that
17 would be communicated to the operators at Rancho Seco -- and
18 I say at Rancho Seco as opposed to while they're at the
19 simulator undergoing simulator training -- is primarily
20 carried out by the operations supervisor, the plant superin-
21 tendent and the manager of nuclear operations, and the training
22 supervisor.

23 Q Do they have any criteria which they apply to
24 determine whether particular information should be communi-
25 cated to licensed operators?

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1 A There is no written specific criteria. Generally,
2 the information that is passed on to the operators is items
3 that directly reflect how the units operated; those I&E
4 circulars or bulletins that relate directly to problems in
5 which they're asking, the NRC, is asking some response from
6 SMUD that relates to how the units operated as opposed to
7 maybe some QA function would be passed directly on to the
8 operators.

9 As I said, the four individuals that are primarily
10 in the line for passing this on are all in the supervisory
11 roles, and in their review of the documents that come across
12 their desks every day, they make this as a judgment evaluation.
13 The fact that there's more than one person involved in making
14 this judgment provides some assurance that it's not just one
15 individual's concept.

16 Q Could you turn your attention to the second document,
17 CEC Exhibit 42. This is a memorandum from Mr. Mau to all
18 licensed operators, and it purports to transmit the latest
19 revision to I&E information notice 79-20. Is this the way
20 that I&E bulletins would be communicated to operators?

21 A Not normally. In the case that is referenced here,
22 the training supervisor has sent to each individual operator
23 a specific I&E information notice. I would need to look at
24 79-20, but it seems to me that I recall that that particular
25 memorandum from the NRC had as a requirement that each

1 individual operator receive his own copy, and this was the
2 way of being able to provide to the NRC inspector an audit
3 capability.

4 MR. BAXTER: Excuse me, Mr. Lanpher, I don't know
5 whether there might be some confusion on the record. Your
6 question was with respect to -- is this the way I&E bulletins
7 are communicated, and this on its face appears to be an infor-
8 mation notice.

9 MR. LANPHER: Thank you.

10 BY MR. LANPHER (Resuming):

11 I take it from your answer that normally there would
12 not be a memorandum to each licensed operator conveying this
13 information. Is that correct?

14 A That's correct.

15 Q Usually, a single copy would be sent to the control
16 room?

17 A That's correct.

18 Q And it would be available there for licensed
19 operators to review?

20 A I take that back. Sometimes a single copy is given
21 to the shift supervisors to read over and make available to
22 their licensed operators or discuss it with them. Other
23 times, the bulletin might be put out under a special order
24 with some other amplifying material; particularly if it was
25 a bulletin that came out and required some response from the

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1 District, it would have both the bulletin and the response.

2 Q We were talking earlier about I&E Bulletin 7905C
3 which was significant at least in the sense of changing the
4 reactor coolant pump criterion, that trip. Was that bulletin
5 made available to all operators?

6 A Yes. I don't remember the number but that came out
7 under a special order.

8 Q Would it be normal for I&E bulletins to be trans-
9 mitted and then discussed in the same way by shift super-
10 visors as you described earlier with respect to emergency
11 procedures?

12 A It would be normal for those bulletins like the
13 7905 series that impacted fairly significantly on the opera-
14 tor's normal routine function. Bulletins that do not impact
15 that significantly would not normally receive the same
16 amount of attention and discussion that the 7905 series
17 received.

18 Q Would licensed operators nevertheless be expected
19 to read them?

20 A Again, it depends upon the significance of the
21 bulletin. If it was a 7905C series, then as I recall. I
22 think we had a requirement that the operators sign off on
23 having read that which dealt with them. But normally it
24 would not be a requirement that each licensed operator sign
25 off having read it. Normally, it's a requirement that the

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1 shift super has signed off that he has discussed it with
2 his crew.

3 MRS. BOWERS: Mr. Lanford, CEC Exhibit 42 is kind
4 of an unusual exhibit. It has three separate things that
5 don't seem to relate to each other. Is the last page the
6 school attended by Mike Carter?

7 MR. LANPHER: It seems to be. This is the way we
8 received this in discovery, stapled together, and that's
9 why we're presenting it stapled together. I agree that it
10 seems to be three separate things. I understood that it
11 was this way that we received it in discovery, but maybe
12 I'm wrong.

13 MR. BAXTER: I believe the way the discovery process
14 went, there were each licensed operator's file that was
15 available among many other things, and the District reproduced
16 whatever pages were requested, and I don't know whether these
17 are the three you requested and they were stapled together
18 for convenience, or whether they are actually together in
19 the file, but the selection was yours, not ours. But they're
20 all out of Mr. Carter's training file is what it looks like.

21 MR. ELLISON: I'm sure that's correct. I'm sure
22 that these were taken from Mr. Carter's training file and
23 that's the reason they're associated this way.
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BY MR. LANPHER: (Resuming)

Q Are all licensee event reports related to Rancho Seco made available to licensed operators?

A No, they are not.

Q Are some?

A Some are, yes.

Q Which ones?

A Those that pertain to the operation of the unit.

Q You and Mr. Ellison spent a good deal of time discussing CEC Exhibit 40, which is that group of abnormal occurrences and licensee event reports. Would I be correct to assume that all of those documents contained in that exhibit were communicated to licensed operators?

A No, you would not be correct in assuming that, because I think the change in our program for the chairman of the Plant Review Committee to forward those reports to the operations supervisor for distribution to the operators, I think that occurred some two or two and a half years ago, that we instituted that positive function.

So, some of those reports occurred before then, and they may or may not have been made available to the operators.

Q Since that time, all those that are dated subsequent to that time, two or two and a half years ago, would all --

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1 A All of those would have been operating type
2 LER's that would have been forwarded to the operators to
3 read the response.

4 Q Are there procedures which require operator-
5 related LER's to be communicated or transmitted to the
6 licensed operators who would then within a certain time
7 from the date that the LER is sent to the NRC?

8 A No. The procedure is, when the LER is signed by
9 Mr. Mattimoe, that the distribution then is to the
10 operations supervisor, who then forwards it on to the
11 operating crew, but there is no prescriptive time that is
12 stipulated for that distribution to be made from the
13 operating supervisor to the operators.

14 Q Are LER's -- operator-related LER's the kind of
15 materials which you would expect shift supervisors to
16 discuss with their crew members?

17 A Yes, they are.

18 Q And would the discussions of LER's also involve
19 unlicensed operators?

20 (Pause.)

21 A Typcially the emphasis on -- the results of the
22 LER's for the most part deal with control of what the
23 unlicensed operators might do or what the actual control
24 room personnel did in the discussions. The discussions are
25 normally directed at the licensed operators. In those

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1 cases where the LER's do deal with the results of the
2 -- some action outside the control room that was inadver-
3 tently carried out by a non-licensed member of the crew,
4 those non-licensed members would be made aware of it.

5 Q Is there any procedure to audit or test licensed
6 operators relating to their understanding of LER's that have
7 occurred and their understanding of the discussions which
8 you have described with the shift supervisors?

9 A No, there is no examination process that we go
10 through to evaluate that understanding.

11 Q Are you familiar with the transient event which
12 occurred at North Anna Unit 2 on September 25, 1979?

13 A There are lots of transients.

14 Q Mr. Ellison is going to give you a document which
15 describes the event, and if you could take just a moment
16 to familiarize yourself with it.

17 A Okay.

18 MR. ELLISON: I would like this document, Mrs.
19 Bowers, marked as CEC Exhibit 44, and it is a letter from
20 the NRC to all operating nuclear power plants, dated
21 October 17, 1979, and the subject is "Radioactive Release
22 At North Anna Unit 1 and Lessons Learned."

23 (The document referred to was
24 marked for identification as
25 CEC Exhibit Number 44.)

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1 (Pause.)

2 THE WITNESS: Yes, I remember that particular
3 incident.

4 BY MR. LANPHER: (Resuming)

5 Q Do you know whether either this document or
6 information related to this North Anna Unit 1 event was
7 transmitted to licensed operators?

8 A I would not have transmitted it to the licensed
9 operators in the Rancho Seco facility.

10 Q Could you explain why?

11 A Because as the scenario -- at least as I read the
12 scenario, our system is not designed that way, and the
13 applicability -- the testing that we have done in verifying
14 how the system is put together, their event is not
15 applicable.

16 Q Mr. Ellison is giving you a copy of a document
17 previously marked as CEC Exhibit 41, which is a May 1
18 NRC letter to SMUD which encloses their evaluation of
19 SMUD's compliance or their review of SMUD's compliance with
20 the short-term Lessons Learned items.

21 Are you familiar with that document, in particular,
22 the evaluation which is an attachment to the letter?

23 (Whereupon, counsel handed the document to the
24 witness, and the witness reviewed the document.)

25 A No, I am not. It is probably in my mail somewhere.

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1 Q I would like to short-circuit this if it is
2 possible. If you could turn to Page 7 of that attachment,
3 the third paragraph on that page, the third full paragraph,
4 "The one that starts, the licensee has reviewed the plant
5 design," and read that paragraph.

6 (Pause.)

7 A Okay.

8 Q Is that -- is the statement in there true that
9 based upon the North Anna event and your review subsequent
10 to it pursuant to this October 17 letter which was marked
11 as CEC 44, that Rancho Seco has decided to change the
12 release valves for the make-up filter in the reactor
13 coolant plant -- reactor coolant pump seal return.

14 A I assume so. This is an engineering evaluation,
15 and I assume if that is what we have committed to,
16 engineering is going to embark on that.

17 Q Does this indicate to you that the North Anna
18 event on subsequent review was relevant to Rancho Seco
19 and has resulted in some proposed changes by Rancho Seco?

20 A I think -- they refer in the October 17 letter
21 to an I&E Circular 7921, and as I read SMUD's response,
22 they talk about North Anna and related instances, and that
23 7921 may have had some other instances that were also
24 reviewed in looking for leak paths from radioactive systems
25 into non-contained systems as an overall evaluation of

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1 the entire system, and I think that is separate from the
2 judgment I would make on this document, passing it on to
3 the operators on watch-out for this kind of an accident
4 happening to us.

5 The reason I say that is, as I said earlier, the
6 design, at least as I read this incident, the design is not
7 applicable to us.

8 Q Is that because they mention there was a design
9 error in construction.

10 A Well, that and the fact that in our make-up tank
11 if the make-up tank became overpressurized, the release
12 valve would relieve to a flash tank that has got two 125 to
13 150 gallon permanent pumps on it that would adequately
14 handle our maximum letdown, our maximum letdown of the water
15 going into the make-up is on the order of 140 gallons per
16 minute, and if we exceeded that we would wind up with a
17 high temperature in the letdown system that would isolate
18 letdown.

19 That and the fact that I know we hydrostatically
20 tested our flash tank and we use that routinely to
21 vent off radioactive gases into the waste gas system which
22 compresses the gases and passes them on out. If we had
23 leaks in there, we would be plagued with high levels of
24 activity throughout the auxiliary building.

25 Q Did Rancho Seco management communicate information

1 relating to the Crystal River incident to its operators?

2 A Yes, we did.

3 Q What information was communicated, if you know?

4 A The -- well, we are not completed. In the
5 training that is going to pick up some more, but the
6 information that was communicated came in a couple of
7 different forms. When the incident first occurred, which
8 I guess was when we were in session last time, or the
9 first time the operations supervisor received over the
10 notepad program, which is an EPRI communicative device
11 to Rancho Seco, a sequence of events. This was a sequence
12 of events essentially as prepared by the Crystal River
13 or the Florida Power Corporation, and then he went through
14 that and annotated based on that sequence how their
15 systems evidently differed from ours and how our response
16 would be different.

17 And then that was again given to the licensed
18 operators to read through and any discussions that they
19 might have, then he answered those to the best of his
20 ability at that time.

21 Subsequent to that, then he again conducted
22 a series of training sessions with the licensed operators
23 covering primarily the changes that we had made in our
24 NNI design and how those changes -- and those changes were
25 related -- not related to Crystal River, but the kind of



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1 problems Crystal River had were discussed in the context
 2 that these changes would eliminate or reduce the probability
 3 of the same kind of occurrence, and the training supervisor
 4 is putting together some follow-on sessions to carry out in
 5 a broader context than the Crystal River, and of course
 6 there is information coming out of there now that he will
 7 probably include in his training.

8 Q Aside from the Crystal River incident which you
 9 have just described, certain training and communications,
 10 and the TMI accident, which I know there is plenty of
 11 communication about, can you recall any other transient
 12 events at other facilities that have been communicated
 13 to licensed operators at Rancho Seco?

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1 MR. BAXTER: The time period is over the entire
2 operation, the life of the plant?

3 MR. LANPHER: Initially, yes.

4 THE WITNESS: The most recent one I can think of
5 is, of course, the -- we transmitted information that we
6 received on the Oconee transient wherein they lost integrated
7 control system. I forget when that occurred, four or five
8 months ago.

9 I probably remember that because it was not too
10 far back. I cannot recall specifically any particular
11 transient.

12 BY MR. LANPHER: (Resuming)

13 Q Are you familiar with a recent memorandum from
14 the NRC which was communicated to SMUD relating to the so-
15 called "light bulb incident," and the alternate sequence of
16 events under which the "light bulb incident" might have been
17 quite a bit more serious?

18 A I am familiar with the letter and the hypothesis,
19 yes.

20 Q Do you know whether that letter and the enclosed
21 memorandum or information relating to that was communicated
22 to licensed operators?

23 A No, that has not been communicated to licensed
24 operators.

25 Q Why not?

1 A The "light bulb incident" of course occurred
2 at Rancho Seco. We have made a number of modifications as
3 a result of that. We have conducted training as a result
4 of those modifications, as well as the incident, itself.

5 The letter that came from the NRC with that
6 hypothesis asked for the District to comment on it. There
7 was no information in there from an operational standpoint
8 that related specifically to how we might change the operation
9 of the plant, or something new that they found out that we
10 should be alerted to, or alert the operators to be alert to.

11 Q It is true, is it not, that that memorandum
12 described an alternative sequence of events which could
13 have made the "light bulb incident" much more severe,
14 correct?

15 A I would have to look at that again to comment on
16 whether that was so or not. I do not recall -- I recall
17 the hypothesis, and our response to that was why the
18 hypothesis was wrong.

19 Q Mr. Ellison is going to distribute a copy of this
20 letter and enclosed memorandum. We would like it marked
21 at CEC-45.

22 (The document referred to
23 was marked CEC Exhibit No.
24 45 for identification.)

25 MR. LANPHER: For the record, it is an April 3rd

1 letter to Mr. Mattimoe from Mr. Darrell G. Eisenhut of the
2 NRC. It encloses the memorandum that I was talking about.

3 BY MR. LANPHER: (Resuming.)

4 Q Are you familiar with that document?

5 A Yes.

6 Q I believe I had asked the question whether it
7 presents an alternate sequence of events which the author of
8 the document believes could have occurred during the "light
9 bulb incident."

10 A In going back and looking at our data on that
11 particular report, our response pointed out to Mr. Eisenhut
12 that the control system for the main boiler feedpumps
13 shifted to what I would call a pseudo-mode causing the pump
14 speed to drop to 2200 rpm.

15 In the context of what was going on, the operator
16 improper instrument indication in many areas, that aspect
17 of the low feedpump rpm was not discovered immediately.

18 It was upon discovering that that he took
19 control and boosted rpm from that main feedpump to 3500
20 rpm, which provided sufficient pressure than to start
21 introducing feedwater back into the A steam generator. We
22 were not able to determine precisely main feedwater flow went
23 to the A steam generator before auxiliary feedwater or after
24 auxiliary feedwater.

25 We do know that both pumps feeding that steam



1 generator contributed to overflowing it, and the resultant
2 cooldown.

3 So, the hypothesis that the only reason it did not
4 turn into TMI is because the steam generator level drifted
5 low instead of high is not true. The operator had intervened
6 to make sure that he had feedwater supplying that generator.

7 Q Would it be fair to say, then, the reason you
8 did not communicate either this document or the substance of
9 this document to operators is that you disagree with it?

10 A Well, I think I just went through three minutes
11 why I disagreed with that hypothesis.

12 Q I don't want you to tell me again that, but is
13 that the reason this information was not communicated to
14 Rancho Seco operators?

15 A No. The reason it was not communicated to Rancho
16 Seco operators was that it really did not add anything to
17 how they are going to operate the plant or call out anything
18 that has not already been called out to them.

19 It was not -- we are sending more documents to
20 the operators to read now than really we ever had before,
21 as a result of the additional information that is coming
22 out from the NRC and the NUREGs; and that we try to be
23 selective. I do not want to overload them.

24 This I did not consider significant enough to
25 put into that program of having the operator read it.

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1 Q From your last response, do you feel as if, given
2 the paper crunch, the amount of material that is circulating
3 anyway, that operators need more time to review information
4 which is significant and is pertinent to operations?

5 A No, I think you need to select what is pertinent
6 to operations to forward to them. I do not think this
7 particular document falls in that category.

8 Q Was one of the reasons you came to that conclusion
9 the fact that they are getting an awful lot of information
10 already and you have to be selective, given that large amount
11 of material?

12 MR. BAXTER: Mrs. Bowers, I object. The question
13 is repetitive. The witness has stated twice what the reasons
14 were for not distributing this document to licensed operators.

15 He said he did not feel it related to the actual
16 operation, facility, or contribute anything to the knowledge
17 of how to respond to an event.

18 MR. LANPHER: He also said; however, he has a
19 concern that they have a great deal of information with
20 paper already crossing their desk. That was a factor in
21 his decision, or someone's decision not to communicate this
22 information.

23 MR. BAXTER: That is not what he said. He said
24 that was the basis for the reason being selective. He gave
25 us his reasons twice now. His basis for not distributing

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1 this document.

2 MRS. BOWERS: We think he has answered the ques-

3 tion.

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BY MR. LANPHER: (Resuming)

Q During the lightbulb incident approximately two years ago, did those steam generators boil dry?

A I do not remember specifically whether it was one at one time and another at another time or whether we ever were able to definitely conclude that they were both dry. I just do not remember.

Q At least one steam generator did boil dry.

A I think we are pretty well able to confirm that at least one boiled dry before we started overfilling and ran into the cool-down transient.

Q You stated earlier in this examination that the auxiliary feedwater system has always been 100 percent reliable in your opinion.

My question is when -- well, was the lightbulb incident in allowing a steam generator to boil dry an indication of auxiliary feedwater failure?

A Well, I guess you need to define what a failure is. Now, granted, I think it is the staff's position and probably some others but not necessarily mine that failure of the auxiliary feedwater system is defined by the steam generator going dry. I do not think so. I think the failure really is more logically defined as the inability to adequately cool the core. That is the bottom line.

In that context, the auxiliary feedwater system

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1 did prove reliable.

2 Q If you define reliability in terms of preventing
3 a boil dry of a steam generator, then that would have been
4 an ASW failure.

5 A I do not define it that way.

6 Q If you did?

7 A Well, as I said, I cannot remember what the
8 sequence was of those steam generators going dry, and I
9 think even anyone that defined failure as a steam generator
10 going dry would have to -- would have to provide the
11 allowance that they both go dry before they really have
12 failure.

13 Q If both steam generators were to boil dry, and if
14 the criteria for auxiliary feedwater reliability were
15 avoiding boil dry, then that would constitute an ASW
16 failure, would it not?

17 A Only if some criteria established how long the
18 steam generators remained dry, if they went dry and two,
19 three, five, ten minutes later auxiliary feedwater went
20 on. I think you can consider that a failure.

21 Q You mentioned in response to one of my earlier
22 questions that NUREG documents have been circulated to
23 licensed operators. Is that correct?

24 A I do not know if I said that, because right now --
25 right now I cannot tell you what specific one it is.

1 Q You had made just a passing reference to NUREG
2 documents. Let me ask you this. Have any NUREG documents
3 subsequent to the TMI accident been circulated to licensed
4 operators for their review?

5 A I think portions of them have, but I guess I cannot
6 think right now of what I would say would be an entire one
7 being circulated.

8 Q Do you know which one a portion of it was?

9 A I think some of the -- some portions of what I
10 call the Tedesco report, particularly it had a scenario
11 sequence of events of Three Mile Island, and I think a
12 portion of the safety analysis -- I am not sure if that was
13 a NUREG or not -- when we returned to power, but I am
14 guessing. I just do not know for a fact.

15 Q Do you know whether NUREG 0623 relating to the
16 delayed reactor coolant pump water was transmitted to
17 licensed operators?

18 A No, I do not. I do know that I gave a copy of that
19 to the training supervisor for him to review and include
20 portions of it, if that were pertinent in his lecture
21 program. Whether that document was transmitted to a licensed
22 operator or not I do not know. I don't think so. I guess
23 I -- the portions of that document that dealt with again
24 the small break spectrum in the hypothetical question, what
25 would happen if you ran the pumps for a while and then they

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1 tripped inadvertently, was covered in our simulator
2 training, and whether that was from the NUREG or from
3 B&W's analysis, I cannot say.

4 Q To your knowledge it was not communicated through
5 the special order program or --

6 A Not that I have any knowledge of, no.

7 Q Do you know whether the failure mode and effects
8 analysis of the ICS was communicated to licensed operators?

9 A I know that it was not communicated under the
10 standing order program. If the operations supervisor gave
11 that to a shift supervisor to read, I do not have any
12 knowledge of it. I would expect that he probably did not
13 just due to the context of that as being an analysis as
14 opposed to providing some specific guidance.

15 Q Do you know whether the auxiliary feedwater
16 reliability study has been communicated to licensed
17 operators?

18 A No, I do not know.

19 Q Would you expect that that is the kind of
20 document that would be routinely transmitted to licensed
21 operators?

22 A I would not expect it in its entirety. There
23 might be some portions of it. Right now I cannot think
24 of any. My recollection of the document as far as relating
25 to operator responses, to those kinds of things, it would

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1 not reveal anything for them. It was more an analysis and
2 a comparison of our feedwater systems to other feedwater
3 systems, and I think that our success with the auxiliary
4 feedwater system. I have already pointed out, and I have had
5 operators tell me that they thought our auxiliary feedwater
6 system was pretty reliable based on just their experience
7 with it.

8 Q Mr. Rodriguez, in complying with the short-term
9 requirements of NUREG 0578, SMUD has sent a whole series
10 of letters to the NRC, including one which we have
11 previously marked as CEC Exhibit 30.

12 (Whereupon, counsel handed the document to the
13 witness.)

14 Q Are you familiar with that letter?

15 (Whereupon, the witness reviewed the document.)

16 Q I am not going to ask you a series of specific
17 questions with respect to it. I just want to know whether
18 you are generally familiar with that document.

19 MRS. BOWERS: Mr. Lanpher, we would like to take
20 another break. We took a break a little bit early this
21 afternoon. Now might be a good time.

22 THE WITNESS: I am generally familiar with the
23 document.

24 MR. LANPHER: Can I just finish up this line?
25 I think I am almost done with this feedback sort of section

1 of his testimony.

2 BY MR. LANPHER: (Resuming)

3 Q In preparing a document such as this for trans-
4 mittal to the NRC, would SMUD consult with licensed
5 operators serving on ships relating to the contents of this
6 letter to attempt to get feedback from them regarding SMUD's
7 positions?

8 A Not generally. The contact would probably be with
9 the operations supervisor.

10 Q Would the operations supervisor then attempt to
11 find out the views of licensed operators who are serving on
12 shifts relating to the issues that are raised in this
13 response?

14 A In his communication with the shift supervisor as
15 well as the control room operators with regard to
16 probably location selection, he would. I think in this
17 particular letter I recall some feedback that I had that
18 the engineer was going to be talking to the operator about
19 the placement of the TSAT meters. That kind of feedback.
20 But I do not think that is addressed in the letter, particu-
21 larly where we were going to place those.

22 This letter is more of an engineering response on
23 what the district was going to do to meet certain
24 requirements in 0578, and not if you will how we are going
25 to human engineer it. That aspect, as I said, is more

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1 typically carried out by an engineer if he is going to
2 install something in there, to go up and talk to some of
3 the operators that happen to be on shift or with the shift
4 supervisor or the operations supervisor, and find out from
5 them where they would think the best location from an
6 operating standpoint to locate the new equipment.

7 MR. LANPHER: This is a good place for a break
8 now.

9 MRS. BOWERS: All right, fine.

10 (Whereupon, a brief recess was taken.)
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1 MRS. BOWERS: We would like to resume. Are you
2 ready, Mr. Lanpher?

3 BY MR. LANPHER: (Resuming)

4 Q Mr. Rodriguez, do you know whether NUREG-0667,
5 whether in draft or in final form, has been communicated
6 to operators?

7 A No, I do not know.

8 Q Is it the type of document you would expect to
9 be communicated?

10 A No, I would not expect it to be communicated.

11 MR. LANPHER: Mrs. Bowers, I would like to go back
12 to the examination that I terminated earlier regarding the
13 D.5 emergency procedure. Mr. Ellison is handing out,
14 hopefully, complete documents except for one page, page
15 number 9, which our copy at the Energy Commission does not
16 have.

17 I was not planning to ask any questions on any
18 of the pages after page 8. In other words, with respect
19 to the large rupture case.

20 So, I am proposing to continue. I do not have
21 much more examination on this. I would just like to
22 complete it.

23 MR. LEWIS: Which exhibit number is this?

24 MR. LANPHER: This is exhibit number 43.

25 BY MR. LANPHER: (Resuming)

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1 Q I believe when we were last talking about this --
2 I apologize if I repeat a question -- you had stated that
3 if an operator believed he had a stuck open EMOV, that his
4 immediate action should be to close the block valve. My
5 question was whether this procedure contains a direction to
6 that effect.

7 Mr. Baxter said I don't have a page for it so he
8 could not tell, maybe you could not tell. Anyway, I would
9 like to pose that question again, whether this procedure does
10 contain a direction to close the block valve if a stuck open
11 PORV is suspected.

12 (Pause.)

13 A On page D.5.7, paragraph 2.2.17.2, it says
14 isolate EMOV (block valve HV-21505).

15 Q Am I correct in understanding that that is one
16 of the subsequent operator actions under the Case 2 medium
17 leak?

18 A That is correct.

19 Q As set forth in this procedure?

20 A Yes.

21 Q An operator should go ahead and, in effect, skip
22 to that procedure if he has reason to believe -- skip to that
23 step if he has reason to believe that the PORV is stuck open?

24 A If he believes that the electromagnetic relief
25 valve is stuck open, he should shut the block valve.

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1 Q Are there any directions in this procedure to an
2 operator to the effect that he does not have to do all the
3 steps in sequence, but that he may move to other actions if
4 he has reason to believe that that is appropriate?

5 A No, the procedure is not that prescriptive with
6 regard to the order in which he carries out his actions.

7 Q Thus, for instance, if the operator had reason to
8 believe that he was in a Case 2 situation, he would not
9 necessarily have to complete all the immediate actions, but
10 rather could go to subsequent operator actions.

11 A No. If the operator saw the EMOV or suspected the
12 EMOV was stuck open, he should shut the block valve. If he
13 did not realize the EMOV was open and the first thing that
14 happened to him was the reactor trip occurred, then he should
15 carry out the procedure for a reactor trip occurring.

16 In the context of your question, you said the
17 operator realized the EMOV is open. Well, then shut the
18 block valve. If you are referring to his action in combatting
19 a situation which had a reactor trip, and the subsequent
20 transient as a result of that, then his immediate action is
21 to carry out the reactor trip portion of a Case 2 medium leak.

22 If, along the way, you know, he recognizes that his
23 source is the EMOV, even though it is not until he gets back
24 into the subsequent action, I would suspect he would reach
25 over and punch the block valve shut. It is a 1 1/2 second

bfm4

1 evolution.

2 Q Turning your attention to page 3 of this procedure,
3 this pertains to Case 1, a very small leak, at the end
4 of Section 5.1.3.3 after completing the preceding --

5 A You said 5.1.3, I do not have one of those.

6 Q 5.1.1 --

7 (Laughter.)

8 A Why don't you just read it and I'll pick up on
9 it?

10 Q That's better. After he has done the immediate
11 operator actions, he is directed "perform the Case 2
12 medium leak actions."

13 Does that mean that the operator at this point
14 is supposed to go to the Case 2 actions and not complete
15 the subsequent operator action under Case 1?

16 A No, it does not mean that he is not to complete
17 the subsequent action under Case 1. What the procedure
18 essentially is describing is the situation where the
19 pressurizer level has dropped below 160 inches and is
20 continuing to decrease. That is the key that goes into
21 the Case 2 procedure. That is, trip the reactor and verify
22 RCS is subcooled, those portions of Case 2 that are
23 applicable.

24 Q If an operator at the outset of a transient
25 event saw that the pressurizer level was less than 160

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1 inches and decreasing as an initial symptom, do you
2 expect the operator to go immediately to Case 2 procedures?

3 A With respect to the Case 2 procedure, you are
4 addressing to trip the reactor? Yes, but that if a follow-on
5 from the Case 1 which says that if it is dropping, that if
6 it is less than 160 inches and decreasing, trip the reactor.

7 It does not necessarily mean that the high pressure
8 injection automatic initiation of high pressure injection
9 has occurred, which is part of the verification in Case 2.

10 There is -- I guess it is degrees, depending on the
11 size of the leak, how fast these things are occurring.

12 Q At the bottom of page 4, there is the statement
13 "If natural circulation flow cannot be verified, utilize
14 incore TCs to determine RCS subcooling."

15 Is there any reason why the step for verification
16 of natural circulation cooling are not set forth in this
17 procedure?

18 A Well, they are set forth in the B.4 procedure,
19 which covers natural circulation.

20 Q On the next page, page 5 --

21 A All right.

22 Q About half way down the page, this is in the
23 context of subsequent operator action, under Case 2. It
24 says, "Perform natural circulation cooldown in accordance
25 with the natural circulation procedure in conjunction with

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1 the remainder of this procedure.

2 Yesterday, I remember -- I think it was yesterday,
3 you told Mr. Ellison that operators cannot do two things
4 at once.

5 A In that context, I was talking about manual
6 manipulations.

7 Q When an operator or an operating crew -- there
8 would probably be at least two people present, I under-
9 stand -- receives this instruction to continue with this
10 procedure and also to initiate and complete the natural
11 circulation cooldown procedure. How do they know which
12 procedure to do at any particular time?

13 A I think the action by the operators, based on of
14 course, the information that is available to him. In this
15 particular case, it says this step that you picked here,
16 it says "perform natural circulation cooldown in accordance
17 with B.4, section 6.

18 If he was in a situation where he had lost or
19 secured reactor coolant pumps then the natural circulation
20 is what he is going to verify. He is going to go to B.6,
21 if he doesn't have off the top of his head what the
22 appropriate delta t is to find that out.

23 Once he has assured himself that natural circula-
24 tion is occurring, then he is going to move onto something
25 else, like try to find out, oh, where the leak is, or at

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1 least take the actions to attempt to stop the leak, those
2 that are available to him.

3 He may move from this procedure into B.6. To
4 give an example, if he has trouble with one of those
5 auxiliary feedwater pumps, he may move into the auxiliary
6 feedwater procedure.

7 There is the possibility of three or four of these
8 procedures being open and being used all in conjunction by
9 two or three operators that are in the control room in
10 coping with the particular scenario that they have.

11 Q Is it a matter of judgment to be exercised by the
12 operators which, of possibly several procedures which may
13 be open, should be utilized at any particular time, then?

14 A Very definitely.

15 Q Would you expect, if an operator gets to this
16 procedure that we have been referring to, the natural
17 circulation cooldown instruction, that before that operator
18 moves on to any other procedure in D.5, that he will get
19 the natural circulation cooldown procedure and take some
20 action to commence following that procedure?

21 A If he has lost forced circulation flow and he has
22 auxiliary feedwater available to the steam generators, I
23 would expect that his action would be to initiate and verify
24 that he has natural circulation as his next step.

25 When he finishes that, then go on to something

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1 else. At least one of the three operators, depending on
2 what the shift supervisor -- you know, what his direction
3 is.

4 On of those would be attempting to verify that he
5 has natural circulation.

6 Q Would it be possible that one operator would be
7 responsible for following the natural circulation procedures
8 and another responsible for following the LOCA procedures
9 with the shift supervisor offering overall direction?

10 A That is very possible.

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1 Q I would like you to turn your attention to Page
2 6 and in the center of the page there is a note. It reads,
3 "When the reactor coolant system is 50 degrees subcooled
4 reactor such RC pressure can be controlled by reducing the
5 HPI flow to avoid exceeding the reactor vessel integrity
6 limits. Pressurizer level may increase due to loss of
7 subcooling." If the pressurizer level does increase due to
8 a loss in subcooling, should the operator take any action?

9 A He should have taken action long before the
10 subcooling was lost. He should have taken action when the
11 50 degrees of subcooling was lost, when it dropped to
12 something less than that. So I would have expected if he
13 had 50 degrees subcooling at one time and he had high
14 pressure injection and then it dropped below 50 degrees
15 subcooling, he would have reinitiated it.

16 If the pressurizer level was increasing and he
17 had no subcooling, I would expect he would let it increase
18 and continue operating the high pressure injection.

19 Q Is this note that pressurizer level may increase
20 due to loss of subcooling something that you expect to
21 happen?

22 Let me put it in context at this point in the
23 procedure.

24 A If you lose subcooling, it is expected that the
25 pressurizer level will probably increase. Where it might

1 occur in any particular scenario is hard to predetermine
2 at this point. This particular statement was added just
3 as a reminder again of that concept of loss of subcooling
4 resulting in pressurizer level increase.

5 Q Would this note maybe be better phrased if it said
6 that if on throttling back HPI flow subcooling is lost and
7 pressurizer level begins to increase, resume HPI flow?

8 A I am sure there are probably three dozen ways that
9 this concept could be written out to get across to the
10 operator -- It just depends on who is writing it.

11 Q Who writes Rancho Seco's procedures?

12 A I think I answered that yesterday at some length.

13 Q They are all done internally. Right?

14 MR. BAXTER: Mrs. Bowers, it is my recollection as
15 well yesterday that we discussed in some depth the group
16 supervisor assigning it to someone within his group and then
17 the group supervisor signing off. It went from there to the
18 plant supervisor. We went through the whole thing at
19 great length.

20 THE WITNESS: I do not recall being asked that
21 question yesterday. With regard to internally -- We have
22 had on occasion contractor personnel on site who have
23 written procedures for us, but it has been the case of
24 identifying a particular individual that we wanted from a
25 vendor and then hiring his services, and he conducted those

1 services entirely on site, so I would still classify that
2 as being written internally, but the individual that was
3 writing it was actually employed by another company, not
4 SMUD.

5 BY MR. LANPHER: (Resuming)

6 Q I would like you to look at Page 7. In the
7 middle of the page the statement appears, "Continue plant
8 cooldown in accordance with Operating Procedure B.4,
9 Section 6, until all conditions have been met for restart
10 of an RCP." What are those conditions for restart of an
11 RCP?

12 A I would have to look at B.4, Section 6. I do not
13 have those conditions committed to memory.

14 Q That is what an operator would presumably do also
15 at this point.

16 A That is correct. That is what the direction to
17 B.4, Section 6, is for.

18 Q And those conditions for restart are contained in
19 that?

20 A That is correct.

21 (Pause.)

22 Q In utilizing this procedure, how does an operator
23 know which case to go to at the outset?

24 A Let me pick a scenario, I guess. If he was
25 alerted to a problem by a reactor trip, then his immediate

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1 response would be to carry out action pertinent to that
2 trip while he is trying to diagnose the cause of it, and
3 if in that diagnosis he identifies that pressurizer level
4 is decreasing fairly rapidly, certainly faster than the
5 make-up system was able to keep up with, that is why he
6 tripped in the first place, then he would go to Case 2.

7 On the other hand, if it tripped and he turned
8 around and within a few seconds the pressurizer was
9 essentially empty, then he knew he had something bigger
10 than Case 2, and he would go to Case 3.

11 On the other hand, if he was alerted to the problem
12 by a low pressurizer alarm, for an example, which meant that
13 he was losing inventory but he was not losing it at such a
14 rate that the system could not maintain pressure -- at such
15 a rate that the system was able to maintain pressure so
16 the trip was not an initial precursor, then he would be in
17 Case 1.

18 Q If an operator cannot make those kinds of dis-
19 tinctions at the outset, he is just somewhat unsure, should
20 he go to Case 1 and complete those steps as first actions,
21 or should he take no action until he thinks he has a Case 1,
22 a Case 2, or a Case 3?

23 A I guess I need some scenarios from you, because
24 those questions are too general for my to hypothesize here
25 what any operator might do. As I said, if his initial

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1 warning to him is a pressurizer level low alarm, and he looks
2 up and says, yes, pressurizer level is low and it is
3 decreasing and yet the reactor has not tripped, he is in a
4 Case 1 condition. If his initial warning is that he has
5 tripped and he handles his trip problem and recognizes along
6 with that trip is fairly rapidly decreasing pressurizer
7 level, then he is in Case 2. And if it is very rapid -- and
8 by that I mean he is in high pressure injection almost
9 immediately -- then he is in a Case 3.

10 (Pause.)

11 Q Hopefully the last question on this. If an
12 operator just cannot tell whether he is in a 1 or a 2, is
13 there any guidance in this procedure as to whether he should
14 go to the Case 1 immediate operator actions or to the Case
15 2 immediate operator actions?

16 A The operator's responsibility is to maintain the
17 unit in a normal operating mode. There is no cut and dried
18 difference between Case 1 and Case 2. It is more a matter
19 of how quickly the system is responding. The operator's
20 attention is drawn to the problem somehow, whether it be
21 by an audible alarm, whether it be by his scanning of
22 instruments, he sees something awry, and if we are talking
23 about a loss of coolant, the logical thing is that he sees
24 pressurizer level coming down and make-up tank level coming
25 down.

1 He has got a leak. Then his evaluation needs to be,
2 is it a leak that he can control and bring the unit down
3 in a fairly controlled manner, and it is stipulated in our
4 procedure if the pressurizer level drops below 160 inches
5 and continues to decrease, he trips it.

6 Q My question was whether this procedure offers any
7 directions to an operator as to which case to go to if he
8 is not sure which case he is in. Does this procedure offer
9 that guidance?

10 MR. BAXTER: Mrs. Bowers, the question has been
11 asked a couple of times, and I think the witness has done
12 his best to explain at least why the answer cannot be
13 given as directly as Mr. Lanpher would like it to be, but I
14 do not see how repeating it develops the record any further.

15 MR. LANPHER: If the witness cannot answer the
16 question, Mrs. Bowers, he should state that. He has not
17 answered my question. He has given me an answer which I
18 would interpret as saying that an operator exercises
19 judgment. My question is whether this procedure directs him
20 to one case or the other, in a case where he is not certain
21 whether he is in Case 1 or Case 2. I think it calls for a
22 yes or no answer.

23 MRS. BOWERS: I think he also testified that the
24 only way he could approach how you determine whether it is
25 Case 1, Case 2, or Case 3 is through examples of scenarios.

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1 MR. SHON: Mr. Rodriguez, would it be fair to say
2 that it is not the intent of this particular procedure to
3 direct the operator into a diagnosis of what is happening,
4 but only to a response after he has diagnosed, in a sense.

5 THE WITNESS: That certainly is correct. Yes, sir.

6 MR. SHON: I think that is the difficulty, Mr.
7 Lanpher. You are looking for something that really is not
8 there. There is nothing there that tells him how to
9 distinguish between transients that may look quite a bit
10 alike, and Mr. Rodriguez could only tell you how to
11 distinguish these transients if you could give him specific
12 information on the exact readings or rapidity of change of
13 readings or something of that order, because that is what
14 the operator will use, too.

15 Is there, Mr. Rodriguez, another sheet somewhere
16 or other that gives that kind of data, that tells how to
17 make the diagnosis, or is he carrying that in his head
18 largely?

19 THE WITNESS: No, sir. That diagnostic function
20 is what a large part of the training program is aimed at
21 and the simulator training. There is no single document or
22 piece of paper that provides that diagnostic guidance.

23 (Pause.)

24 BY MR. LANPHER: (Resuming)

25 Q Mr. Rodriguez, has SMUD investigated the possibility

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1 of installing a reactor coolant level indicator?

2 (Pause.)

3 A That subject has been looked at for some time, and
4 we have responded, I think, to the Energy Commission --
5 excuse me, to the Nuclear Regulatory Commission that at this
6 time we did not feel that the level indication would add
7 significantly to providing an unambiguous indication of
8 loss of level in the core.

9 Q In the event of a transient condition where you have
10 lost subcooling -- you are less than 50 degrees subcooled --
11 you have lost subcooling, is your pressurizer level indi- a-
12 tion accurate as to the level of core inventory?

13 A I am not sure how your question is worded. Do you
14 mean loss of subcooling or subcooling less than 50 degrees
15 Fahrenheit?

16 Q Loss of subcooling.

17 A In the case where subcooling is lost, your press-
18 urizer level indication would not accurately reflect
19 reactor coolant system inventory.

20 Q In that situation, how would an operator at Rancho
21 Seco determine whether the core was covered?

22 MR. BAXTER: Excuse me, Mr. Lanpher. Are we now
23 working from Mr. Rodriguez' testimony at Page 46?

24 MR. LANPHER: I am not asking my questions from
25 that. I think that is the section of the testimony that

1 this relates to, yes.

2 THE WITNESS: Adequate water level in the core
3 can be determined by reference to the T-hot indicators
4 and or by reference to the in core thermocouples, that those
5 temperatures do not indicate superheat in the reactor
6 coolant system but rather that they are at saturation
7 temperature or pressure -- that the system is that.

8 BY MR. LANPHER: (Resuming)

9 Q And from those readings, the operator would be
10 able to infer the reactor coolant's level or simply that
11 the core was covered?

12 A They would incur that the core -- they could infer
13 that the core is covered. However, in the procedural
14 guidance that they are given long before they reach the
15 subcooling area they should have high pressure injection
16 flow on at its maximum capacity. They should also have
17 auxiliary feedwater supplying the steam generators and
18 have -- and raising level if it is not raised to the 95
19 percent, and I would expect that that is where the
20 operator's primary attention is, because if he does that, he
21 can assure that he will adequately cool the core, and as I
22 said earlier, I think, in my reference to dry steam
23 generators, the bottom line is whether or not his action is
24 successful, and then there are varying degrees of success.
25 But the bottom line is that the core is being adequately

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1 cooled.

2 Q At Page 4 of CEC Exhibit 41, this is the NRC's
3 evaluation of the short-term Lessons Learned item, the
4 following statement is made. "The licensee has stated that
5 it has reviewed several conceptual designs for reactor
6 vessel water level indication. By letter of March 5,
7 1980" --

8 MR. BAXTER: Excuse me, Mr. Lanpher. I have not
9 located that.

10 BY MR. LANPHER: (Resuming)

11 Q The top of Page 4 of the enclosure, Mr. Rodriguez.

12 I am interested in the first two sentences. The
13 second sentence is, "By letter of March 5, 1980, the licensee
14 informed the staff that it has not considered any of these
15 designs that it has considered to date to be acceptable."
16 Do you believe that to be an accurate statement of SMUD's
17 review and its position?

18 A To the best of my knowledge, the engineering
19 department has reviewed some conceptual designs and, as I
20 said earlier, I thought, and this confirms it, that our
21 response was that we did not find a design that we felt
22 that was acceptable to the criteria of unambiguous
23 indication.

24 Q Do you know whether one of the designs which the
25 engineering department has investigated would be the use

1 of void detectors in the core.

2 A No, I do not know for certain. I can guess, and my
3 guess is that void detectors were considered, particularly
4 if anyone in the engineering department read Dr. Lewis's
5 transcript of his hearing.

6 I might add at this point, I guess, with regard to
7 void detectors that this point and as much as I know about
8 them, and I am not an expert on them, I would have some
9 problem with our engineering department recommending that,
10 primarily because, to the best of my knowledge, having a
11 void detector and noting that there are voids in the J-loop
12 would not tell the operator or give the operator information
13 that he could take some action on that he was not already
14 doing.

15 Furthermore, particularly in backfitting an
16 operating power plant, you do not do those kinds of things
17 without taking exposure for the individuals making the
18 installation, and exposure for the individuals that have
19 to maintain that equipment, particularly, I guess, in a void
20 detection technology, which I said I am not an expert in,
21 but remembering what Dr. Lewis said about acoustic void
22 detectors, and I think the installation and maintenance of
23 acoustic equipment in the reactor building, the contaminated
24 piping would increase the exposure that the maintenance
25 personnel take, and that it would not provide anything to

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1 the operator in the way of a diagnostic tool to direct him
 2 to take some more action. As I said, long before he has
 3 voids in the core, he has already done just about everything
 4 he can do.

5 MR. SHON: Just one thing, Mr. Rodriguez, if you
 6 will excuse me, Mr. Lanpher. Would that still be true after
 7 the proposed high point venting apparatus, the things that
 8 people have talked about, at least, have been installed, that
 9 he would not be able to do anything anyway about the voids?
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1 THE WITNESS: From an operating standpoint, I
2 have trouble with those high point vents, also.

3 MR. SHON: I see. Thank you.

4 THE WITNESS: I guess just to clarify that that
5 high point vent is another leak path. Our whole design and
6 operating program since TMI--In our case, I think even before
7 TMI--was based on maintaining cooling water to the core.

8 You put vents on the high points and void the
9 detectors if you will. I am not sure that that is the time
10 that we want them to start venting steam. Maybe we just want
11 to keep pumping high pressure injection in there.

12 MR. SHON: I see.

13 BY MR. LANPHER: (Resuming)

14 Q Mr. Rodriguez, in the previous question that I
15 asked prior to Mr. Shon's question, did you understand my
16 question to be void detectors in the hot leg, or void detec-
17 tors in the core?

18 A Void detectors anywhere, in the hot leg or in
19 the reactor vessel.

20 Q That is what you were referring to?

21 A Yes.

22 Q Anywhere?

23 A Yes.

24 (Pause.)

25 Q Mr. Rodriguez, I would like you to turn to page 12

1 of the same document that was CEC-41. Could you please
2 review the top two thirds of that page relating to shift
3 technical advisors?

4 (Pause.)

5 Is it correct as set forth in this document that
6 the shift technical advisors at SMUD will be plant staff
7 graduate engineers?

8 MR. BAXTER. Mrs. Bowers, excuse me. I would like
9 to request a reference to what aspect of Mr. Rodriguez's
10 testimony not covered by Mr. Ellison's cross examination
11 this question refers to.

12 MRS. BOWERS: Can you respond, Mr. Lanpher?

13 MR. LANPHER: My first response is I cannot recall
14 this coming up at all before. We were dividing it up. If
15 you could just give me a moment, I do not believe Mr.
16 Ellison went into this at all, so I do not believe it is
17 a matter of trying to gang up on the witness, which is the
18 purpose of the two attorney rule.

19 We have been, I hope, careful not to ask questions
20 in the same area.

21 MRS. BOWERS: Well, the first question was what
22 part of Mr. Rodriguez's testimony does this come within?

23 MR. LANPHER: I suppose if you had to -- I suppose
24 if you had to fix it into any spot it would fall into
25 operator and facility management competence, but Mr.

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1 Rodriguez did not, in his testimony that I recall, make
2 specific reference to shift technical advisors. So, we did
3 not, in preparing for this, really put it into one section
4 or another.

5 However, I think the shift technical advisor is
6 a relevant area for inquiry.

7 MR. BAXTER: Well, Mrs. Bowers, whether or not
8 Mr. Ellison asked the question, nevertheless, he did cross
9 examine on operator and facility management competence. The
10 test is not whether Mr. Rodriguez put this in his testimony
11 at that point, but to the extent that they feel it is
12 relevant to a given portion of his testimony, it should have
13 been covered by Mr. Ellison when he cross examined on that
14 point.

15 We are now having admittedly two attorneys cross
16 examine with respect to the same portion of the direct
17 testimony. I do not think that is permissible.

18 MR. LANPHER: I believe it is discretionary with
19 the board. There is certainly no hard and fast rule that
20 says you cannot do that. I do not think there is any
21 ganging up which is the whole purpose of that rule, Mrs.
22 Bowers.

23 MR. BAXTER: Well, I object and say that it is,
24 indeed ganging up, if it is with respect to the same
25 testimony.

(Board conferring.)

1 MRS. BOWERS: In our discretion, recognizing
2 fully the arguments and positions on both sides, first, does
3 the staff have a position on this?

4 MR. LEWIS: We will submit to the board's
5 discretion.

6 (Laughter.)

7 MRS. BOWERS: We think if you are going to question
8 briefly one or two questions, Mr. Lanpher, you proceed.
9 Now, if you are getting into what would be a long and in-
10 depth examination, then we would, at the time you have
11 concluded your part, go back to Mr. Ellison.

12 In any case, it is going to be asked by either
13 Mr. Lanpher or Mr. Ellison.

14 MR. BAXTER: I do not understand that aspect of the
15 board's ruling that talks about going back to Mr. Ellison.
16 I'm sorry.

17 MR. LANPHER: My questions are not extensive here,
18 so maybe we can avoid going back to Mr. Ellison, at all.

19 MRS. BOWERS: Let me respond, though. In an
20 administrative hearing, it certainly is permitted for
21 counsel to say "There is one question or two that I forgot
22 to ask, may I have the opportunity after someone else has
23 interceded."

24 That is really what we have here.

25 MR. LANPHER: Should I proceed?

1 MRS. BOWERS: Yes.

2 BY MR. LANPHER: (Resuming)

3 Q What functions do plant staff graduate engineers
4 normally perform at Rancho Seco?

5 A Engineering functions.

6 Q The whole scale of engineering functions relating
7 to the nuclear power plant?

8 A That is correct.

9 Q What was the basis for SMUD deciding to utilize
10 these persons as the shift technical advisors?

11 A Primarily their familiarization with the operation
12 of Rancho Seco from their individual assignment standpoint,
13 their responsibilities and experience, although maybe in a
14 narrow area depending on the discipline would be or could
15 be of assistance to the shift supervisor in his conduct
16 of handling the transient.

17 Secondly, was their availability, and that these
18 were individuals who were familiar with the unit,
19 already SMUD employees. The requirements of having the
20 shift technical advisor on by 1 January 1980 did not provide
21 for sufficient time to hire other personnel and get them up
22 to where they are familiar with the unit and could act
23 responsibly in these positions.

24 Q Would it be fair to say that these persons
25 generally have a good understanding of the engineering and

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1 design of the facility but where, if at all, they may lack
2 experience in the operational aspects.

3 A Some of them would lack experience in the opera-
4 tional aspects. Some of them would have some good experience
5 maybe not in all operational aspects, but in those aspects
6 that deal with the nuclear steam supply system and the
7 thermal -- thermodynamics of it.

8 They would have good experience.

9 Q Do any of them hold a license to operate the
10 plant?

11 A Yes.

12 Q How many, do you know?

13 A One.

14 Q How many shift technical advisors altogether do
15 you have?

16 A Somewhere between 12 and 14. I am not sure of
17 the exact number. The reason I say that is we had selected
18 some and in that time a couple of the engineers had
19 transferred to other departments and main headquarters.
20 That is why I am not sure.

21 They are in the process of transferring and
22 whether or not they are still on the STA watch or not, I
23 cannot say.

24 Q Earlier today, I asked you several questions
25 relating to I and E bulletin 7905C and the reactor coolant

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1 pump trip. I did leave out one question.

2 We have heard testimony from other witnesses that
3 that is not an ideal solution. It is my understanding that
4 SMUD has at least tentatively proposed an alternate solution
5 to the present reactor coolant pump trip scenario. Is that
6 true?

7 A Yes, I think we have submitted a design for
8 NRC's review.

9 Q Could you briefly describe what that design is?

10 A Not accurately, I could not. The basic concept is
11 that the design utilized reactor coolant system pressure as
12 one parameter and reactor coolant pump power as another
13 parameter in determining whether or not there is voiding
14 in the core to the point where the reactor coolant pump
15 should be tripped off.

16 Q The status of this design as you submitted to the
17 NRC and you are asking them to review it. So, it perhaps
18 can be instituted at your facility.

19 A I really cannot comment on the exact status. I
20 am reasonably certain that it has been submitted. Where it
21 is in the review and the return and the question and
22 answer portion of the scenario, I do not know.

23 (Pause.)

24 MR. LANPHER: This is probably a good time for
25 me to go through my notes. I should probably have only a

1 couple of more minutes, I hope.

2 MR. LEWIS: Altogether, or on a particular subject?

3 MR. LANPHER: Altogether.

4 MRS. BOWERS: We will recess for this evening and
5 reconvene at 9:00 tomorrow morning.

6 (Thereupon, at 5:00 p.m., the hearing in the above-
7 entitled matter was recessed, to reconvene at 9:00 a.m. the
8 following day.)
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310 7TH STREET, S.W. REPORTERS BUILDING, WASHINGTON, D. C. 20024 (202) 554-2345



This is to certify that the attached proceedings before the
NUCLEAR REGULATORY COMMISSION

in the matter of: SMUD (Rancho Seco)

Date of Proceeding: 5/8/80

Docket Number: 50-312

Place of Proceeding: Sacramento, CA

were held as herein appears, and that this is the original transcript thereof for the file of the Commission.

Suzanne R. Babineau

Official Reporter (Typed)

Suzanne R. Babineau

Official Reporter (Signature)

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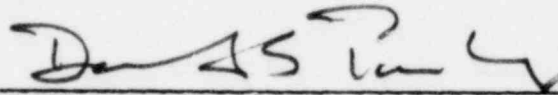
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David S. Parker

Official Reporter (Typed)



Official Reporter (Signature)