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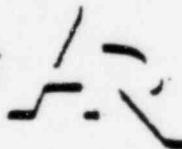
COMMISSION MEETING

In the Matter of: PUBLIC MEETING

DISCUSSION OF AND POSSIBLE VOTE ON FULL
POWER OPERATING LICENSE FOR SAN ONOFRE UNIT 2

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

DISCUSSION OF AND POSSIBLE VOTE ON
FULL POWER OPERATING LICENSE FOR SAN ONOFRE UNIT 2

PUBLIC MEETING

Nuclear Regulatory Commission
Room 1130
1717 H Street, N. W.
Washington, D. C.

Wednesday, July 28, 1982

The Commission met, pursuant to notice, at
3:00 p.m.

BEFORE:

- NUNZIO PLALLADINO, Chairman of the Commission
- JOHN AHEARNE, Commissioner
- THOMAS ROBERTS, Commissioner
- JAMES ASSELSTINE, Commissioner

STAFF AND PRESENTERS SEATED AT COMMISSION TABLE:

- S. CHILK
- L. BICKWIT
- F. REMICK
- H. DENTON
- D. EISENHUT
- H. ROOD
- L. CHANDLER

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AUDIENCE SPEAKERS:

- R. MATTSON
- B. GRIMES
- C. KNIGHT
- L. NORDERHAUG

REGION V SPEAKERS:

- R. ENGELKEN
- J. CREWS
- A. CHAFFEE

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P R O C E E D I N G S

1
2 CHAIRMAN PALLADINO: Good afternoon, ladies
3 and gentlemen.

4 The Commission meets this afternoon for
5 discussion and possible vote on full power operating
6 license for San Onofre Unit-2.

7 On February 16, 1982, the Director of the
8 Office of Nuclear Reactor Regulation issued a license
9 limited to low power operation for San Onofre Unit 2.
10 Since that time, the licensee has loaded fuel and
11 conducted post-fuel load hot functional tests.

12 The San Onofre Unit 2 reactor achieved initial
13 criticality on July 26, 1982, and now the licensee will
14 conduct low power tests.

15 On Tuesday, July 27, the Court of Appeals for
16 the District of Columbia denied a request to stay the
17 San Onofre operating license, and I will ask the General
18 Counsel to highlight the outcome of that case.

19 MR. BICKWIT: Very good, Mr. Chairman.

20 CHAIRMAN PALLADINO: Let me finish a few
21 procedural items.

22 We have with us from Region V, Leroy
23 Norderhaug -- Leroy, where are you? Nice to have you
24 with us -- who is Chief of the Safeguards Branch in the
25 region. We also have a telephone hook-up, at least so I

1 am told, with Region V. On the other end, we have with
2 us Robert Engelken, the Regional Administrator; Jesse
3 Crews, Director, Division of Resident, Reactor Projects
4 and Engineering Inspection; Daniel Sternberg, Branch
5 Chief, Reactor Operations Projects Branch; Gerald
6 Zwetzig, Section Chief, Reactor Operations Projects
7 Branch; and Alfred Chaffee, Resident Inspector for the
8 San Onofre Nuclear Generating Station.

9 Bob, could I confirm that all of you are on
10 the line?

11 MR. ENGELKEN: Yes, we are, Mr. Chairman.

12 CHAIRMAN PALLADINO: Thank you.

13 I might indicate that this is a voice actuated
14 system, so if the people on the other end are talking,
15 you won't be heard until he stops talking and you
16 start. I understand the telephone line will be open
17 throughout the meeting.

18 At this time, unless there are comments by my
19 fellow Commissioners, I am going to turn the meeting
20 over first to General Counsel, and then to Mr. Dircks,
21 Mr. Denton, and staff, to discuss the San Onofre Unit 2
22 licensing.

23 MR. BICKWIT: Mr. Chairman, the end result of
24 that litigation is that it has no operational
25 significance for the Commission's actions today and

1 hereafter in this matter. It is as if the litigation
2 had not taken place.

3 The Petitioners, Carstons, Friends of the
4 Earth, et al., had asked for a stay of the low power
5 license, and had petitioned for review of the
6 Commission's denial of a stay of that license. The
7 panel of the Court has denied the stay, and has denied
8 the petition for review.

9 The Petitioners also initially asked for a
10 stay of the Commission's immediate effectiveness order
11 with respect to the full power license. Throughout the
12 course of this litigation, it became clear that
13 Petitioners had misunderstood the meaning of the
14 immediate effectiveness order regarding the full power
15 license. They had understood it to have authorized the
16 issuance of a license, whereas in fact it does not do
17 that. It paves the way for the authorization of that
18 issuance, should the Commission decide to issue the
19 license.

20 The Court did not speak to the petition for
21 review of that immediate effectiveness order. The
22 meaning of the Court's failing to speak to it is
23 unclear. What is clear is that the Commission can move
24 forward today and consider the matter without regard to
25 any action the Court has yet taken.

1 CHAIRMAN PALLADINO: Thank you.

2 Are there any questions?

3 Then let me turn the meeting over to Mr.
4 Dircks or Mr. Denton.

5 MR. DENTON: The action that we recommend
6 today is that you authorize issuance of a full power
7 license for this station. It is the first Combustion
8 Engineering Plant to have a complete review by the staff
9 since Three Mile Island. So what we will try to hit
10 today in our presentation are those unique features of
11 this plant. There are several that I want to highlight
12 for you.

13 One is the issue with regard to the PORV. The
14 Combustion Engineering plant does not have a PORV, and
15 there was a lot of emphasis during our review on the
16 PORV, and we will cover that one in more detail.

17 Another is the independent design review. An
18 effort was undertaken about a year ago to verify the
19 accuracy of the seismic design of the plant. We will
20 report additionally on that.

21 Some of the areas which we devoted a lot of
22 attention to, such as seismic design, were subject to
23 adjudication, and I will not go into those.

24 The operating experience, since the issuance
25 of the low power license will be covered by Region V.

1 He also will report on some safeguard aspects of this
2 review, and then we will cover the amendments to the
3 operating license that we would propose be a part of any
4 license to be issued.

5 I have Darrell Eisenhut and Harry Rood, the
6 project manager, who will walk us through each of these
7 issues.

8 Darrell or Harry.

9 MR. EISENHUT: Thank you, Harold.

10 We will try to go down through this. If I
11 could have the first slide.

12 This is basically an outline, I think everyone
13 has this package of slides, it has slightly been revised
14 and there are some additional aspects in here since the
15 package we sent down to the Commission last week.

16 Harold just went down the agenda here. We
17 will be walking through it with several different
18 speakers, and when we get to the end, there are a couple
19 of conditions that have been added, and there is at
20 least one outstanding issue that needs to be resolved
21 prior to the issuance of the full power license.

22 I will turn it over first to Harry Rood who
23 will go through the first several topics in the agenda.

24 MR. ROOD: Thank you, Darrell.

25 The first slide gives a little background

1 description.

2 The next slide gives a little background
3 description on the plant and the location. The
4 principal Applicant is Southern California Edison. They
5 are acting as project managers for the facility. There
6 are three other owners, San Diego Gas and Electric, and
7 the Cities of Anaheim and Riverside, but Southern
8 California Edison is managing the project, so we mainly
9 deal with them.

10 It is a pressurized water reactor of a C-E
11 design, as we have mentioned earlier, with a large dry
12 containment. The architect-engineer-constructor is
13 Bechtel Power Corporation. It is an 1100 megawatt
14 electrical plant located in San Diego County, about five
15 miles south of the center of San Clemente, and the
16 population within five miles is estimated for 1980 to be
17 27,000 people. It is the first plant licensed since
18 Arkansas Unit 2 roughly four years ago.

19 COMMISSIONER AHEARNE: Is Unit 3 the same
20 kind?

21 MR. ROOD: Unit 3 is essentially a duplicate
22 of Unit 2.

23 COMMISSIONER ROBERTS: What is the similarity
24 between this plant and the Palo Verde units?

25 MR. ROOD: Palo Verde is a CSAR design, and I

1 think that it is a little bigger. They do share many of
2 the same features. This is not a System 80 plant, but
3 it does have a lot of the System 80 features on it.

4 Going to Slide 3, status schedule. The
5 construction permit was issued in October of 1973. The
6 OL application came in in late 1976, and was docketed
7 for review in March 1977. We issued an operating
8 license for Unit 2 on February 16, 1982, which was
9 limited to operation at or below 5 percent power.

10 The construction schedule of Unit 2 was
11 completed in February 1982. Unit 3 is, per the
12 applicant, going to be completed in November 1982. We,
13 the staff, have a little concern that that won't quite
14 come out that way, but that is what we are working
15 toward on the licensing basis. But there might be a few
16 months slip in that.

17 In terms of start-up schedule for Unit 2,
18 February 16 was the license, and they started loading
19 fuel within a couple of days. Within roughly a month,
20 they got the fuel loaded and the head tensioned. They
21 just achieved criticality on the 26th of this month, a
22 couple of days ago. They are currently critical, and
23 proceeding through their initial tests at criticality.
24 They are scheduled to be above 5 percent power the week
25 of August 16th.

1 The next slide is the first of several issues
2 selected for highlighting here. This slide No. 4 talks
3 about the core protection calculator. This is a
4 relatively new system. It was installed on Arkansas-2.
5 Basically, it uses a digital computer for two of the 14
6 trip functions in the plant protection system. Perhaps
7 Roger Mattson could say a couple of words about this to
8 augment what I have said.

9 MR. MATTSON: It is worth talking about in the
10 sense that it is the second of a kind to go into
11 operation. ANO-2 was the first one to go in with the
12 CPC in place. We are now up to having approved the
13 cycle two operation of the CPC at ANO-2, which is
14 essentially the same as the CPC software that goes into
15 San Onofre Unit 2. The hardware is essentially
16 identical.

17 This is the first design that uses a computer
18 system to process normal control system information and
19 then make decisions for two of the several protection
20 systems functions. In this case, it is low D&B ratio,
21 and high local power density that are the two protection
22 functions.

23 Down through the years there has always been a
24 concern in the regulatory staff with coupling control
25 with protection functions. Remember that we have a lot

1 of buffering between control systems and protection
2 systems. Tying them together in a computer has always
3 raised the spectre of software errors or common mode
4 failures in the design making an error from the control
5 system propagate into the protection system. So there
6 was quite a lot of review given to ANO-2.

7 A rough figure from the computers back home
8 says that 15 man-years of NRR staff work went into the
9 development and review of the criteria for ANO-2, about
10 eight man-years of that went into ANO-2 alone. By
11 contrast there are just several man-months to look at
12 the difference between what is in this Southern Cal
13 Edison machine as opposed to what we have approved for
14 ANO-2.

15 We have had a lot of help from the people at
16 Oakridge on the hardware parts of the machine, or the
17 CPC, and a lot of people at the Pacific Northwest
18 Laboratories in scrubbing the software.

19 We have used this as a model for how not to do
20 computer protection systems in the future. It was the
21 genesis of our invention of third party V&V which you
22 have heard us speak of with the safety parameter display
23 system when we were down here in connection with
24 SECY-82-111. It was from the experience of our having
25 to do the V&V on this design that we decided somebody

1 else ought to do that one because we coulin't afford
2 it.

3 The system has worked well in ANO-2 cycle
4 one. They had some software glitches that they worked
5 out in the course of the first cycle. We are kind of
6 please with the way it is operating, and we expect it to
7 operate well in this plant.

8 CHAIRMAN PALLADINO: Roger you said something
9 that may I misunderstood, but at least it ought to be
10 cleared up for the record. You said that this is how
11 not to do the job.

12 MR. MATTSON: Yes.

13 CHAIRMAN PALLADINO: What were you referring
14 to?

15 MR. MATTSON: Spending 15 man-years to look at
16 one component in the machine. When we only spent about
17 20 man-years total looking at the whole reactor for an
18 operating license, and spending 15 on one little piece
19 of the protection system is too much.

20 CHAIRMAN PALLADINO: It was not that you had
21 any concern about it.

22 MR. MATTSON: No, we did a good job, it was
23 just too expensive.

24 CHAIRMAN PALLADINO: Thank you.

25 COMMISSIONER AHEARNE: Roger, do they have

1 plans to go beyond just those two functions?

2 MR. MATTSON: I am sorry.

3 COMMISSIONER AHEARNE: Do they have plans to
4 expand the system beyond the two that are now
5 controlled?

6 MR. MATTSON: To more protection functions, I
7 will have to ask Larry Philips, I don't know.

8 No, this design sticks with these two. They
9 will continue to make software changes and continue, I
10 am sure, to eat away at a little of the margin that we
11 have reserved as we get our feet wet with this first of
12 a kind. We will keep up with those reviews through
13 subsequent cycles, but no more functions will be added.

14 There are other designs by other
15 manufacturers, and maybe even another design by
16 Combustion, for advanced control rooms that put
17 computers into many more protection functions.
18 Westinghouse has an offering that has all of them in the
19 computer.

20 CHAIRMAN PALLADINO: Roger, you said once that
21 this was previously used in ANO-2. I got the feeling
22 that this was the second plant in which we are using
23 it. Then you said that this is the first of a kind.

24 MR. MATTSON: I meant that this core
25 protection calculation, which is being used in ANO-2 and

1 San Onofre, and in other plants, is the first computer
2 based protection system in any nuclear plant in the
3 country. That is what I meant. This CPC is the first
4 of a kind. This plant is the second one that it is
5 incorporated in.

6 CHAIRMAN PALLADINO: Thank you.

7 MR. ROOD: Thank you, Roger.

8 Slide five introduces the PORV, or system
9 depressurization question, and I would like to turn that
10 over to Harold Denton to discuss.

11 MR. DENTON: I wanted to give a little
12 background on the role PORVs in our review of this
13 plant. The staff attention given to ways to remove
14 decay heat right after TMI resulted in the adoption in
15 our standard review plan of reliability goals for
16 auxiliary feedwater systems.

17 So it was recognized that ways to remove decay
18 heat from a plant that had shut down were very
19 important, so we adopted in the standard review plan a
20 requirement that auxiliary feedwater systems be shown to
21 be reliable in the range of 10 to the minus 4 or ten to
22 the minus 5, and this plant was reviewed against that
23 criterion.

24 We also had initiated unresolved safety issue
25 A-45 to help address the question, should we have even

1 better means of removing decay heat. We had a number of
2 things in mind that are being addressed by A-45, but the
3 results of that will not be available for 18 months or
4 two years.

5 During the course of the review, we received a
6 memo from Research which pointed that they thought
7 perhaps the reliability goals would not be achieved
8 based on the type of experience that we were getting --

9 COMMISSIONER AHEARNE: On the aux feed?

10 MR. DENTON: -- on the aux feed system. So we
11 brought this to the attention of the ACRS. We reviewed
12 the aux feed system again, taking into account the
13 experience we had gained over the past decade with
14 auxiliary feedwater systems.

15 If you look at aux feed systems and PORVs
16 against the safety goal of the Commission, it is sort of
17 interesting. The precursor study shows that aux feed
18 systems are not achieving the desire reliability mainly
19 because of common mode failures, maintenance type
20 problems where the valves or bolts are tightened too
21 tight, or not properly maintained.

22 So there has been a suspicion on the staff
23 that once the unresolved safety issue study was
24 complete, it might show that small break of coolant
25 accidents coupled with the actual in-place performance

1 of auxiliary feedwater systems might prevent plants from
2 meeting the 10 to the minus 4 goal if they didn't have
3 other ways to provide core cooling, such as a PORV, a
4 high pressure RHR, or automatic depressurization system,
5 and there were a number of such schemes.

6 It is these kinds of concerns which led us to
7 make this area an unresolved safety issue. It also led
8 us to conclude in the safety evaluation report that we
9 wanted further study of this area. Even though we
10 thought the plant was adequate in the interim without a
11 PORV, we were obtaining further studies of this from
12 Combustion, and had in mind that they would complete
13 such a study within about a year.

14 Coming back to the safety goal, and the way we
15 propose to implement the safety goal is, if you are
16 above the ten to the minus 4 range, you look to see what
17 it means for health effects off-site. The types of
18 accidents where the PORV plays an important role with
19 regard to mitigating core damage are not those in which
20 you would expect large off-site radiological
21 consequences.

22 Let me say that another way. If a PORV is to
23 be effective in the small break loss of coolant
24 accident, it must mean that you have got AC power to
25 power HIPSI, and if you have AC power, then you probably

1 are able to operate containment fan coolers, containment
2 sprays and these kinds of things, and therefore you tend
3 to mitigate.

4 So even though we might eventually conclude
5 that a plant with nothing more than a very reliable
6 auxiliary feedwater system would be above the ten to the
7 minus 4 safety goal, it probably will not make a great
8 deal of impact in terms of whether or not it meets the
9 off-site dose consequences. In fact, I would speculate
10 that the absence of a PORV would not greatly affect the
11 off-site consequences.

12 What I am trying to say is, even though you
13 may be above ten to the minus 4, you may not be able to
14 see that in terms of what the acute or latent health
15 effects are off-site from a full spectrum of risk. If
16 you were to use ALARA as the basis for backfitting of
17 the plant, I would speculate that you would not be able
18 to backfit very much into a plant that had a reliable
19 auxiliary feedwater system.

20 It was these kinds of concerns within the
21 staff that resulted in this area getting an awful lot of
22 attention during the review. These areas were discussed
23 with the ACRS. We notified the Boards with regard to
24 some of these issues. What I would like to do now is
25 have Roger Mattson summarize for you the conclusions in

1 this particular case, and the license conditions that we
2 propose to add into this license to reflect some of the
3 interest of the Commission.

4 CHAIRMAN PALLADINO: I wanted to ask you,
5 aren't there circumstances such as -- Let me ask it this
6 way. If you have steam tube failures, will the systems
7 in place enable you to handle it with the ease, for
8 example, that it was handled at Ginna?

9 MR. DENTON: The cases in which you have steam
10 generator tube ruptures, and if you are only have two
11 steam generators in the plant, and the other one isn't
12 effective for some reason, then it is really desirable
13 to have an alternative way to cool the core. It is
14 because of the concern about cooling the core under
15 certain small break loss of coolant accidents that we
16 have always tried to ascertain whether we have adequate
17 back-up means or not.

18 But I was trying to compare to the safety goal
19 of the Commission.

20 CHAIRMAN PALLADINO: I was thinking from a
21 depressurization as well as a heat removal standpoint,
22 to reduce leakage, that presumably you might want to
23 reduce the pressure in the primary system.

24 MR. DENTON: Then you get into questions of
25 how good is the pressurizer spray system, how many pumps

1 feed the spray, and what other means you have for
2 cooling the core.

3 CHAIRMAN PALLADINO: Will your study, or
4 whatever is being asked for, will it address both the
5 depressurization and the heat removal questions?

6 MR. DENTON: Yes, it will. What I would
7 propose to do is to have Roger walk you through our
8 particular findings on San Onofre and what we would
9 propose to add in the license, to assured that when we
10 make a decision in this area, we have got as much
11 information as we can have.

12 CHAIRMAN PALLADINO: Commissioner Ahearne.

13 COMMISSIONER AHEARNE: Before that, can you
14 give me a little background. Have C-E plants never had
15 PORVs?

16 MR. DENTON: I think they have had them. Let
17 me ask.

18 COMMISSIONER AHEARNE: I am sure they have.

19 MR. DENTON: This particular breed of plants
20 doesn't have it.

21 COMMISSIONER AHEARNE: I am sure they did, but
22 not all of them.

23 MR. DENTON: Not all.

24 COMMISSIONER AHEARNE: I am sure that the
25 staff at some point must have addressed with C-E putting

1 in PORVs. So there must be some arguments both for and
2 against. I wondered, in this presentation that Roger is
3 about to give, whether he can also comment on what are
4 the arguments on the other side.

5 MR. DENTON: I would propose that we discuss
6 this plant first. We have never been able to settle the
7 pros and cons. Remember, we have talked about, right
8 after TMI, closing the block valve so that PORVs would
9 not be a potential cause of an accident. We have looked
10 a lot more at this those days.

11 I would propose that we switch to the review
12 of this plant and discuss the generic issue for all
13 plants.

14 COMMISSIONER AHEARNE: If you just quickly
15 sketch the arguments for and against. I think I
16 understand the arguments for. What are the arguments
17 against, just on a generic basis, then I think I can
18 better follow the argument that might be made on this
19 plant.

20 MR. DENTON: Roger, do you want to hit both
21 sides of that?

22 MR. MATTSON: A stuck open PORV was the cause
23 of the accident at Three Mile Island, and as a source of
24 a potential small break LOCA, it is a risk contributor.
25 That is the argument against. That was the reason that

1 Combustion-Engineering took it out of the System 80
2 design, and in fact took it out of some designs in
3 advance of System 80, namely San Onofre and ANO.

4 COMMISSIONER AHEARNE: All right.

5 MR. MATTSON: The reason the PORV is there in
6 all the other designs, and was originally there in the
7 Combustion Engineering design, was to avoid challenges
8 to the safety relief valve, so that plants could ride
9 certain over-pressurization transients without opening
10 and challenging the safeties.

11 Given that the System 80 design, the evolving
12 C-E design, didn't propose to try to avoid those
13 challenge, it wasn't going to try to ride those
14 transients out, was in fact going to trip the reactor
15 for those transients, then it was a source of a small
16 break LOCA that they saw they could remove and they
17 decided to remove it. That is the downside of adding a
18 PORV.

19 In fact, as you will see, when we get to the
20 license condition that we have proposed to add for this
21 plant, we have ceased calling it a PORV, it isn't what
22 we are interested in for this plant, it is a
23 depressurizing capability that PORVs in some plant might
24 be good at, and at other plants may not be worth
25 anything as I have explained, I guess.

1 CHAIRMAN PALLADINO: All right, do you want to
2 go ahead.

3 MR. MATTSON: Yes. Let me start with your
4 question, Mr. Chairman, about the depressurization
5 capability at San Onofre in view of what we saw at Ginna
6 and the need to depressurize the primary system.

7 The way the San Onofre design works today,
8 there are two ways to depressurize the primary system,
9 either by heat removal from the steam generators, if you
10 had a steam generator tube rupture event like Ginna,
11 then you could depressurize using the infaulted steam
12 generator, which is one way to depressurize.

13 Another way to depressurize is to use the
14 spray in the pressurizer. With off-site power, and
15 reactor coolant pumps operational, which you hope to
16 have be the situation for steam generator tube ruptures,
17 that spray works off of the reactor coolant pumps.

18 For the case where the reactor coolant pumps
19 are tripped, which would be the instance if you lost
20 off-site power, then San Onofre has a safety grade
21 auxilliary spray system, which is driven by make-up
22 pumps, or high pressure safety injection pumps in this
23 design. That auxilliary spray system is particularly
24 effective for reducing the primary system pressure down
25 to the range of the secondary system pressure, that is

1 down to 1,000 to 1,200 p.s.i. It is not very useful for
2 going below that pressure.

3 Further depressurization is impossible in this
4 design unless there were some addition of valves. There
5 are no other valves that you could open up and
6 depressurize with. There are small valves, drain lines
7 that are not remotely operable in all likelihood. There
8 are the vent lines for the non-combustible gases that we
9 added as a result of lessons learned from Three Mile
10 Island. Those are all very small and not a controlled
11 way to depressurize the system.

12 Does that go to your question? The question,
13 I take it to be one of reducing exposures off-site in
14 the event of a steam generator tube rupture, which this
15 plant can do either through the unfaulted steam
16 generator or through the spray system to the
17 pressurizer, with and without off-site power. It
18 doesn't need this capability.

19 CHAIRMAN PALLADINO: Except, without off-site
20 power, you can only go down to 1,000 p.s.i.

21 MR. MATTSON: That is right.

22 COMMISSIONER AHEARNE: What would the
23 significance of that would end up being?

24 MR. MATTSON: I am sorry.

25 COMMISSIONER AHEARNE: What would be the

1 significance of that if you could only get down to 1,000
2 p.s.i.

3 MR. MATTSON: The way we do calculations for
4 consequences, it would be man-rems. It is not
5 insignificant numbers, significant fractions of the
6 off-site doses, for example, at Ginna. It is not small
7 percentages, it is factors. Cut it in half, cut it by a
8 factor of three or four.

9 COMMISSIONER AHEARNE: Of the exposure at
10 Ginna?

11 MR. MATTSON: Yes.

12 CHAIRMAN PALLADINO: Does your proposed study
13 include looking at alternative ways of depressurizing or
14 perhaps even, whether or not it is needed, to
15 repressurize below this 1,000 p.s.i.

16 MR. MATTSON: Why don't you let me go through
17 the next three slides, and I think you will see the
18 progression of what we have done so far, and what we add
19 to that.

20 On this slide that is up, the first statement
21 is that those C-E plants do not have power operated
22 relief valves. Let me try to be a little more specific
23 than that. I know you are aware that there have been
24 some changes in this area in the last few days.

25 Of the plants yet to be licensed of Combustion

1 Engineering design, St. Lucie has PORVs, they are
2 installed, and they will be wired up and ready to go
3 this fall. Palo Verde has made a decision on its own to
4 add PORVs.

5 COMMISSIONER AHEARNE: Could I ask a question
6 on that?

7 MR. MATTSON: Yes.

8 COMMISSIONER AHEARNE: You add, on its own.
9 This was solely, then, Palo Verde's decision?

10 MR. MATTSON: Yes.

11 COMMISSIONER AHEARNE: There was no
12 encouragement by the staff?

13 MR. MATTSON: Palo Verde was involved in the
14 dialogue among the staff, the ACRS, and itself on
15 whether they should be added. We didn't strong-arm them
16 into these PORVs, they made the decision themselves.

17 COMMISSIONER AHEARNE: Do you know what was
18 the tipping factor for them?

19 MR. MATTSON: Yes, I think operational
20 flexibility for events, complicated events that are
21 different than our stylized design basis events. I have
22 that information second-hand. I don't have that
23 straight from Palo Verde but from Combustion
24 Engineering.

25 WNP-3 has a study underway by Abasco to decide

1 whether to add PORVs. They may do it. Waterford and
2 San Onofre have decided not to add PORVs.

3 Commissioner Roberts, I am sorry.

4 COMMISSIONER ROBERTS: Yes. Who would make
5 that decision?

6 MR. MATTSON: The licensee in this case.

7 COMMISSIONER ROBERTS: How much would they
8 rely on their architect-engineer? I guess that would
9 vary.

10 MR. MATTSON: They would rely on their
11 supplier to do the study, to tell them.

12 COMMISSIONER ROBERTS: Bechtel is the
13 architect-engineer at San Onofre and they decided not to
14 opt for the PORV. Bechtel was the architect-engineer
15 for Palo Verde.

16 MR. MATTSON: I am not certain the
17 architect-engineer made the decision.

18 COMMISSIONER ROBERTS: Okay, I just wanted to
19 understand the process.

20 MR. MATTSON: In the case of WNP-3, the
21 architect-engineer is doing the study. I think that the
22 decision on Palo Verde was made between the license
23 applicant and Combustion-Engineering.

24 COMMISSIONER AHEARNE: What is Combustion's
25 position?

1 MR. MATTSON: Combustion's position is that
2 after WNP-3, they will add PORV to CSAR. No, I am
3 sorry.

4 CHAIRMAN PALLADINO: To who?

5 MR. MATTSON: I said it wrong, let me say it
6 again. After WNP-3, they will add a depressurization
7 capability to CSAR.

8 COMMISSIONER AHEARNE: Is that a to be
9 designed depressurization capability, or is that just a
10 euphemism for PORVs?

11 MR. MATTSON: We haven't seen it. In fact, in
12 the licensing form, they have told us that it is
13 unnecessary for safety. That continues to be their
14 official posture vis-a-vis licensing of the CSAR
15 design. But they have underway internally design
16 studies.

17 COMMISSIONER AHEARNE: You say that their
18 position is that it is unnecessary for safety, but they
19 are going to add it?

20 MR. MATTSON: They have told us on the CSAR
21 docket that it is net necessary for safety, or to meet
22 the Commission's regulations. Off-the-docket, they have
23 told us that they have underway design studies for this
24 operational flexibility for complicated events within or
25 beyond the design basis of their concern, where they are

1 undertaking to look at such a design.

2 MR. DENTON: They know we have it under
3 consideration, and it is flagged for further study, and
4 I think some of them are coming to their own conclusions
5 about where they may come out. But we have not required
6 it of Palo Verde or these others.

7 What we have required in this particular case
8 is that a study be done and provided on San Onofre.
9 That is where the SER leaves the case.

10 MR. MATTSON: I will say more about that
11 second bullet on the next slide. Let me skip to the
12 third one.

13 The basis for interim acceptability of San
14 Onofre has been that they have a reliable aux feedwater
15 system, and a high quality way to go to cold shutdown,
16 and state-of-the-art steam generators, and every
17 expectations that they can meet the reliability criteria
18 of the standard review plan, in addition to the
19 deterministic requirements of the Commission's
20 regulations. They are fully in accord with our
21 regulations.

22 COMMISSIONER ASSELSTINE: Was the reliability
23 of the auxilliary feedwater system upgraded in the case
24 of this plant?

25 MR. MATTSON: This plant, yes, added a third

1 aux feedwater pump, and there may have been other
2 changes of a smaller scale. But it was upgraded in
3 order the ten to the minus four/ten to the minus fifth
4 criterion.

5 COMMISSIONER ASSELSTINE: Was this done at our
6 direction or insistence.

7 MR. MATTSON: It was done under a review
8 pursuant to the lessons learned from TMI.

9 COMMISSIONER ASSELSTINE: Was that done on the
10 theory that by upgrading the auxilliary feedwater
11 system, that then the PORV would not be necessary?

12 MR. MATTSON: No.

13 COMMISSIONER ASSELSTINE: It was separate?

14 MR. MATTSON: Having done what we did to
15 assure a reliable secondary system, our argument has
16 been that it was not necessary to do more than have a
17 reliable secondary system, which is the traditional
18 reading of the Commission's regulations.

19 It was subsequent to those decisions when
20 people began to say at the ACRS and internal to the
21 staff that you may not be achieving the reliability of
22 aux feedwater that you say you are trying for on paper,
23 and in addition there may be other ways to defeat the
24 secondary system by failing two steam generators at once
25 in a two-steam generator plant, or by failing the

1 primary system through a steam generator tube rupture,
2 and then failing the faulted steam generator through a
3 stuck open relief valve and having an uncontained LOCA,
4 the pressure relieving capability is also useful there
5 as a backup to the secondary system.

6 As those arguments began to gel, and people
7 began to put a little more urgency into this decision
8 because of San Onofre and Palo Verde coming on line, we
9 began to see the need to look at feed and bleed,
10 depressurization capability for these beyond design
11 basis, beyond curve requirements kinds of concerns,
12 which really brought me into the next slide, if you want
13 to switch that one.

14 CHAIRMAN PALLADINO: Could you refresh my
15 memory, Roger, on the loops in steam generators on this
16 plant?

17 MR. MATTSON: Two-loop, two by four plants.

18 CHAIRMAN PALLADINO: Give me for a steam
19 generator.

20 MR. MATTSON: Two steam generators, four
21 pumps, inverted tube steam generator.

22 MR. DENTON: I would like to go back just a
23 bit to pick up on one of your questions.

24 When we picked this ten to the minus four goal
25 for auxilliary feedwater systems, I think it was in

1 recognition that the probability of a small break LOCA
2 where the system might be called upon, either through a
3 steam generator tube rupture, or pump seal failure, was
4 more a ten to the minus two than what was in WASH-1400.
5 In WASH-1400, I think it was more like ten to the minus
6 three.

7 We were recognizing that the probability of a
8 small break LOCA moved up a decade to ten to the minus
9 two, then you would ask yourself, what kind of
10 reliability should you have for removing heat for this,
11 and that is how we picked the ten to the minus four/ten
12 to the minus five design goal for this system, so when
13 you couple those two together, you would not make small
14 break LOCA followed by a loss of feedwater a dominant
15 sequence.

16 What is beginning to cause us the unease in
17 this area is the fact that studies like the precursor
18 study show that we are not being able to achieve in
19 actual practice the ten to the minus four goal, where
20 that would indicate more like ten to the minus three.

21 What we have done in this case, we went with
22 the precursor study, looked at all those events that led
23 to a loss of auxilliary feedwater function during the
24 first decade in that study, and compared those causes to
25 the design at San Onofre.

1 We think that it has got additional protection
2 in there, so that those kinds of problems that cause
3 failures in the first decade are somewhat covered in the
4 design. But nonetheless, we were sufficiently uneasy
5 about the match-up between the reliability of the system
6 and the probability of loss of core, that we did require
7 this utility to commit to doing further study on this.
8 That would come out at about the same time our
9 unresolved safety issue came out, and we could address
10 this issue generically.

11 COMMISSIONER ASSELSTINE: I understand what
12 you are saying. You are still not quite sure that even
13 with the upgrades, this system will meet the ten to the
14 minus four reliability design goal that you set for the
15 system in this case.

16 MR. DENTON: Without some other additional
17 feature built into the plant. This one does have the
18 one feature we have mentioned, the special feature for
19 pressurized spray valves which tends to help this
20 problem.

21 COMMISSIONER AHEARNE: You say that you did
22 have them put in a third aux feed train. Is that what
23 you said, Roger?

24 What modification did they make to the aux
25 feed system, put in a third?

1 MR. MATTSON: A third pump.

2 COMMISSIONER AHEARNE: Now, is that also what
3 was done at Palo Verde?

4 MR. MATTSON: Let me make certain. Did they
5 add a third pump, or did they cross-connect?

6 MR. EISENHUT: If I am not mistaken, at Palo
7 Verde, the third pump is a control grade pump. I should
8 point out that at San Onofre, it is really a third pump
9 on a two train system.

10 MR. MATTSON: Yes.

11 MR. EISENHUT: It is not a three-train
12 system.

13 MR. MATTSON: It is a third pump at Palo
14 Verde, but it is the train.

15 MR. EISENHUT: It is a different arrangement
16 when you go through the overall reliability.

17 MR. MATTSON: There is a spectrum of what
18 people do to meet this reliability criterion. At Byron,
19 they have cross-connected power supplies rather than add
20 a third pump, which gives a higher reliability and puts
21 them in the ten to the minus four/ten to the minus
22 five.

23 CHAIRMAN PALLADINO: What do you mean by
24 control grade pump?

25 MR. EISENHUT: A better characterization would

1 be, it is not necessarily a safety grade.

2 COMMISSIONER AHEARNE: It is a lower grade.

3 MR. MATTSON: For reliability performance, not
4 for function under severe conditions. So in order to
5 get to the reliability, you can do it with less than
6 safety grade equipment.

7 CHAIRMAN PALLADINO: Could we find out how we
8 stand with our connection.

9 COMMISSIONER AHEARNE: The red light went out,
10 so we will have to call back, I think.

11 MR. MATTSON: Maybe I could plow ahead with
12 this second slide we had on the depressurization
13 capability minus Region V.

14 Let me just start from the top and get us back
15 on track. We have concluded that for the current design
16 basis that a depressurization system was not necessary,
17 if there was not unacceptable challenge to safety relief
18 valves, and we had found the auxilliary feedwater system
19 to have a high reliability.

20 Nevertheless, we are confident that a reliable
21 depressurization system could be designed. What that
22 means is, you could put a depressurization system on
23 that would add more to safety than it would detract --
24 Remember, we already said that it would detract from
25 safety by creating the possibility of a small break LOCA

1 -- but with the requirements to monitor the tailpipes of
2 relief valves and to have positive indication, and to
3 put a block valve on, and all of those things we have
4 learned to do in some of these non-safety relief valves
5 since TMI. We are confident that it has as a design
6 basis that it be reliable, you could design one.

7 COMMISSIONER AHEARNE: Should I infer, from
8 the way you have described that that at the present time
9 you know of no such design?

10 MR. MATTSON: I have not seen on paper such a
11 design submitted. I have heard idea about such a design
12 that give me confidence that one could be built, yes.

13 COMMISSIONER AHEARNE: I am not talking about
14 the -- I would agree with you in having confidence that
15 you could do it. I was just asking if there is one
16 existence.

17 MR. MATTSON: No. Neither Palo Verde nor
18 CSAR, both of whom we know to be looking at designs,
19 have said anything in particular about this design.

20 COMMISSIONER AHEARNE: Nor any other PWR?

21 MR. DENTON: I can tell you some of our
22 thoughts. I don't think we have to -- If you wanted a
23 real gold plated feed and bleed system --

24 COMMISSIONER AHEARNE: I am not looking for a
25 gold plated system.

1 MR. DENTON: Let me give you a first class
2 feed and bleed system, it would not be a PORV, it would
3 be control valves. PORVs are not the easiest things.
4 If you really want to have an ability to feed and bleed,
5 PORVs are not the desirable valves, you would have
6 control valves. You would be more careful about where
7 the water goes when it comes out of the valve. Instead
8 of just spraying in the containment, you would probably
9 pipe it down.

10 So we have thought about that kind of thing,
11 but we have decided that we would not make any
12 recommendations in that area until we had the study on
13 the unresolved safety issue behind us.

14 COMMISSIONER AHEARNE: But do any of the PWR
15 manufacturers have such a system that meet your criteria
16 in existence at the present time?

17 MR. DENTON: Many of them have PORVs.

18 COMMISSIONER AHEARNE: I understand that.

19 MR. DENTON: We don't have as a design
20 criteria that they be designed to feed and bleed
21 reliably, and so forth. They have been considered a
22 back-up to the auxilliary feedwater system.

23 COMMISSIONER AHEARNE: I understand that.

24 MR. MATTSON: They are better than we thought
25 a couple of years ago. They have gone through EPRI

1 testing, and the block valves have better assurance and
2 that sort of thing. But, again, they had as a design
3 basis the protection of the safety relief valves from
4 unnecessary challenges.

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1 We are talking about an ability to
2 depressurize to a particular head flow curve on a
3 high-pressure injection system in a particular time
4 frame with high reliability of not only opening but of
5 controlling and closing and blocking if the PORV, the
6 new valve, whatever it is called, were to stick open.
7 And those are different design bases than they
8 originally had.

9 COMMISSIONER AHEARNE: I understand that,
10 Roger. My question really is you had just finished
11 talking about CE was not yet ready with such a design,
12 and my question was very simply --

13 MR. MATTSON: No one else's either. We have
14 not seen it from anyone.

15 Okay. The third bullet here. It is clear
16 that as a backup to the secondary system, it is
17 desirable to have this flexibility. It is hard to
18 estimate what the likelihood is of losing the secondary
19 system. We can give you assurance that the reliability
20 of the aux feedwater, we are able to design it and
21 review designs of it in the range of 10⁻⁴, 10⁻⁵. Yet
22 operating experience continues to belie that.

23 Failure of two steam generators or one steam
24 generator plus operational error or one steam generator
25 plus a failure of a steam generator relief valve, those

1 are complicated events without a lot of experience. And
2 whether they meet the 10⁴ is the subject of ongoing
3 study today.

4 So as a backup to that it would be desirable
5 to have the depressurizing capability. In fact, most
6 operating PWRs today have a depressurizing capability by
7 virtue of their PORVs.

8 If I could digress on that for a moment. We
9 have had a couple of questions from Commission staff on
10 what the status is for operating reactors.

11 They come in three classes. The best class
12 are those seven or eight operating B&W plants that have
13 high-pressure injection capability all the way up to the
14 safety relief valve set-points and can either remove
15 decay heat via the safety relief valves or the PORVs and
16 need not have a secondary system if they have enough
17 high-pressure injection pumps operating. So that is a
18 pretty good capability. That plus the EPRI tests of
19 PORV capability with two-phase flow gives you a fairly
20 high confidence in the feed-and-bleed capability of
21 those machines.

22 The next class of machines are the
23 Westinghouse and Combustion Engineering designs, of
24 which there are two subsets. There is a subset that has
25 a very high-head high-pressure injection capability, but

1 not as high as the B&W plants. And there is another
2 subset that has a lower high-head injection capability.

3 For both subsets they have enough PORV
4 capability to remove the decay heat. They depend on
5 manual operation of the PORV to do that. And the
6 discomfort with those operating plants is that they
7 haven't any procedures in place nor is there a high
8 degree of analytical or experimental verification of
9 their ability to cool by feed-and-bleed.

10 So although they have PORVs, they do not have
11 high assurance of an ability to cool by feed-and-bleed.
12 Let me give you two examples -- I will give you three
13 examples.

14 ANO-2 has no PORV, but we include it in this
15 second class because it has a 4-inch vent line. That is
16 bigger than a PORV. Your superficial judgment would be,
17 that is good. But when you look at the system, it is a
18 plumber's nightmare. It was put there for flushing,
19 back-flushing the system of boron. It was not put there
20 as a pressure-relieving capability at all. And we do
21 not even know whether the valve will open at full
22 reactor pressure.

23 So a superficial examination would tell you
24 that looks like a good depressurizing system. It needs
25 an engineering evaluation before you draw any comfort

1 that ANO-2 has a feed-and-bleed capability.

2 Another example is another CE reactor, Calvert
3 Cliffs, which has a PORV, but whose operation depends
4 upon an operator going behind the console, opening up a
5 high-voltage cabinet, reaching by high-voltage
6 connections, manipulating a lever that the man on the
7 other side of the control console tells him whether he
8 is having the right effect or not. So that is not very
9 well human-engineered. If you wanted to depend upon a
10 feed-and-bleed capability, again you would have to know
11 more than it has a PORV.

12 A third example is the Yankee plant, where it
13 is a close call between the high-pressure injection
14 capability and the depressurization capability of the
15 PORV.

16 The point I want to leave you with is: do not
17 jump to the conclusion that just because a plant has a
18 PORV it has a feed-and-bleed capability.

19 Finally, there is a third set of operating
20 plants, of which there is only one, Davis-Besse, which
21 does not have the capability to remove decay heat by
22 feed-and-bleed. It has a low-pressure high-head
23 injection system and an inadequately sized PORV to get
24 to the point where the high-head system could keep up
25 with decay heat.

1 CHAIRMAN PALLADINO: I did not get the meaning
2 of the whole last phrase.

3 MR. MATTSON: Well, the Davis-Besse plant
4 cannot feed-and-bleed and remove decay heat without a
5 secondary system. It needs at least a partial secondary
6 system.

7 CHAIRMAN PALLADINO: But it has got other
8 means for decay heat removal?

9 MR. MATTSON: Yes. Yes. The auxiliary
10 feedwater system, the steam generators are its way of
11 removing decay heat.

12 CHAIRMAN PALLADINO: Did I check to see if our
13 California friends are on the line? Bob, are you on?

14 MR. ENGELKEN: We are here, Mr. Chairman. Can
15 you hear me?

16 CHAIRMAN PALLADINO: Yes. Very well. Thank
17 you.

18 MR. ENGELKEN: Mr. Chairman.

19 CHAIRMAN PALLADINO: Yes.

20 MR. ENGELKEN: We can hear.

21 MR. MATTSON: I think let me conclude this
22 slide by saying we had decided at SER time for the San
23 Onofre units to require a study to examine the need for
24 a pressure-relieving capability on this design. Some 14
25 questions were filed with Combustion and Southern Cal

1 Edison, due to be complete in the March 1983 time frame.

2 We are today recommending --

3 CHAIRMAN PALLADINO: Focused on?

4 MR. MATTSON: The need for a
5 pressure-relieving capability.

6 For the 14 questions, if you were to read them
7 -- I have a copy here -- would cover the briefing you
8 have been getting on all of the interest in that
9 pressure-relieving capability, including the one I
10 jumped over on ATWS.

11 We are now recommending that we strengthen
12 that requirement by a license condition, which is on the
13 next slide, requiring this licensee to submit by July 1,
14 1983, a design of a pressure-relieving capability and
15 ancillary equipment for design objectives that are
16 stated in this licensing condition that need not
17 necessarily meet the General Design Criterion.

18 The flavor we want to leave there is that we
19 believe that the need for pressure-relieving capability
20 is beyond the current design basis. Given that it is
21 beyond the design basis, we believe that the GDC need
22 not necessarily apply and would encourage through this
23 license condition the use of cost-effectiveness analysis
24 and probabilistic risk assessment and the things that go
25 with it to justify the design that the licensee comes up

1 with.

2 COMMISSIONER ROBERTS: What is the reason for
3 the change in the staff position?

4 MR. MATTSON: Well, Harold, do you want to
5 start?

6 MR. DENTON: Well, you could go on to the
7 second part of that. The only thing we are requiring
8 here is that they provide a design so --

9 COMMISSIONER ROBERTS: You initially in the
10 SER wanted a study.

11 MR. DENTON: Yes.

12 COMMISSIONER ROBERTS: Now you are going to go
13 a step farther and require a design.

14 MR. DENTON: Yes.

15 COMMISSIONER ROBERTS: I want to know the
16 basis.

17 MR. DENTON: And the basis for that is that we
18 have got Sandia studying about 12 plants which would
19 look at whether or not we ought to make some
20 improvements in this area. And if we were to decide
21 that improvements were needed, we still would not have a
22 design for any particular plant. We felt for this plant
23 that if we had a design and if we came to a conclusion
24 that something was needed, we would save some time in
25 putting one in.

1 We have not come to a judgment that we really
2 need a PORV in this plant. And you will notice the last
3 block in --

4 COMMISSIONER ROBERTS: I thought we were not
5 talking about a PORV. I thought it was scrupulously
6 avoiding that.

7 MR. DENTON: But the last part of this license
8 condition does not say that you put it in, it says that
9 you provide a design --

10 COMMISSIONER ROBERTS: I understand.

11 MR. DENTON: -- that we can review, and if we
12 come to a conclusion that improvements are needed, it is
13 a commitment from a licensee to put it in.

14 MR. MATSON: Maybe I could help put a little
15 more light on that. At the time we wrote the license
16 condition -- I am sorry -- at the time we required of
17 them that there be a study, we had insufficient
18 information of our own to make a recommendation
19 according to agency procedures that a new design
20 requirement be created.

21 We had indications from a number of sources
22 that people felt it was maybe necessary, but we did not
23 have the information to support such a decision.

24 COMMISSIONER ROBERTS: But you are telling me
25 that in between June 1982 and today you have additional

1 information?

2 MR. MATTSON: We have several kinds of
3 additional information. One is the knowledge that Palo
4 Verde made the decision on their own, which is an
5 important additional piece of information. A second
6 piece of information are two Commission memoranda which
7 tell us that the Commission is interested in whether the
8 design requirements ought to be changed separate from
9 our putting together a formal recommendation to support
10 making a change.

11 Now, we are not proposing to abandon the study
12 of need for adding this requirement. In fact, the
13 previous study that we have required of the licensee
14 stands because we need more information to understand
15 the risk reduction potential of this design change.
16 What we have added to that is more specifics about how
17 you go about doing it, trying to focus people on exactly
18 what it is, the purpose, and the ends that could be
19 achieved by this design change.

20 MR. DENTON: I think the provision of a
21 specific design would sharpen our ability to make a
22 decision. We would be able to answer better what are
23 the pros and cons if we had one in front of us. And
24 since we had already required the study to come due in
25 March of next year, it seemed to be reasonable to

1 require that they provide a study.

2 But we have not come, we still have not come,
3 to a conclusion that we could say one is needed today.

4 COMMISSIONER AHEARNE: Roger, or Harold, What
5 would be the criteria that this system would be designed
6 against?

7 MR. MATTSON: Well, we have specified several
8 in this license condition. Highly reliable is one
9 deterministic criterion. Removal of decay heat without
10 any other system, using the existing makeup systems is
11 another criterion.

12 COMMISSIONER AHEARNE: Highly reliable is very
13 subjective.

14 MR. MATTSON: Well, we have issued 70
15 operating licenses and 100-some construction permits on
16 that basis.

17 COMMISSIONER AHEARNE: Yes.

18 MR. DENTON: Well, let me have a shot at
19 this.

20 COMMISSIONER AHEARNE: In general, that is a
21 judgmental decision, and now you are saying you want
22 someone to design something.

23 MR. DENTON: I think it will come down to
24 being a policy issue by the Commission. We have talked
25 before about how do you implement a safety goal if you

1 had one.

2 COMMISSIONER AHEARNE: Harold, I am asking you
3 a much simpler question.

4 You are telling these people to design
5 something. Now, you had a study under way in which they
6 were going to study whether it was needed. Now, I
7 assume one of the products of that kind of a study is if
8 the answer is, no, it is not needed, that is one side.
9 But if the answer is, yes, it is needed, usually the
10 "it" is somewhat defined, what is needed. But you are
11 here asking them to do design, in effect, in the absence
12 of having done the study of what is needed.

13 MR. DENTON: Right.

14 COMMISSIONER AHEARNE: And I was really
15 asking, since you are not waiting for them to decide
16 what are the criteria, what criteria you were having
17 them design this to. It has to be, obviously, that you
18 have reached the rough conclusion that is needed, and so
19 you have this.

20 MR. DENTON: No, I have not. No, I have not.

21 COMMISSIONER AHEARNE: Well, but you are
22 asking them to design something.

23 MR. DENTON: Well, I am trying to be
24 responsive, and I think that two of the Commissioners
25 who said we should consider this, and I can best

1 consider it if I had a specific design at about the same
2 time the study was coming to completion.

3 COMMISSIONER ASSELSTINE: Yes, I understand
4 what you --

5 MR. DENTON: That is where we are. We
6 finished this review without any requirement other than
7 a study. And we have seen the correspondence between
8 the Commissioners showing an interest in PORVs, and it
9 seemingly -- I thought a way to respond would be to get
10 a specific valve design so that in a year from now we
11 could advise you on whether one is needed or not and we
12 would not lose time. Now, if that is not your desire,
13 that could be accommodated.

14 COMMISSIONER AHEARNE: Why not have the
15 research staff then design it if you are responding to
16 our interest, then why do we not design it?

17 MR. DENTON: Because that is not normally done
18 by research for specific designs.

19 COMMISSIONER AHEARNE: We had set up a process
20 for establishing how you go about doing requirements.

21 MR. DENTON: Yes.

22 COMMISSIONER AHEARNE: And so has this gone
23 through the CRGR?

24 MR. DENTON: No, it has not. But what would
25 go through the CRGR is if when we get the design in and

1 we look at the study at, say, at that time and it is
2 determined that we want to impose a requirement, that
3 would go through the CRGR. I did not see that the
4 design of a valve for one particular plant is the kind
5 of thing that you had CRGR in mind for.

6 COMMISSIONER AHEARNE: Well, it is not a
7 valve, is it?

8 CHAIRMAN PALLADINO: We do not know if it is a
9 valve.

10 COMMISSIONER ROBERTS: It could be a system.

11 COMMISSIONER AHEARNE: It could be, but it is
12 a depressurization system.

13 MR. DENTON: Yes.

14 COMMISSIONER AHEARNE: And I presume that if
15 we end up requiring it here, we would end up requiring
16 it on all CE plants, at least. And I would imagine that
17 if we required it in all CE plants, we may end up
18 requiring it in all PWRs.

19 MR. DENTON: Well, I think that decision was
20 not being made today. It was to be made based on
21 information we got as a result of this proposed
22 requirement.

23 COMMISSIONER AHEARNE: Okay. Perhaps then I
24 ought to ask, since I guess Joe as the chairman was one
25 of the people who --

1 CHAIRMAN PALLADINO: Yes, I was one of the
2 people, yes.

3 COMMISSIONER AHEARNE: What criteria did you
4 have in mind that they should design to?

5 CHAIRMAN PALLADINO: Well, I did not ask for a
6 design. I asked for them to look into whether or not or
7 to what extent we had depressurization system and decay
8 heat system in this plant. And then I also asked them
9 later, too, that I think they ought to look beyond this
10 plant. And the chief problem I have is that
11 depressurization appears needed in the event of steam
12 tube ruptures. And that I intuitively feel we need. I
13 did not try to indicate what criteria we ought to meet.
14 As a matter of fact, I want to ask them some questions
15 about that criteria.

16 COMMISSIONER ROBERTS: Yes. Is it appropriate
17 to ask what the licensee thinks about this?

18 MR. DENTON: I think it is appropriate to ask
19 him. He does not think it is needed, obviously, and did
20 not propose it. But he thinks he could design the type
21 of system that has been provided on other plants within
22 this time frame. And we have talked to him about it.

23 COMMISSIONER AHEARNE: I thought earlier you
24 said there was no --

25 MR. DENTON: But there are PORVs.

1 COMMISSIONER AHEARNE: Well, I guess I go back
2 to an earlier question. Your statement, is this really
3 a euphemism for PORV?

4 MR. DENTON: Well, we are trying to be broader
5 than PORV.

6 CHAIRMAN PALLADINO: Yes, I think you need --

7 MR. DENTON: I think there are other ways to
8 depressurize, and we did not want to limit it to PORVs.
9 So we were going to allow the designer flexibility in
10 proposing a depressurization system.

11 COMMISSIONER ROBERTS: Is it appropriate to
12 ask for a representative of the licensee to address
13 this? I do not know whether they have anybody in the
14 audience.

15 MR. DENTON: Yes, there are people here who
16 could address it.

17 COMMISSIONER ROBERTS: I would like very much
18 to hear what the licensee has to say.

19 CHAIRMAN PALLADINO: Do we have any problem
20 with that?

21 COMMISSIONER AHEARNE: I guess we have to ask
22 our legal counsel.

23 CHAIRMAN PALLADINO: Where is our legal
24 counsel.

25 MR. MALSCH: I do not see any problem with

1 asking. It is not a contested issue at this point.

2 MR. DENTON: I think the vice president of the
3 company is here.

4 CHAIRMAN PALLADINO: Who is it?

5 MR. DENTON: Ken Baskin.

6 MR. BASKIN: My name is Ken Baskin. I am
7 manager of nuclear engineering from Southern California
8 Edison Company.

9 In regard to this matter, I think maybe Roger
10 summarized or Harold summarized it fairly well. From a
11 safety standpoint, we do not think such a system is
12 required. Clearly, in our mind, it is not required to
13 meet the Commission's regulations.

14 We think such a system can probably be
15 designed to provide more benefits or provide an overall
16 benefit; in other words, has more advantages than
17 disadvantages. Again, it has pluses and minuses. We
18 think a system can be designed that strictly from that
19 standpoint has more positive aspects than negative.

20 From the standpoint of whether or not such a
21 system is cost-effective in any sense of the word, I
22 frankly do not know. We do not have any estimates for a
23 system like this. I do not know what it would look
24 like. So whether we would be spending, just to pick a
25 number out of the air, \$10 million for a very minor

1 increment in safety, I just cannot speak to at this
2 point in time. We do not have enough information.

3 The staff asked us if we would agree to do
4 this sort of study, as Mr. Denton said. We did not
5 propose it, but we agreed that if they felt it was
6 required to move ahead, we would proceed and do the
7 design as they have suggested.

8 COMMISSIONER ASSELSTINE: You are talking
9 about the staff's new proposed license condition, or are
10 you talking about the --

11 MR. BASKIN: Staff's new proposed license
12 condition.

13 Does that answer your question?

14 CHAIRMAN PALLADINO: You mentioned \$10
15 million. I missed what the \$10 million was.

16 MR. BASKIN: Oh, I was just picking a number
17 out of the air. My point is I do not know today whether
18 or not it would be, from our perspective at least,
19 justified on a cost-benefit analysis. I do not know
20 what the cost is. I do not have any quantification of
21 the benefits.

22 CHAIRMAN PALLADINO: Well, I have a strong
23 feeling that depressurization capability or some way to
24 control that pressure is a highly desirable feature of
25 these plants. And I am one of the proponents of

1 avoiding all backfitting if we possibly can. But I do
2 feel, based on the insight given by the Ginna incident,
3 that this is a worthwhile thing to do. It was the basis
4 for my memo. You notice I did not say PORV. I spoke
5 about the depressurization system and decay heat
6 removal.

7 COMMISSIONER ROBERTS: I have one further
8 question. Do you have any feel for what the cost of
9 this design will be?

10 COMMISSIONER AHEARNE: The design study?

11 COMMISSIONER ROBERTS: Yes.

12 MR. BASKIN: No, I really do not. My
13 expectation -- and again recognize that I am giving you
14 something off the top of my head -- would be somewhere
15 between a half to three-quarters of a million dollars.

16 COMMISSIONER ROBERTS: Thank you.

17 MR. BASKIN: For the study, not the system.

18 CHAIRMAN PALLADINO: Okay. Any other
19 questions?

20 (No response.)

21 CHAIRMAN PALLADINO: Thank you, Mr. Baskin.

22 Could I ask a question? What do you mean by
23 saying not necessarily meet General Design Criteria 1,
24 2, 3, et cetera? What do those relate to, Harold?

25 MR. DENTON: Roger, do you want to explain why

1 we took those?

2 MR. MATTSON: 1, 2, 3, and 4 are the
3 environmental qualifications, fire protection,
4 high-quality equipment, the sort of general
5 requirements. 14 is the one concerning the quality of
6 the reactor coolant pressure boundary. 30 and 34 have
7 to do with heat removal, residual heat removal.

8 These are criteria that would apply, for
9 example, to the decay heat removal system or to the
10 emergency core cooling system and other systems within
11 the design basis of the plant that were required for
12 decay heat removal.

13 What we are saying in this case is, this is
14 something we think is probably beyond the design basis
15 of the plant but it is a good backup, a desirable
16 quality of a design, and we are trying through these
17 approaches to learn how to use PRA and other reliability
18 techniques for speaking to those "nice to have, but
19 beyond design-basis" requirements.

20 The analogy we have been using in the staff --
21 and it has not come up here today; I am a little
22 surprised -- is the igniters in Sequoyah, MacGuire, D.C.
23 Cook, Grand Gulf. It is the same concept that we are
24 dealing with. They are desirable to have, they are not
25 within the design basis of the plant; if the

1 design-basis equipment works the way it is licensed to
2 work, you would not call upon this system.

3 COMMISSIONER AHEARNE: Can you explain the
4 process you have in mind by the last sentence?

5 MR. MATSON: The last sentence?

6 COMMISSIONER AHEARNE: Yes.

7 MR. DENTON: What I had in mind in the last
8 sentence would be, they would send one in, a design, we
9 would consider that plus the results of the Sandia study
10 and other in-house studies; and if we came to the
11 conclusion that such a system was necessary, we would
12 propose that the bill have a review by the committee for
13 reviewing regulatory requirements, get their views, and
14 come down and get the Commission views, I would expect,
15 on this issue. And then if everyone concurred that that
16 was a desirable action, have the licensee install it.

17 COMMISSIONER AHEARNE: So when you say staff
18 approval, staff approval includes going through the
19 CBGR?

20 MR. DENTON: I would envision the Commission
21 in this case.

22 COMMISSIONER AHEARNE: I guess what was
23 concerning me is that we did have developed some kind of
24 a process to flow requirements through, and it just
25 seemed to be going around it.

1 MR. DENTON: I guess I did not see having the
2 study done as going around it, because I had intended
3 that any generic application certainly would go through
4 it.

5 COMMISSIONER AHEARNE: Well, I just caution
6 you that when you do something for one plant which has a
7 very high probability of then ending up being a
8 requirement for all plants of a class, like PWRs, it
9 probably is not really accurate to describe it as a
10 single-plant issue.

11 COMMISSIONER ASSELSTINE: Yes, I must say I
12 agree with that. I think that the potential generic
13 implications of this are fairly significant, and I think
14 requiring a specific design for this particular plant
15 really does go a long way towards how we are going to
16 respond to the problem. It does not make it a foregone
17 conclusion, but it sure goes in that direction. And I
18 think the way this is being developed does tend to
19 short-circuit the process that we put in place to take
20 away those kinds of issues.

21 MR. DIRCKS: Harold and I talked about it
22 earlier today, and it was moving along, I think, as a
23 result of this particular action. And as we discussed
24 earlier today, we agreed it should be brought back into
25 the more formal channels and subjected to the reviews

1 that you have established for this sort of thing.

2 COMMISSIONER AHEARNE: I guess as just another
3 comment, we are in the midst of a budget review, and
4 part of this budget review is the \$200 million that we
5 spend in research.

6 I guess I am a little puzzled by if we spend
7 all that money in research plus there is some other
8 sizeable chunk of dollars in technical assistance, if we
9 feel that something ought to be designed, I am not sure
10 why we should not then hire somebody to design it.

11 MR. DENTON: Well, mentioning research, I
12 think you should probably hear from Research on this
13 issue. They did write us a memo on this during the
14 course of the review, and you might like to hear their
15 views on how the absence or presence affects safety.

16 COMMISSIONER AHEARNE: Well, that is fine. I
17 doubt if they are going to address this specific comment
18 I just made.

19 MR. DENTON: No; that is right.

20 MR. WATTSON: If I could interject one point,
21 Commissioner, you do get a different kind of design
22 study when you require a licensee to go to his
23 architect-engineer and his NSSS supplier than you would
24 get by going to a national laboratory or someone else
25 with whom we could contract under existing

1 conflict-of-interest requirements.

2 COMMISSIONER AHEARNE: You mean that we could
3 not transfer funds to EPRI to have EPRI have that done?

4 MR. MATTSON: It might be a possibility, but
5 for generating a Commission requirement, we have had
6 some difficulty of that sort in the past.

7 MR. DIRCKS: I can see your point, though.
8 What you are talking about is this is a study to look at
9 the feasibility of the requirement as opposed to the
10 design of a piece of equipment to go in the plant
11 itself.

12 COMMISSIONER AHEARNE: Yes.

13 MR. DIRCKS: I can see the difference.

14 COMMISSIONER AHEARNE: And I think it was
15 clearly described by Harold, it is because the
16 Commission wants it done. It would seem to me that --

17 COMMISSIONER ROBERTS: I don't want it done.

18 CHAIRMAN PALLADINO: At least two
19 commissioners want it done.

20 COMMISSIONER AHEARNE: No. I think I would
21 guess that we are probably all interested in addressing
22 the depressurization question. I do not think there is
23 any doubt about that. I mean what I am just pointing
24 out is that we have a very sizeable budget which, in
25 theory, is spent to answer the questions that we feel

1 have to get answered.

2 MR. DENTON: One more comment, and then I
3 would like to ask Frank Rawson to give his views on
4 this.

5 But basically, I think the staff thought after
6 TMI that our attack on auxiliary feedwater systems would
7 provide adequate level of assurance, and we did this big
8 PRA study and we upgraded auxiliary feedwater systems to
9 what we thought was a high degree of reliability. Our
10 confidence in the reliability now is being somewhat
11 undermined by continuing operating experience where they
12 are not performing as well.

13 And so it is the fact that they are not
14 performing as well as expected that is causing us to
15 look for alternative ways to depressurize. And there
16 are other schemes, such as the high-pressure residual
17 heat removal system instead of the low-pressure system,
18 or a depressurization system such as boiling-water
19 reactors have as an easy way to get pressure down so
20 that pumps could work.

21 But Frank wrote a perceptive memo on this to
22 us which will play a role in our deliberations, and
23 perhaps he would like to discuss it.

24 MR. RAWSON: My name is Frank Rawson. I am
25 deputy director of the Division of Analysis and Research.

1 The comments I am going to make are on the
2 basis of the study I did for that memorandum and are not
3 necessarily the position of the Office of Research.

4 It is my feeling that what we have here is the
5 tip of the iceberg of the major policy problem that you
6 gentlemen have struggled with before in the safety goal
7 arena. I see no incentive to add a depressurization
8 system on the basis of what we know today to protect
9 public health and safety.

10 I do see an incentive to add such a capability
11 to protect the plant from incidents like TMI, from
12 incidents that do not threaten public health and safety
13 directly, but which are immensely costly to the utility
14 suffering them.

15 What our role should be in making such
16 accidents rare is a policy issue that you have struggled
17 with when you have considered whether or not to have the
18 10⁻⁴ criterion for core damage in the safety goals.

19 And to what extent the Commission wants to step into the
20 arena of regulating accident scenarios that probably do
21 not touch off-site radiological risk very much is a
22 ticklish issue, as you gentlemen know.

23 CHAIRMAN PALLADINO: What was your observation
24 with regard to steam tube ruptures so far as reducing
25 off-site doses?

1 MR. RAWSON: I have seen no evidence in the
2 calculations I have done or others I have read that a
3 depressurization system is necessary to protect public
4 health and safety. The scenarios by which the steam
5 generator tube rupture evolves into something
6 potentially threatening to public health and safety look
7 to me to be so low in probability as not to warrant
8 attention under either the ALARA criterion or the health
9 effect-based mortality and morbidity criteria, though it
10 might be the operational flexibility it gives an owner
11 would be useful to him.

12 And in addition, there is a class of accidents
13 in which, as Harold has pointed out, AC power is
14 available, containment cooling systems are presumably
15 available, in which having a depressurization system
16 could make the difference between core damage or core
17 melt and no core damage.

18 CHAIRMAN PALLADINO: May I ask one other
19 question? You referred to studies in this area. Are
20 they studies such as to be able to answer the need for
21 depressurization under various circumstances? And when
22 would that study be done?

23 MR. DENTON: The major in-house study is an
24 unresolved safety issue. I think it is A.45. And I
25 believe that study is not to be completed in total for

1 18 months to 2 years from now. It is being done by
2 Sandia.

3 And it involves a look at several selected
4 representative types of plants that are presently in
5 operation or under review, to give us a firm base so we
6 fully understand the capabilities and the reliabilities
7 of the system, looking at the kinds of problems that
8 Roger saw and described in some of the systems. So that
9 we look fully at the reliability of the auxiliary
10 feedwater system, the HPCIs, the procedures, and the
11 thermohydraulic analyses to support feed-and-bleed
12 operations.

13 So that study, from my standpoint, was to
14 provide the answer to this question. And I would say
15 that is, as I said, a year and a half or 2 years away.

16 CHAIRMAN PALLADINO: Very well. This is an
17 issue I guess we will have to decide as an adjunct to
18 our basic decision.

19 COMMISSIONER ASSELSTINE: Let me ask one other
20 question. How much time would be saved by requiring
21 this design, assuming the possibility that that design
22 might not be what you would want or that it would be
23 what you want?

24 If the decision was ultimately made to go
25 ahead with this system? How much time would you say it

1 might require in the development of the design at the
2 same time that the study is being done?

3 MR. DENTON: Well, I think in the straight
4 sense of San Onofre, you would save a year, or they
5 think it would take them about a year to save this. So
6 if we were to come to a decision that one were necessary
7 before any design was done, then it would cost a year.

8 Actually, I think it will contribute to the
9 quality of the decision to have a real design to look at
10 when we make that decision. So in that sense, it
11 probably goes more to our making an adequate, reliable
12 decision. But at least a year would be saved by that.

13 COMMISSIONER ASSELSTINE: But you did say that
14 the reasons why you came up with this license condition
15 were essentially two-fold: one, that at least two
16 members of the Commission had expressed an interest in
17 requiring the depressurization system as a license
18 condition; and second, that another licensee had
19 voluntarily decided to install one.

20 MR. DENTON: Yes.

21 COMMISSIONER ASSELSTINE: And that those were
22 the two bases.

23 MR. MATTSON: Well, there was a third reason,
24 and I think I got interrupted and I did not get to
25 mention it.

1 And that is, when we called the licensee and
2 asked this licensee of the status of the study we had
3 asked for before and the date by which it would be
4 complete and the involvement of other Combustion
5 Engineering plants and the relation among Combustion
6 Engineering and its clients, we did not have the feeling
7 it was moving aggressively forward and that a firmer
8 condition with a specified end date that got serious
9 about considering real design possibilities would add to
10 the state of knowledge.

11 COMMISSIONER ASSELSTINE: But the original
12 condition has a specified end date, does it not?

13 MR. MATTSON: No.

14 COMMISSIONER ASSELSTINE: It does not?

15 MR. MATTSON: There was, by some oversight, no
16 specified end date.

17 COMMISSIONER ASSELSTINE: Okay.

18 MR. MATTSON: The only commitment we have made
19 on the record is we told the ACRS we would do it in
20 about 12 months, and the ACRS letter said that the study
21 we had described sounded good to them, words to that
22 effect.

23 MR. DENTON: We had not turned that into a
24 license requirement. March was the date that had been
25 understood formally.

1 COMMISSIONER ASSELSTINE: Okay.

2 COMMISSIONER ROBERTS: Well, I have a
3 question. There is some implied criticism of the
4 licensee, and I would like to hear their response.

5 MR. BASKIN: Ken Baskin again.

6 Let me maybe make something clear, because I
7 think when I was here a moment ago, the term "study" was
8 being used maybe synonymously by Roger and maybe
9 differently by me. As I look at it, there are two
10 things happening. One is answers to a series of
11 questions that were sent to Combustion Engineering and
12 to ourselves regarding the overall what I will call PORV
13 situation.

14 The second thing is this specific study for
15 the design of the system, in my mind, those are distinct
16 -- overlap quite a bit, but distinct -- things.

17 I believe what Roger -- apparently, from what
18 you were just talking about, Roger -- was your letter
19 asking these broader questions about the need for
20 PORVs. That was sent to Combustion and to us. I am not
21 sure about any other licensees.

22 The agreement we had with the staff was that
23 we would work with the Combustion Engineering and Owners
24 Group to try or to prepare answers in a timely manner.
25 We were not going at it on any kind of crash basis. We

1 told them, and were under the impression that it was
2 satisfactory, that we would have the answers in about
3 March of next year.

4 So from the standpoint of, you know, this
5 license condition being required to get us to take
6 action on that letter, I guess I would take exception
7 with that statement. We felt we were pursuing it in a
8 diligent manner consistent with the needs of everybody
9 involved.

10 COMMISSIONER ROBERTS: Thank you.

11 CHAIRMAN PALLADINO: While you are there,
12 could I ask you a question?

13 COMMISSIONER ROBERTS: The question included
14 the three bases for this would not drive us to do this.

15 CHAIRMAN PALLADINO: Well, I do not want to
16 debate it yet.

17 Could I ask you, do you know what to do with
18 this, with the words stated here?

19 The question was raised, are the requirements
20 set forth here definitive enough so that you could know
21 what to do?

22 MR. BASKIN: Well, one of the first things we
23 will do is to find what we believe the proper
24 requirements for such a system are. I mean certainly I
25 do not know what they are today, and I do not think

1 anyone knows. But that would be one of the first things
2 we would do as a part of this effort and the effort for
3 answering the other questions.

4 CHAIRMAN PALLADINO: Okay. Thank you.

5 I might also note that CSAR is going to add
6 some depressurization capability after WNP-3, is it not?

7 COMMISSIONER AHEARNE: Yes, that was the point.

8 But I gather what you said, Roger, is that
9 they are in the process of going through a study to
10 conclude what kind of depressurization capability to
11 add?

12 MR. MATTSON: Yes.

13 CHAIRMAN PALLADINO: And I gather even the
14 requirement here would entail looking at what kind of
15 systems are available?

16 COMMISSIONER AHEARNE: Well, as far as I can
17 see, what you have got is you have got the licensee
18 working with the Owners Group to answer a set of
19 questions which are focused on the need for this kind of
20 a system; you have got Combustion working on their
21 system and trying to design a depressurization system;
22 and now what the Commission would do is task the
23 licensee to design a depressurization system, and, I
24 gather, in the same time frame as certainly it is
25 answering on the previous set of questions focused on

1 the need.

2 CHAIRMAN PALLADINO: Okay.

3 MR. DENTON: This concludes our presentation
4 on this topic.

5 (Laughter.)

6 MR. DENTON: Any questions?

7 (No response.)

8 MR. ROOD: If there are no more questions on
9 that topic, I would like to suggest a change in the
10 order of presentation of one of our slides out of
11 order. We have a spokesman for the Federal Emergency
12 Management Agency, FEMA, here with us today for a
13 limited period of time.

14 So if we could jump out of order to the
15 emergency preparedness, which is slide 11 --

16 CHAIRMAN PALLADINO: Okay.

17 MR. ROOD: we would like to cover that at this
18 point.

19 This issue is a contested issue, and I think
20 we have to be careful that we do not wander into
21 territory that we should not. I do not know if there is
22 anybody who would like to speak to that, but --

23 MR. CHANDLER: I agree with that statement.

24 Okay.

25 (Laughter.)

1 MR. ROOD: What I plan to do is simply
2 summarize the status of what has transpired in terms of
3 the hearing dates and so on, and get into the technical
4 details on an issue which is not in contention and which
5 I think the FEMA people can address, and Brian Grimes
6 also will lead off on that.

7 Just starting out, though, going through this,
8 the hearing in this area was held August-September
9 1981. A partial initial decision was reached in
10 January, a complete initial decision in May. We have
11 license conditions which we plan to include in the
12 license per the Board's requirements.

13 All of the issues that would stand in the way
14 of issuing a full-power amendment have been resolved,
15 with one exception. And that exception is an area of
16 off-site emergency planning relating to the ingestion
17 pathway emergency preparedness. This was not an issue
18 under litigation at the hearing.

19 MR. CHANDLER: For purposes of clarity, the
20 issue was initially contested. The Licensing Board
21 ultimately found that it was no longer contested by
22 virtue of the intervenor's failure to file findings on
23 that. That is -- and to that extent, is a matter which
24 may be subject to appeal -- in fact, is involved in the
25 appeal. But the Licensing Board had found in there that

1 it was no longer a contested issue.

2 MR. ROOD: Okay. And I think at this point we
3 would like to ask Brian Grimes of the staff to summarize
4 the situation with this one area.

5 MR. BICKWIT: While you are coming to the
6 microphone, we have faced this question before. It is
7 not an absolutely clear question, but our advice has
8 been that even a denied contention that is subject to
9 appeal is one that can be dealt with in the course of
10 these discussions. Otherwise, you would not have
11 anything on which to base your immediate effectiveness
12 decisions.

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1 If you have no record, you have got to learn about the
2 subject matter some other way, and the way you learn
3 about it is during the course of these briefings.

4 MR. GRIMES: If I can characterize the matter,
5 it is a fairly minor clean-up item that we need to take
6 care of. The existing state of preparedness is such
7 that there is some capability for the ingestion
8 pathway.

9 The State of California and the counties have
10 had some capability to monitor the pool pathways for
11 sometime after the accident, and to take agricultural
12 interdictions measures if they needed to. California
13 has frequently done that in other areas, so there is not
14 much doubt as to the general capability.

15 There are not detailed plans in place which
16 all parties have integrated yet in this matter, and over
17 the next few months those final touches will be put on
18 the plans. There has already been one ingestion pathway
19 exercise in Orange County, and the State of California
20 had observers at that coordinating with the county.
21 FEMA has given us a status report of the state of
22 development of those plans. The region has also given
23 us an overall finding of adequacy because we do have an
24 item in our regulations that specifically calls for
25

1 ingestion pathway plans, we will want to make sure that
2 there is something in place when we give a final
3 authorization for the license. However, based on my own
4 personal knowledge today, I would say that we have good
5 assurance in that area.

6 I would like Vern Adler of FEMA to perhaps
7 speak to just the overall conclusions of FEMA in this
8 area.

9 MR. ADLER: I would say that Brian
10 characterized it accurately. There was a drill in March
11 in Orange County of the ingestion pathway zones. As
12 FEMA observed it, the State Office of Emergency Services
13 and the State Rad Health were represented as observers.
14 They learned from the positive demonstration by Orange
15 County, and they are integrating what they learned from
16 that into what is now an advance status of their own
17 plans development. The schedule for the development of
18 those plans was documented this date to Mr. Grimes and
19 FEMA.

20 CHAIRMAN PALLADINO: Do you have any
21 questions?

22 COMMISSIGNER AHEARNE: Does FEMA have any
23 remnant major concerns?

24 MR. ADLER: Certainly not. We do not.

25 CHAIRMAN PALLADINO: Thank you, Mr. Adler.

1 Do you want to continue?

2 Are you trying to decide what to present to
3 us, or how long it is going to take, or who is going to
4 do it?

5 MR. ROOD: We decided to go back to the
6 presentation and just go back where we had left off
7 before.

8 CHAIRMAN PALLADINO: I am just wondering. I
9 have a feeling that we are going to spend at least
10 another half-hour on this.

11 COMMISSIONER AHEARNE: I would think so.

12 CHAIRMAN PALLADINO: I would suggest a
13 five-minute break.

14 (A short break was taken.)

15 CHAIRMAN PALLADINO: I wonder if we might
16 reconvene.

17 Do you want to go ahead, Harold?

18 MR. DENTON: We will try to move ahead quickly
19 here. The next topic was independent design review. We
20 have sent down the results of the study that was done by
21 the General Atomic Company of the adequacy of the
22 seismic design of San Onofre.

23 We felt that was a very worthwhile endeavor.
24 It did verify the adequacy of the design, which if we
25 can go through the slide. Jim Knight is here to

1 summarize that review, if you would like.

2 CHAIRMAN PALLADINO: Is there a desire to have
3 it reviewed?

4 MR. DENTON: It is slide No. 8.

5 COMMISSIONER AHEARNE: Could I just ask a
6 question on the conclusions?

7 CHAIRMAN PALLADINO: Yes.

8 COMMISSIONER AHEARNE: What type of conclusion
9 did they reach as far as the existing numerical
10 calculations that had been done in contrast with any
11 independent numerical calculations that were done? Did
12 they find that they were generally consistent.

13 MR. KNIGHT: Jim Knight of the staff.

14 Torrey Pines performed two independent
15 calculations, and in one instance they found, as one
16 might expect I would argue in this type of situation,
17 results on the original calculation that were quite a
18 bit more conservative than they got, and one facet of
19 the design, that is the buckling through the sloshing in
20 the tank, that was less conservative than they would
21 calculate, still concluding that the overall design
22 approach for the tank was a valid one.

23 In the other, they looked at the frequency
24 calculation for pump support. In that instance, they
25 calculated quite a different number. They would

1 calculate a frequency in the range of 20 to 30 Herz,
2 whereas the original calculation was something like
3 100-some odd Herz. The question here was one of whether
4 or not that represented a significant difference, one
5 might say, in a large picture, certainly, if you can
6 characterize it as a 400 percent difference or 500
7 percent.

8 In standing back and looking at this
9 particular finding in relation to the overall program,
10 they concluded that the designer had set about here to
11 designed are rigid support, and in fact he had
12 accomplished that. An experienced engineer looking at
13 this type of support would say, yes, that you have met
14 the design objectives.

15 There was, in fact, a numerical error made. I
16 would characterize it as the most difficult of the
17 judgments that had to be made in this process, since the
18 vast majority of all of the investigations here show
19 that there was in effect a design control process, that
20 it was implemented, that the people doing the design
21 were qualified.

22 The whole picture indicated a whole process
23 under control and effective, if you didn't have this
24 one, unfortunately, large sample, one out of two, that
25 seemed to show a large numerical error. They said that

1 they viewed that in the broader perspective, and after
2 reflecting upon it, the staff felt that in that broader
3 perspective their conclusion was a sound one.

4 COMMISSIONER AHEARNE: When you say, for
5 example, that the staff viewed it in a broader
6 perspective, could you say a few more words about that,
7 what you meant about the broader perspective.

8 MR. KNIGHT: The broader perspective being the
9 overview that is gained from all of the other activities
10 that went on. As I said there was very substantial
11 evidence that an effective design control program did
12 exist. There was very good evidence that that program
13 was implemented, and implemented well.

14 COMMISSIONER AHEARNE: Okay.

15 MR. KNIGHT: That is what I mean by the
16 broader.

17 COMMISSIONER AHEARNE: What was the
18 significance as far as the actual design went of that
19 frequency difference?

20 MR. KNIGHT: None whatsoever. There was a
21 rigid support intended, and a rigid support was
22 obtained, and the impact on equipment was negligible.

23 COMMISSIONER AHEARNE: Thank you.

24 CHAIRMAN PALLADINO: Any other questions?

25 MR. EISENHUT: If I could press on, let's go

1 to slide 9. There are a couple of other issues here I
2 will just summarized before we switch over to the
3 region.

4 Shift staffing, the plant is somewhat limited
5 by the number of SROs. They currently have been
6 operating with four shifts, that is two SROs on each
7 shift for a total of eight. They do, however, have
8 other SROs in reserve, in training, and they have other
9 SROs assigned to different functions. They have a group
10 of SROs presently who have undergone testing, and we are
11 examining the exam results, and they have another group
12 coming in the pipeline in December.

13 We recently have discussed this matter with
14 the licensee, who has committed that prior to exceeding
15 5 percent power, he will be staffed with five scheduled
16 operating shifts along the lines of the discussions that
17 were held with the Commission over the last couple of
18 weeks. Four shifts on regularly working, with the fifth
19 shift in the training program, and all evolved to a
20 training program such as that.

21 COMMISSIONER AHEARNE: That is a commitment,
22 then.

23 MR. EISENHUT: That is a commitment.

24 The next slide, if I could, on seismic
25 design. This is meant here only to summarize and

1 highlight a key area and a unique consideration of this
2 plant. It does have a seismic design basis at .67 Gs
3 which is somewhat higher than, of course, most plants in
4 the United States.

5 COMMISSIONER AHEARNE: It is built in an area
6 --

7 MR. EISENHUT: It is built in an area of very
8 high seismicity relative to the rest of the country.

9 The design basis was reexamined during the
10 review process. The plant has a seismic trip at 60
11 percent of the SSE, which was largely based on
12 discussions with the ACRS who has pushed in the
13 direction of a seismic trip for a number of years.

14 This was a hearing issue. That is, the
15 accuracy of the seismic design basis was, in fact, a
16 hearing issue. The decision was appealed, and as
17 mentioned earlier there was a request for a restraining
18 order filed with the Court of Appeals, which was denied
19 very recently. We don't plan on going in any depth here
20 because it was a contested issue, but just to highlight
21 the fact that it was an unusual feature.

22 At this time, we basically have two items left
23 in the overall agenda, that is, the Region V report, and
24 the special conditions we have added to the license
25 amendment of which there are a couple.

1 At this time, I would like to turn it over to
2 Region V to summarize a number of features, including
3 operating experience and delays in operation.

4 CHAIRMAN PALLADINO: Bob, are you still
5 there?

6 MR. ENGELKEN: Mr. Chairman, this is Robert
7 Engelken. Can you hear me?

8 CHAIRMAN PALLADINO: Yes, indeed.

9 MR. ENGELKEN: Can you hear me, Mr. Chairman.

10 CHAIRMAN PALLADINO: Yes, we can, clearly.

11 MR. ENGELKEN: At this time, we are going to
12 have a brief presentation covering five principal
13 topics. The first four will be presented by Mr. Jesse
14 Crews and will cover the operating experience of San
15 Onofre Unit 2. The second topic covers the delays in
16 the test program and in achieving criticality, and the
17 causes of those delays. The third will be the readiness
18 for full power operation. The fourth an assessment of
19 licensee's performance. The fifth will be presented by
20 Mr. Norderhaus who is present in the audience in
21 Washington, and he will briefly discuss the results of
22 Region V's safety/security interface task force review.

23 At this point, I would like to turn the
24 microphone over to Jesse Crews who will present the four
25 first topics, using some slides that have been sent in,

1 and which will be operated by someone in the audience.

2 MR. CREWS: This is Jess Crews. We would like
3 to have viewgraph 12.

4 CHAIRMAN PALLADINO: It is on.

5 MR. CREWS: Assuming that this viewgraph is
6 before you, it is, as the title indicates, the operating
7 experience. We have attempted on this slide to
8 highlight some of the events and milestones during the
9 period from issuance of the license on February 16
10 through the initial criticality on Monday of this week,
11 July 26.

12 I don't intend to go through each of these
13 events. We will field questions you may have. I think
14 there are a couple of events that constituted unusual
15 events in reporting to us. I am going to ask Al
16 Chaffee, who is the senior resident at San Onofre, to go
17 through those, starting with the event of March 14, loss
18 of shutdown cooling.

19 MR. CHAFFEE: This is Al Chaffee, can you hear
20 me?

21 CHAIRMAN PALLADINO: Yes. Can you hear us?

22 MR. CHAFFEE: The loss of shutdown cooling
23 event occurred due to air binding of the shutdown cooling
24 pump. This occurred when they were doing a normal
25 evolution of backflushing of filter at 20 with hydrogen,

1 which hasn't been clearly determined, either due to
2 equipment malfunction or operator error, resulted in the
3 injection of a large quantity of nitrogen into the
4 shutdown cooling system, and that resulted in a loss of
5 the shutdown cooling trains, both trains and both
6 pumps.

7 In the process of mitigating this, the
8 operators attempted to purge the shutdown cooling pump
9 of its nitrogen by recircing from the refueling water
10 storage tank, recircing to get rid of the gas. In the
11 process of doing that, they lined up or opened the valve
12 which was then parallel with another valve, such that
13 they established a flow path from the refueling water
14 storage to the reactor coolant system, which resulted in
15 two things. One, it resulted in a dilution, a small
16 dilution. Secondly, it resulted in overflowing the
17 reactor coolant vessel, the borated water then going out
18 through an instrument signal from the top of the vessel
19 head, and overflowing the closure head, and resulted in
20 having to clean that area up.

21 This occurred, one, because the procedure did
22 not have a caution statement, although it in fact did
23 have a sequence that the operators did not follow. So
24 in addition to the procedure being probably weak, also
25 the operators failed to follow the procedure precisely.

1 This resulted in the flow path being established.

2 It also occurred because the plant was in the
3 unique line in that only during initial criticality does
4 the situation occur where the refueling water storage
5 tank when full was at a level of up to three feet higher
6 than the level in the reactor coolant system where the
7 level was roughly at the plan's level. So you,
8 therefore, had an edge, so that when this flow path was
9 established, it would get full of water from the
10 refueling water storage tank into the reactor coolant
11 system.

12 In addition, it became a problem as far as the
13 dilution occurring, because unknown to the licensee,
14 they also had a problem that the boron concentration in
15 the refueling water storage tank was less than that in
16 the reactor coolant system, and that occurred because of
17 stratification in the refueling water storage tank, and
18 that occurred due to two reasons.

19 One, the sampling system that they used only
20 sampled the boron concentration in the bottom of the
21 tank; and second of all, the recirc system they had for
22 recircing one of these tanks did not result in a mixing
23 of the borated water within that tank, in that when you
24 recirc the tank, the water going into the tank came in
25 at the bottom, and the water flowing out of the tank

1 also came out of the bottom. So there is no effective
2 amount of recirc.

3 The licensee has corrected that on an interim
4 basis by providing a hose to the top of the tank so that
5 now they do get proper mixing. The licensee has also,
6 as a result of this, further corrected their procedures
7 and further emphasized procedure compliance.

8 Are there any questions on this event?

9 CHAIRMAN PALLADINO: No, but may I ask if you
10 can hear us?

11 MR. CHAFFEE: Yes, I can hear you.

12 CHAIRMAN PALLADINO: We weren't sure.

13 Are there questions?

14 (No response.)

15 CHAIRMAN PALLADINO: There appear to be none.
16 Would you proceed.

17 MR. CREWS: The second event I would now like
18 to address involves the reactor coolant system leakage
19 and their response to that in the latter part of April.

20 MR. CHAFFEE: With this communication system
21 we have, as long as I continue to talk, I can't hear you
22 asking questions. So if you do ask a question, if I
23 don't stop it is for that reason. Let me go ahead and
24 start.

25 The licensee, following going into Mode 4, had

1 to do a reactor coolant system leakage test, and he also
2 had to do an emergency core cooling system check valve
3 verification to determine that the leakage rate through
4 its check valves was less than a gallon per minute.

5 On April 27, when he went into Mode 4, he had
6 pressurized up to 2200 pounds in preparation for doing
7 the emergency core cooling system check valve leakage
8 test, and in conjunction, while doing that, he was also
9 doing reactor coolant leakage calculations which looks
10 for leakage from all various sources from the reactor
11 coolant system.

12 In the process of doing this reactor coolant
13 leakage check in conjunction with also doing ECCS check
14 valve leakage, and doing several other evolutions, they
15 determined that they had an unidentified leakage rate
16 that was in excess of the one gallon per minute tech
17 spec limit.

18 They then did repeated calculations to try to
19 get a firm handle on the exact value of the leakage, but
20 the issue became a little bit confused because they were
21 having some problems, unless they had time ahead of
22 samples being taken and the ECCS calculations being
23 done, where they were charging water into the RCS, which
24 at times made the results they were getting seem
25 confusing.

1 So probably due to the several evolutions
2 going on, also due to the fact that the procedure they
3 were using was being used for the first time and did not
4 take them directly to identifying the location of the
5 leak, as far as just focusing on the fact that the had a
6 leak and calling it unidentified, they proceeded to
7 declare it an unusual event.

8 They continued to follow up on it, and
9 eventually were able to identify that the majority of
10 the leakage was due to two drain valves in the reactor
11 coolant system, which were interior test valves that
12 were leaking. They in effect accounted for the majority
13 of it. They were able, six to ten hours after the event
14 was declared, to identify where the leakage was. At
15 that point they were able to come out of the unusual
16 event. So the identified leakage tech spec requirement
17 was 10 gallons per minute, and they were within that
18 once they had focused in and identified where the
19 leakage was.

20 So due in part new procedures, and being
21 somewhat unfamiliar with them, they were in a situation
22 where they declared an unusual event. They were able to
23 identify where the leakage was. They have since refined
24 their procedure and refined their technique for doing
25 this type of calculation.

1 In addition, while this was occurring, they
2 also found that they did haveun acceptable leakage on
3 the emergency core cooling system check valves due to
4 the greateste extent to misalignment of the check valve
5 itself between the peak and the dip.

6 They corrected that, and subsequently further
7 testing proved that they were able to meet the one
8 gallon per minute emergency core cooling check valve
9 requirements for all their ECCS check valves.

10 Are there any questions on that event?

11 CHAIRMAN PALLADINO: There are no questions on
12 that point.

13 MR. CREWS: Before leaving this slide -- this
14 is Jess Crews again -- I just would point out two
15 occasions indicated here on May 28, when the reactor
16 coolant pump seals were replaced, and again in the
17 middle of June, June 17th. They have replaced the seals
18 on all four pumps, and in two of the pumps, twice they
19 have replaced seals.

20 They have pretty much concluded that the cause
21 of the degradation of the seals being misalignment
22 between the reactor pump motor shaft and the pump
23 shaft. That has been corrected and, hopefully, that
24 will correct the problems that they have been
25 experiencing.

1 I would just quickly point out that the
2 problem has been excessive leakage, but one of
3 degradation of one of the seals in each of the reactor
4 coolant pumps.

5 Moving on to the next slide, we have put
6 together.

7 COMMISSIONER AHEARNE: Jesse, can I ask you a
8 question on the previous slide?

9 MR. CREWS: Okay.

10 COMMISSIONER AHEARNE: Could you explain the
11 event of March 19?

12 MR. CREWS: This was an occasion when they
13 were using a metal rule to make some measurements on
14 instrumentation penetration. This penetration, they had
15 look at prior to this accident, and this is penetration
16 where there is a height within the penetration, so that
17 it is leaving an annulus area.

18 They had done some measurements to determine
19 that, they inadvertently dropped the rule on what they
20 had not considered as the non-concentrix orientation of
21 the instrument penetration in the inner-tubes. After a
22 number of measurements had been made, the metal rule
23 fell into the reactor vessel. That required the removal
24 of the vessel head to retrieve it.

25 COMMISSIONER AHEARNE: That is what it sounded

1 like.

2 COMMISSIONER ROBERTS: Question on the slide
3 12, the event of 5/17, what do you mean by vent line
4 failed? Specifically what happened?

5 MR. CREWS: One of the vent lines actually
6 failed, broke off. This is about a three-quarter inch
7 line, which is connected to a two-inch cross-tied line
8 between the two trains of feedwater.

9 They had experienced earlier excessive
10 vibration. In fact, Al Tracy had observed what appeared
11 to be excessive vibration in that particular section of
12 the feedwater piping. He brought it to their
13 attention.

14 They repeated the plant condition to try to
15 reproduce the vibration. They did make the measurements
16 which served as part of their evaluation and analysis of
17 any degradation to piping. But on two occasions, a
18 three-quarter inch vent line failed due to fatigue from
19 vibration.

20 CHAIRMAN PALLADINO: Any other questions?

21 Will you proceed.

22 MR. CREWS: We are going to the next slide,
23 slide 13, please.

24 On this slide, we have indicated the principal
25 delays brought by events after issuance of the license.

1 I would state one correction to this slide, the last
2 bullet entitled "Reactor Coolant RCT Seal Repair," the
3 time to be corrected to 19 days rather than the 10 as
4 indicated. That then results in a cumulative delay
5 represented on this slide of approximately two months.

6 We included this slide because there has been
7 some concern of the period of time since issuance of the
8 license and initial criticality, at the base of which
9 the testing program has progressed.

10 CHAIRMAN PALLADINO: Commissioner Roberts has
11 a question.

12 COMMISSIONER ROBERTS: Your foreign material
13 in vessel required head removal, impact five days, is
14 that the same thing on the previous slide as the 3/19
15 event?

16 MR. CREWS: It is.

17 COMMISSIONER ROBERTS: Is there any
18 inconsistency between the dates. This says, reinstalled
19 vessel head 3/20. Slide 12 indicates a one day passage
20 of time, and this indicates a five-day delay. I don't
21 understand.

22 MR. CREWS: I think on the 19th, it indicates
23 when the vessel head had been removed, and then the
24 retrieval of the metal rule.

25 COMMISSIONER ROBERTS: The next line says,

1 3/20, reinstalled the vessel head.

2 MR. CREWS: The 19th is when they retrieved
3 the metal rule. They actually dropped it in there
4 several days prior to that. After removal the rule, the
5 next day they actually reinstalled the vessel head. It
6 must have been like on March 14 when they actually
7 dropped the metal rule into the vessel, and then it took
8 several days to cool down, remove the material above the
9 head, and then remove the head, and finally removed the
10 rule on the 19th. The total lost time was five days.

11 COMMISSIONER ROBERTS: Thank you.

12 CHAIRMAN PALLADINO: Any other questions?

13 Will you proceed.

14 MR. CREWS: I would point out, again, the
15 reactor coolant pump seal replaced were an appreciable
16 part of the cumulative delay.

17 I would just try to give by way of comparisons
18 of performance by others that we have looked, they have
19 ranged from something slightly more than a month between
20 issuance of the lower power license and initial
21 criticality up to four months, and San Onofre, it was
22 exactly five months.

23 CHAIRMAN PALLADINO: You can continue.

24 MR. CREWS: May I have slide 14, please.

25 This slide summarizes the status of our

1 program. The TMI action items, their implementation,
2 and the licensee conformance are indicated on this
3 slide. Our program is current. The TMI action items
4 either are complete, and there is sufficient assurance
5 that, looking at their schedule, they will be done by
6 the time required, and the same is true of conformance
7 with the license conditions.

8 We have used these areas of licensee
9 performance in the presentation here, the licensee event
10 reports, unusual events, and enforcement actions.

11 During the period of the last five months, as
12 indicated on this slide, there have been approximately
13 60 licensee event reports. Those are conditions
14 requiring a report by the licensee in writing to the
15 Regional Office.

16 By way of comparison to previous facilities,
17 they fall somewhere in the middle of performance of the
18 other facilities. The number of LERs has ranged from on
19 the order of 20 on the low side, to as many as 140 in a
20 six-month period of time, and at San Onofre, they have
21 had 60 in a period of time of about five months.

22 COMMISSIONER AHEARNE: With respect to that,
23 you say that it falls right about the middle, and you
24 give a 20 to 140 range. Is this 20 to 140 range for
25 plants in a similar situation, that is plants going

1 through their start-up?

2 MR. CREWS: The period is comparable for all
3 the plants, the first six months of operation and
4 issuance of the license, and all plants are closely
5 aligned.

6 COMMISSIONER AHEARNE: Thank you.

7 MR. CREWS: The next category is unusual
8 events. Al has described the two occasions when there
9 were unusual events reported. We don't consider that to
10 be an excessive number.

11 Moving to enforcement actions, we have to
12 update this slide to make it current. There are
13 presently seven notices of violation that have been
14 issued by the region, all of those in the level four or
15 five category. We have a couple currently under
16 consideration. Again, by comparison, other facilities
17 that we have looked at have ranged from as few as two to
18 as many as 23 violations. Among them, San Onofre with
19 seven is not out of line in comparison to the other to
20 the other facilities.

21 CHAIRMAN PALLADINO: Any questions?

22 Will you proceed.

23 MR. CREWS: At this time, we are ready for
24 Leroy Norderhaug, if he would, to present a statement
25 regarding the safeguards matters.

1 MR. NORDERHAUG: Chairman, Palladino,
2 Commissioners, I have prepared a written statement
3 concerning the program at San Onofre Nuclear Generating
4 Station, particularly as it applies to the Unit 2
5 licensing action being discussed today.

6 If you agree, I will be pleased to read that
7 five-minute statement, which has been reviewed for
8 national security information and safeguards
9 information, as well as for proprietary interests, and
10 is suitable for disclosure in a public forum such as
11 this. If you have any specific questions, I will answer
12 them to the extent I can.

13 CHAIRMAN PALLADINO: Can you summarize it in
14 one minute?

15 MR. NORDERHAUG: Yes.

16 CHAIRMAN PALLADINO: Would you please.

17 MR. NORDERHAUG: Okay, summarizing it in one
18 minute.

19 CHAIRMAN PALLADINO: Or less.

20 MR. NORDERHAUG: The task force study looking
21 at the interface between security concerns and safety
22 needs did identify some problem areas that look like
23 they could potentially present a problem.

24 We discussed each of those items with the
25 licensee in a meeting at the regional office. They

1 prepared and submitted to us proposed corrective action
2 for each one of those. We reviewed them.

3 We have a team of inspectors on site this
4 week. I talked to the lead inspector this morning. All
5 the items that were to have been completed, most of
6 which are to be done by August 1, have been. Those that
7 have not been finished, we feel that we will be able to
8 accomplish on the time scale given. The interim
9 measures in place until they are effective, we feel
10 compensate for those. We don't think that there is any
11 problem.

12 CHAIRMAN PALLADINO: Any questions?

13 COMMISSIONER ASSELSTINE: I just have one on
14 that. Does that leave in place the basic structure of
15 the present physical security arrangement at the plant?

16 MR. NORDERHAUG: Yes. The main changes are in
17 some cases redefining certain areas, certain access
18 control points, some clarification of procedures, some
19 training considerations. A little additional

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1 preplanning on just who needs to go where under certain
2 types of emergency conditions so that those
3 considerations are taken care of and accommodated by the
4 security program.

5 COMMISSIONER ASSELSTINE: But you are
6 confident that that will assure that the present access
7 limitations that apply out there are not going to unduly
8 restrict the ability of plant personnel or our people to
9 be able to move about the plant in responding to an
10 emergency situation?

11 MR. NORDERHAUG: That is correct.

12 COMMISSIONER ASSELSTINE: Okay.

13 CHAIRMAN PALLADINO: Any other questions?

14 (No response.)

15 CHAIRMAN PALLADINO: Okay, Bob, who is going
16 to present the conclusion?

17 (No response.)

18 CHAIRMAN PALLADINO: Can you hear us?

19 (No response.)

20 CHAIRMAN PALLADINO: Are we reconnected?

21 MR. ENGELKEN: Please?

22 CHAIRMAN PALLADINO: Can you hear us, Bob?

23 MR. ENGELKEN: We can hear you. Can you hear
24 us?

25 CHAIRMAN PALLADINO: Yes. Now we can.

1 Who is going to present the conclusion?

2 MR. ENGELKEN: Bob Engelken.

3 Although the licensee has encountered a number
4 of operational problems since the issuance of the
5 operating license, such experience appears to be
6 normal. And in addition, the licensee appears to be
7 taking aggressive corrective action.

8 Based on its observations and assessments,
9 Region V concludes there is reasonable assurance that
10 the licensee can safely operate San Onofre Unit 2.

11 CHAIRMAN PALLADINO: Are there any questions?

12 MR. ENGELKEN: That concludes our
13 presentation, Mr. Chairman.

14 CHAIRMAN PALLADINO: All right. Thank you,
15 Bob. I gather there are no questions. So we will turn
16 back to the staff here. Thank you very much.

17 MR. EISENHUT: All right. If I could have the
18 next slide, entitled "Amendments to the OL," this is
19 just meant to be here for completeness. There are five
20 amendments that have been issued to date. There is
21 actually one that will be going out this week. The
22 first four were minor revisions to tech spec numbers
23 that are in the attached tech specs. The one going out
24 this week is a minor change to a license condition
25 changing a completion date from August 1st to November

1 1st. It had to be done before the August 1st deadline.

2 The proposed amendment 6 that was handed out
3 at the beginning of the meeting is an amendment to the
4 license which would authorize full-power operation. It
5 puts in the emergency preparedness conditions that flow
6 out of the ASLB decision. It also is making a number of
7 minor tech spec changes at the same time associated with
8 this amendment.

9 There is an environmental qualification
10 condition date that is here. Recall what happened
11 recently was that there were three conditions on
12 environmental qualification: one was having records;
13 one was having everything complete; and the third one is
14 the maintenance and surveillance program.

15 All three of those were by June 30, 1982. The
16 Commission amended that date by rule. We asked the
17 utility what would be an appropriate date for those
18 three items. He states he has completed the first two
19 items; that is, everything is, in fact, qualified, the
20 E-2 conditions, and he does have a file.

21 However, he proposed that the last item be
22 completed by the first refueling outage. We therefore
23 propose that in the license condition.

24 COMMISSIONER AHEARNE: The last item being the
25 surveillance and maintenance?

1 MR. EISENHUT: Yes, it is. Hence, the license
2 condition that you see in the amendment is only a change
3 to item C. Just 5.C.

4 We already discussed the reactor pressure
5 depressurization system conditions. I will not mention
6 those.

7 There was one other condition that was not in
8 the package that was submitted downtown. If I could
9 have the last slide, please.

10 COMMISSIONER AHEARNE: Before you do, on that
11 last item you were just talking about, Darrell, I
12 remember the first two items. I did not recall what we
13 had ended up doing in the recent addressal on the
14 surveillance and maintenance.

15 MR. EISENHUT: They had all three been June
16 30, 1982. And I believe the rule erased essentially all
17 three of the June 30, 1982, dates. It, in effect,
18 erased all dates.

19 COMMISSIONER AHEARNE: Yes, but it left open
20 the possibility the dates might --

21 MR. EISENHUT: Might be put back in.

22 COMMISSIONER AHEARNE: Yes.

23 MR. EISENHUT: So, in effect, what we have
24 done, both on LaSalle and on San Onofre -- and we
25 proposed continuing the OLS -- is rather than completely

1 drop the condition --

2 COMMISSIONER AHEARNE: Right.

3 MR. EISENHUT: -- we have asked the utility to
4 propose a date that he can meet. And on the LaSalle
5 license, you will recall there were two dates.

6 COMMISSIONER AHEARNE: Yes.

7 MR. EISENHUT: And here he did not need to
8 propose a new date for items A and B.

9 COMMISSIONER AHEARNE: I did not understand
10 then. It was C that I was wanting --

11 MR. EISENHUT: And item C he proposed the
12 first refueling outage.

13 COMMISSIONER AHEARNE: And what was the
14 staff's position with respect to that? Does that seem a
15 reasonable date?

16 MR. EISENHUT: It seemed reasonable, yes, it
17 did.

18 COMMISSIONER AHEARNE: The surveillance
19 program in question is what?

20 MR. EISENHUT: In fact, I believe it is one of
21 the two. The surveillance has been accomplished, and
22 the maintenance is --

23 MR. ROOD: No, it is the other way around.

24 MR. EISENHUT: Oh, okay.

25 MR. ROOD: The maintenance procedure is

1 installed and in place. But the surveillance, they need
2 some time to develop their surveillance criteria and
3 acceptance curves and things like that. They are not
4 ready to put it in at this time.

5 COMMISSIONER AHEARNE: But the maintenance
6 procedures are all ready?

7 MR. ROOD: But the maintenance program is
8 ready.

9 MR. EISENHUT: In fact, we kept the license
10 condition intact, basically.

11 COMMISSIONER ROBERTS: Question: Is there any
12 inconsistency between this slide, which says it requires
13 the RCS depressurization system -- requires
14 installation?

15 MR. EISENHUT: No, it was not meant to be --
16 it was in the edification of the slides, is it evolved
17 -- it was meant to be -- this slide was meant to be a
18 summary. It is certainly no change was meant, "if
19 required."

20 COMMISSIONER ROBERTS: If required.

21 MR. EISENHUT: Yes.

22 COMMISSIONER ROBERTS: There is a difference.

23 MR. EISENHUT: The last slide is an item that
24 actually came about as part of a continuing review.
25 There is one license condition we have proposed to be

1 added relating to a modification to implementation
2 relating to the auxiliary feedwater pump room. There is
3 a piece of high-energy line that goes through the room,
4 and there will be some action taken by October of this
5 year to accommodate breaks in that small segment of line
6 up in the first isolation valve.

7 That basically completes the presentation we
8 had planned. I guess one other item, the last slide.
9 This is a 30-year license. The utility in this case has
10 not requested a 40-year license. It is really a 32-year
11 license. 40 years from the date of the CP.

12 CHAIRMAN PALLADINO: All right. Thank you.
13 Are there any questions?

14 (No response.)

15 CHAIRMAN PALLADINO: Well, let me ask the
16 Commission a question so that we see how to proceed.
17 Aside from the question of depressurization and decay
18 heat, are there any other issues that the Commissioners
19 feel we will have to address? All right.

20 COMMISSIONER AHEARNE: No.

21 CHAIRMAN PALLADINO: Okay. Then let me
22 propose that we address the depressurization/decay heat
23 question. And I am going to suggest that we take up to
24 1 minute to say what the position is, and then I suggest
25 we vote whether we want to support the staff's

1 recommendation or not. And then, depending on what
2 happens to that, we vote on the license. Is that a
3 reasonable way?

4 (No response.)

5 CHAIRMAN PALLADINO: All right. Well, let me
6 take the prerogative of the Chair, since I also support
7 the staff.

8 (Laughter.)

9 CHAIRMAN PALLADINO: It appears to me that
10 this will be the first CE plant after Three Mile Island
11 to be built without some means of depressurization. If
12 I understand correctly, St. Lucie 2 has a PORV. Palo
13 Verde will install a PORV. WNP-3 -- I think it is 3 --
14 is having a study. And San Onofre will not have a
15 system or a PORV.

16 So while one might say this is a generic
17 issue, it is the first one out of the pattern. And I
18 should also note that after the WNP-3, the others will
19 add some depressurization.

20 And since I feel that depressurization is a
21 very important item, particularly when we come to steam
22 tube rupture, I think it is appropriate to ask San
23 Onofre to at least look into what is involved in the
24 design and in the process establish what we
25 accomplished.

1 That is my one minute. All right.

2 COMMISSIONER ROBERTS: While I am addressing
3 the merits, I disagree with it procedurally, with this
4 method.

5 CHAIRMAN PALLADINO: Well, if this were -- I
6 am sorry, I was going to give each person a minute, and
7 then I interrupted.

8 (Laughter.)

9 COMMISSIONER AHEARNE: Yes, I think that that
10 is slightly misleading presentation, Joe, on where the
11 status is, in the sense that WNP-3 is studying it,
12 Waterford has said, no, they were not going to put it
13 in, as did San Onofre, and Combustion, as we have heard,
14 has said that they are also studying it and will, I
15 gather, eventually go to a depressurization aspect. And
16 I would not be surprised, to some extent, because we are
17 convinced that it ought to be there.

18 Myself, I would tend to agree with you on just
19 an intuitive feeling that it is probably a sound item to
20 put in. However, we have spent a long time trying to
21 addressing let us get the procedures of putting in place
22 changes in such a way that we can have confidence that
23 this is the way it ought to go.

24 It seems to be the first out of the box in
25 that sense, that instead, we are going to decide

1 intuitively it is a good thing, we ought to require the
2 licensee to design it.

3 I have no problem with requiring a design by
4 someone, and I have no problem with saying, well, let us
5 have the utility industry do it because they have a
6 different perspective, and I would have no problem with
7 taking some of our money that we have and transferring
8 it to EPRI to do that design.

9 I do have a problem with using the fact that
10 the licensee needs a license to require it.

11 COMMISSIONER ROBERTS: Absolutely.

12 CHAIRMAN PALLADINO: I was not trying to hold
13 up the license in any way. As a matter of fact, the
14 proposal does recognize that there is time in which to
15 design and study. But WNP at least is having a study,
16 and here we do not have a study required, nor do we have
17 a design.

18 It will still be the first one out of the
19 pattern, so in that regard, it is a change. But I think
20 we can vote on it, after we have had everybody had a
21 chance to talk, vote on whether or not --

22 (Laughter.)

23 CHAIRMAN PALLADINO: By everybody, I mean the
24 four Commissioners.

25 (Laughter.)

1 CHAIRMAN PALLADINO: And then we will address
2 it on a different basis.

3 Jim?

4 COMMISSIONER ASSELSTINE: My feeling is that I
5 think this is -- I agree with what John said and with
6 what you have said -- I think this is an area, the
7 depressurization area, is an area that needs to be
8 looked at.

9 My feeling is we should not impose this
10 condition, the staff's proposed condition specifically,
11 and we should not require the development of a design,
12 for much the same reasons that John has mentioned.

13 I do think that we ought to adhere to the
14 process that we have set up now for looking at these
15 design changes. I think we already have the CE Owners
16 Group study with Southern California Edison
17 participating, and we already have our own study on the
18 unresolved safety issue.

19 If there is a real concern about whether SCE
20 is pursuing that study, then I would not have a problem
21 with putting in the requirement that they do the study
22 by a certain date as a license condition, but I do not
23 support the requirement to develop the design.

24 It was unclear to me in the exchange we had
25 with the applicant and with the staff how much of a

1 problem that is, whether we need to impose a condition
2 to require that they do go forward and study this and
3 get back to us in the time frame that was discussed
4 earlier. But I would not support this condition.

5 CHAIRMAN PALLADINO: Let me ask a question.
6 This study that is in the SER, is that a requirement, or
7 has there been a commitment made to it?

8 MR. DENTON: Let me ask Darrell. I do not
9 think -- we have not put that in the license as a
10 requirement, I think it is more informal. But it could
11 be changed into a requirement that it be submitted by
12 some given date.

13 CHAIRMAN PALLADINO: Is there a commitment on
14 the part of the applicant to do it?

15 MR. EISENHUT: There is a commitment. More
16 formally, we had sent a letter to the applicant. The
17 applicant has agreed to participate and do it as part of
18 the CE Owners Group. He sent us a letter, and the only
19 thing that is missing is, in fact, a firm date, number
20 one, as to sort of a drop-dead date for the end of the
21 study; and number two, is not a formal license
22 condition. It could be made into such a condition.

23 CHAIRMAN PALLADINO: Well, I just lost the
24 other vote.

25 (Laughter.)

1 COMMISSIONER ROBERTS: I would not make it a
2 license condition.

3 CHAIRMAN PALLADINO: I understand, as I say.
4 But the other vote on whether or not we would have this
5 proposal of the staff as part of the license is lost by
6 3-1. Okay.

7 Now do we want to consider about making this a
8 license condition?

9 COMMISSIONER ASSELSTINE: I have no problem
10 with formalizing the requirement that they do the study
11 and to put a date certain so that we know that we are
12 going to get the results back by a certain time.

13 CHAIRMAN PALLADINO: Fine. I would vote for
14 that, too. And the date that you would propose would
15 be?

16 COMMISSIONER AHEARNE: It could be something
17 like, say, March.

18 MR. DENTON: We had talked about March, but I
19 think if it is to be a license condition, we would want
20 to check with the company to be sure it is an achievable
21 date to get product in that time frame.

22 MR. EISENHUT: And generally, I ask him to
23 send me a letter as to when he can really commit to do
24 it, put it back as a license condition.

25 CHAIRMAN PALLADINO: Well, does it --

1 COMMISSIONER AHEARNE: But I think you also
2 put some -- I mean if he comes back and says he
3 absolutely can do it by 1985, I do not think it would be
4 a good idea.

5 (Laughter.)

6 MR. EISENHUT: Well, we do exercise a little
7 judgment.

8 COMMISSIONER AHEARNE: Make sure it is really
9 --

10 CHAIRMAN PALLADINO: But with the
11 understanding that the time frame in which the
12 Commission is thinking is March to June or July --

13 COMMISSIONER AHEARNE: Right

14 CHAIRMAN PALLADINO: -- of that year, of next
15 year.

16 COMMISSIONER AHEARNE: Yes.

17 CHAIRMAN PALLADINO: All right. I gather,
18 Tom, you vote against that?

19 COMMISSIONER ROBERTS: Yes.

20 CHAIRMAN PALLADINO: You vote for?

21 COMMISSIONER AHEARNE: Yes.

22 CHAIRMAN PALLADINO: I vote for it. You vote
23 for it.

24 COMMISSIONER ASSELSTINE: Right.

25 CHAIRMAN PALLADINO: All right.

1 Well, now, are we ready to vote on granting
2 the license?

3 COMMISSIONER AHEARNE: Yes.

4 CHAIRMAN PALLADINO: With all the conditions.
5 Right?

6 All those in favor indicate by saying aye.

7 (Chorus of ayes.)

8 CHAIRMAN PALLADINO: Opposed?

9 (No response.)

10 CHAIRMAN PALLADINO: All right, I think we
11 have accomplished today's task. Are there any other
12 points that should come up in this?

13 (No response.)

14 CHAIRMAN PALLADINO: Thank you all for your
15 participation.

16 Thank you, Bob. We have not forgotten you all
17 out there.

18 We will stand adjourned.

19 (Thereupon, at 5:40 p.m., the Commission was
20 adjourned.)

21

22

23

24

25

CONTACT: H. ROOD

EXT: 28472

BRIEFING OUTLINE

- PLANT DESCRIPTION/LOCATION
- STATUS/SCHEDULE
- SELECTED REVIEW ITEMS
 - CORE PROTECTION CALCULATOR
 - RCS DEPRESSURIZATION SYSTEM (PORVs)
 - INDEPENDENT DESIGN VERIFICATION
 - SHIFT STAFFING
- ASLB HEARING ISSUES
 - SEISMIC DESIGN
 - EMERGENCY PREPAREDNESS
- REGION V REPORT
 - OPERATING EXPERIENCE SINCE LICENSING
 - DELAYS AND CAUSES
 - SAFEGUARDS CONSIDERATIONS
 - READINESS FOR FULL POWER OPERATION
 - ASSESSMENT OF LICENSEE PERFORMANCE
- AMENDMENTS TO OPERATING LICENSE
- PROPOSED FULL POWER AMENDMENT
 - CONDITIONS/OUTSTANDING ISSUES

PLANT DESCRIPTION/LOCATION

- UTILITY: SOUTHERN CALIFORNIA EDISON
- REACTOR TYPE: PWR
- NSSS VENDOR: CE
- CONTAINMENT TYPE: LARGE, DRY
- ENGINEER/CONSTRUCTOR: BECHTEL
- POWER: 1100 MWe/3390 MWt
- LOCATION: SAN DIEGO COUNTY, CALIFORNIA
 - 5 MILES SOUTH OF SAN CLEMENTE
 - POPULATION WITHIN 5 MILES: 27,000
- FIRST CE PLANT LICENSED SINCE TMI

STATUS/SCHEDULE

- LICENSING MILESTONES

- CONSTRUCTION PERMIT ISSUED: OCTOBER 18, 1973
- OL APPLICATION DOCKETED: MARCH 23, 1977
- OL ISSUED: FEBRUARY 16, 1982

- CONSTRUCTION SCHEDULE

- UNIT 2: COMPLETE FEBRUARY 1982
- UNIT 3: NOVEMBER 1982 PER APPLICANT

- UNIT 2 STARTUP SCHEDULE

- | | |
|------------------------------|--------------------------|
| ISSUE LOW POWER LICENSE | -FEBRUARY 16, 1982 |
| BEGIN LOADING FUEL | -FEBRUARY 19, 1982 |
| FUEL LOADED & HEAD TENSIONED | -MARCH 13, 1982 |
| INITIAL CRITICALITY | -JULY 26, 1982 |
| EXCEED 5% POWER | -WEEK OF AUGUST 16, 1982 |

CORE PROTECTION CALCULATOR

- USES DIGITAL COMPUTER GENERATED SIGNAL TO TRIP REACTOR
- FIRST USED ON ANO-2
- WILL BE USED ON FUTURE CE PLANTS
- STAFF REVIEWED CHANGES FROM ANO-2 CPC

PORVS

- MOST NEW CE PLANTS DO NOT HAVE POWER OPERATED RELIEF VALVES (PORVs)
- GENERIC STUDY UNDERWAY
- BASIS FOR INTERIM ACCEPTABILITY
 - RELIABLE AFWS: 2 100% CAPABILITY MOTOR DRIVEN PUMPS PLUS 100% CAPACITY STEAM DRIVEN PUMP PLUS LOW HEAD (NON-SAFETY) BACKUP PUMPS.
 - PLANT CAN SHUT DOWN (COLD) USING SAFETY GRADE SYSTEMS, WITHOUT OFFSITE POWER, WITH SINGLE FAILURE

DEPRESSURIZATION CAPABILITY
FOR PLANTS OF CE DESIGN

- DEPRESSURIZATION SYSTEM NOT NEEDED FOR CURRENT DESIGN BASIS EVENTS
 - NO UNACCEPTABLE CHALLENGE TO SRV
 - AFW SYSTEM RELIABILITY IS HIGH
- A DEPRESSURIZATION CAPABILITY COULD BE DESIGNED TO BE SUFFICIENTLY RELIABLE
- IT IS DESIRABLE AS BACKUP TO THE SECONDARY SYSTEM
- IT COULD IMPROVE ATWS CAPABILITY
- MOST OPERATING PWRs HAVE SOME DEPRESSURIZATION CAPABILITY USING PORVs
- CE AND OWNERS REQUIRED TO STUDY THE NEED FOR A SYSTEM AND REPORT BY ABOUT MARCH 1983
- WE NOW RECOMMEND ADDING A CONDITION TO SAN ONOFRE LICENSE TO REQUIRE A DESIGN OF A DEPRESSURIZATION SYSTEM AND, INSTALLATION, IF REQUIRED.

LICENSE CONDITION
FOR SAN ONOFRE UNIT 2

BY JULY 1, 1983, THE LICENSEE SHALL PROVIDE A DESIGN AND SUPPORTING ENGINEERING STUDY FOR VALVES, AND ASSOCIATED HARDWARE, CONTROLS AND PROCEDURES, THAT COULD BE ADDED TO THE REACTOR COOLANT SYSTEM TO PROVIDE FOR ITS CONTROLLED, RAPID DEPRESSURIZATION. THE DEPRESSURIZATION SYSTEM SHALL HAVE HIGH RELIABILITY AND BE SIZED TO PERMIT SUFFICIENT REMOVAL OF DECAY HEAT BY PRIMARY COOLANT MAKEUP SYSTEMS TO PREVENT UNACCEPTABLE CORE DAMAGE AFTER A REACTOR SCRAM FROM FULL POWER WITHOUT RELIANCE ON HEAT TRANSFER TO THE STEAM GENERATORS AND THEIR FEEDWATER SYSTEMS. THE STUDY SHALL CONSIDER, BUT THE DESIGN NEED NOT NECESSARILY MEET, GENERAL DESIGN CRITERIA 1, 2, 3, 4, 14, 30 AND 34 OF APPENDIX A TO 10 CFR PART 50. THE STUDY SHALL INCLUDE COST/BENEFIT ANALYSES OF DESIGN VARIATIONS THAT WOULD CONFORM COMPLETELY AND TO VARYING DEGREES WITH THESE GENERAL DESIGN CRITERIA TO DEMONSTRATE HOW THE LICENSEE'S RECOMMENDED DESIGN COST EFFECTIVELY SATISFIES ITS DESIGN OBJECTIVES. IF REQUIRED, THE LICENSEE SHALL INSTALL THE DEPRESSURIZATION SYSTEM BEFORE STARTUP FOLLOWING THE NEXT REFUELING OUTAGE OR OTHER OUTAGE OF SUFFICIENT DURATION WHICH COMMENCES 24 MONTHS AFTER STAFF APPROVAL OF THE DESIGN.

INDEPENDENT DESIGN VERIFICATION

- REVIEW OF SEISMIC DESIGN AND QA PROGRAM
CONDUCTED BY GENERAL ATOMIC COMPANY (GA)

- MAJOR TASKS CONDUCTED BY GA
 - DESIGN PROCEDURE REVIEW
 - DESIGN PROCEDURE IMPLEMENTATION REVIEW
 - TECHNICAL ASPECTS OF SEISMIC DESIGN
 - AUDIT PLAN REVIEW
 - PIPE SEGMENT WALKDOWN
 - INDEPENDENT CALCULATIONS

- STAFF REVIEW OF GA PROGRAM
 - INDEPENDENCE OF GA
 - TECHNICAL QUALIFICATIONS OF GA REVIEWERS
 - QA USED BY GA DURING ITS REVIEW
 - GA PROGRAM PLAN
 - IMPLEMENTATION OF GA PROGRAM
 - RESULTS OF GA PROGRAM

- CONCLUSIONS

SAN ONOFRE UNIT 2
SHIFT STAFFING

- SHIFT STAFFING NOW LIMITED BY NUMBER OF SROs
- CURRENTLY OPERATING WITH 4 SHIFTS PLUS 2 SROs IN TRAINING OR IN RESERVE
- ADDITIONAL SROs TESTED IN JUNE - RESULTS OF EXAMS EXPECTED IN AUGUST
- MORE SRO CANDIDATES SCHEDULED TO BE TESTED IN DECEMBER, 1982.
- THE LICENSEE HAS COMMITTED, PRIOR TO EXCEEDING FIVE PERCENT POWER, THAT SAN ONOFRE UNIT 2 SHALL BE STAFFED WITH 5 SCHEDULED OPERATING SHIFTS.

SEISMIC DESIGN

- SEISMIC DESIGN BASIS - 0.67 G'S
- DESIGN BASIS RE-EVALUATED DURING OL REVIEW
- PLANT HAS SEISMIC TRIP SET AT 60% OF SSE
- HEARING ISSUE: ADEQUACY OF SEISMIC DESIGN BASIS
- ASLB HEARING HELD JUNE - AUGUST 1981
- PARTIAL INITIAL DECISION OF JANUARY 11, 1982
- DECISION APPEALED - STAY OF LOW POWER TESTING DENIED BY ASLAB AND COMMISSION
- TEMPORARY RESTRAINING ORDER STAYING LOW POWER TESTING DENIED BY THE U. S. COURT OF APPEALS FOR D. C.

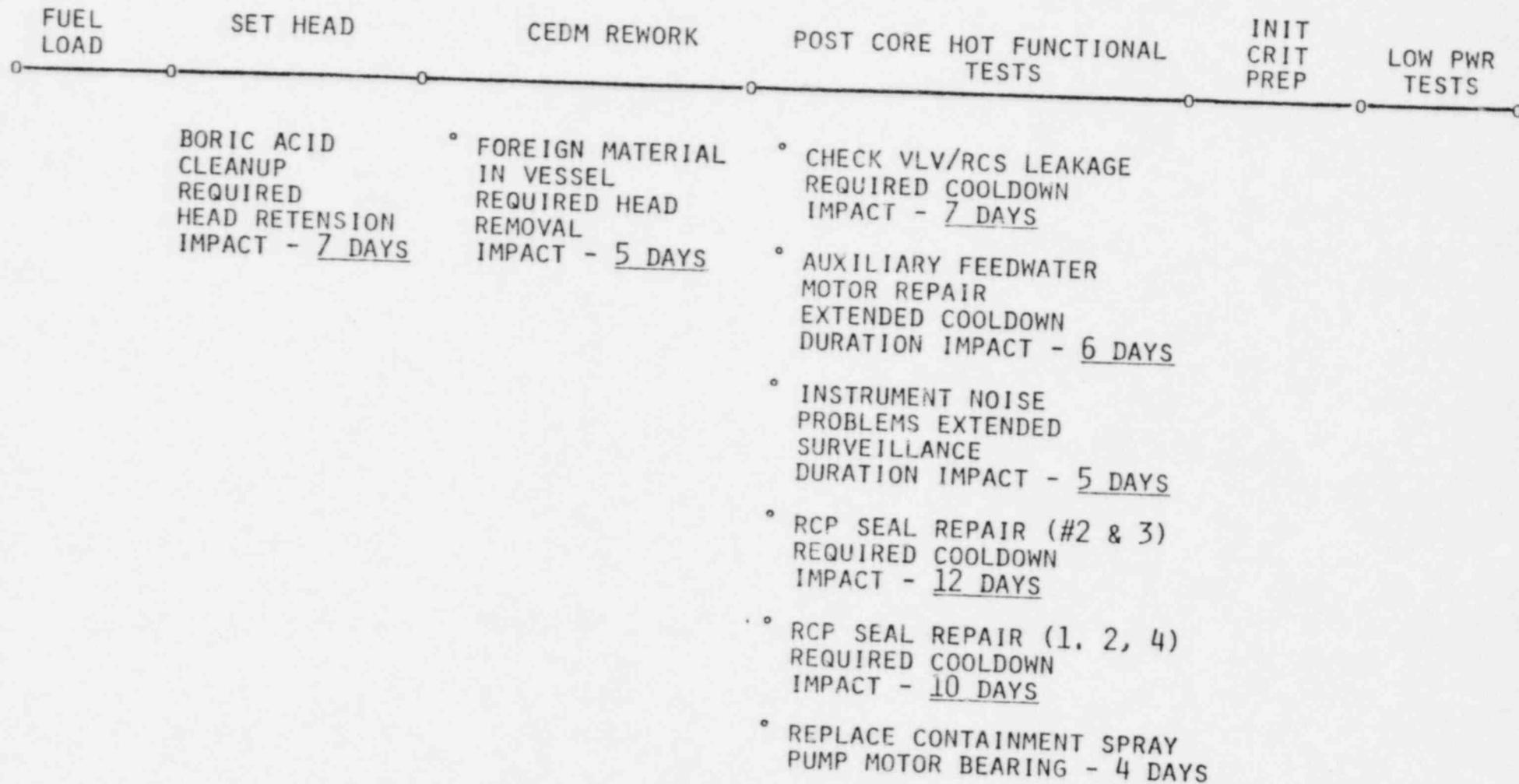
EMERGENCY PREPAREDNESS

- HEARING ISSUES: ADEQUACY OF EMERGENCY PLANS AND THEIR IMPLEMENTAION
- HEARING HELD: AUGUST - SEPTEMBER 1981
- PARTIAL INITIAL DECISION: JANUARY 11, 1982 (LOW POWER)
- INITIAL DECISION: MAY 14, 1982 (FULL POWER)
 - ISSUES GENERALLY DECIDED IN LICENSEE'S FAVOR
 - SEVERAL CONDITIONS IMPOSED BY BOARD
 - DECISION APPEALED, STAY DENIED BY ASLAB
- EMERGENCY PLAN EXERCISES
 - FULL SCALE: MAY 13, 1981
 - SMALL SCALE: APRIL 15, 1982

OPERATING EXPERIENCE

<u>DATE</u>	<u>EVENT</u>
2/16/82	OL ISSUED
2/19/82	COMMENCED FUEL LOADING
2/28/82	COMPLETED FUEL LOADING - COMMENCED ASSEMBLY AND CLOSURE OF REACTOR, REWORK OF CEDM VENTILATION, AND CONDUCT OF PRECRITICAL SYSTEM TESTS
3/14/82	LOST SHUTDOWN COOLING FOR ABOUT ONE HOUR DUE TO NITROGEN IN SYSTEM - CONCURRENT MINOR BORON DILUTION (TANK STRATIFICATION) (UNUSUAL EVENT)
3/19/82	REMOVED REACTOR VESSEL HEAD TO RETRIEVE METAL RULE
3/20/82	REINSTALLED REACTOR VESSEL HEAD - RESUMED SYSTEM PRECRITICAL TESTS
4/19/82	BEGAN SYSTEM HEATUP (MODE 4: 200F - 350F) - CONDUCTED SYSTEM TESTS
4/25/82	ENTERED MODE 5 (<200F) TO CORRECT EXCESSIVE CHECK VALVE LEAKAGE
4/27/82	REENTERED MODE 4 TO TEST CHECK VALVE LEAKAGE
4/28-30/82	EXCESSIVE RCS LEAKAGE (UNUSUAL EVENT) - COOLDOWN TO MODE 5 TO REPAIR LEAKAGE
5/09/82	RESUME HOT SYSTEM TESTS
5/14/82	ENTER MODE 3 (\geq 350F) FOR FURTHER SYSTEM TESTS
5/28/82	COMMENCE COOLDOWN TO REPAIR RCP SEALS - SUBSTANTIAL VIBRATION ALSO NOTED IN MAIN AND AFW LINES
6/07/82	RETURNED TO MODE 3 (\geq 350F) FOR ADDITIONAL SYSTEM TESTS
6/11/82	WHILE INVESTIGATING CAUSE OF AFW PIPE VIBRATIONS, ONE-INCH VENT LINE IN AFW SYSTEM FAILED
6/17/82	COMMENCED COOLDOWN TO REPAIR RCP SEALS AND INVESTIGATE CAUSE OF FAILURES - DURING COOLDOWN, VENT LINE ON AFW SYSTEM AGAIN FAILED - THIS TIME IN ABSENCE OF SIGNIFICANT VIBRATION
7/06/82	RETURNED TO MODE 4 FOLLOWING REPAIR OF RCP SEALS
7/15/82	RETURNED TO MODE 3 FOLLOWING REPAIR OF CONTAINMENT SPRAY PUMP MOTOR BEARING

DELAYS AND CAUSES



CUMULATIVE DELAY APPROXIMATELY 1.5 MONTHS

READINESS FOR FULL POWER OPERATION

1. INSPECTION PROGRAM - CURRENT
2. VERIFICATION OF TMI ACTION ITEMS (ASSIGNED TO REGIONS) - CURRENT^(A)
3. CONFORMANCE WITH LICENSE CONDITIONS - CURRENT^(A)

^(A) VERIFICATION COMPLETE OR THERE IS REASONABLE ASSURANCE THAT REQUIREMENT WILL BE SATISFIED BY THE REQUIRED MILESTONE.

ASSESSMENT OF LICENSEE PERFORMANCE TO DATE

A. LICENSEE EVENT REPORTS

- ° 25 ISSUED SINCE OL
 - °° 12 - PERSONNEL ERROR
 - °° 3 - INADEQUATE PROCEDURE
 - °° 4 - COMPONENT FAILURE
 - °° 6 - DESIGN/CONSTRUCTION ERROR
 - °° UP TO 33 OTHER POTENTIALLY REPORTABLE CONDITIONS HAVE BEEN IDENTIFIED AND ARE BEING EVALUATED

B. UNUSUAL EVENTS

- ° 2 UNUSUAL EVENTS DECLARED
 - °° LOSS OF SHUTDOWN COOLING FLOW
 - °° EXCESSIVE REACTOR COOLANT SYSTEM LEAKAGE RATE

C. ENFORCEMENT ACTIONS

- ° 6 NOTICES OF VIOLATION ISSUED (5 LEVEL IV AND 1 LEVEL V)
 - °° 2 - FAILURE TO FOLLOW PROCEDURES
 - °° 3 - FAILURE TO COMPLY WITH TECHNICAL SPECIFICATIONS OR LICENSE CONDITIONS
 - °° 1 - INADEQUATE DOCUMENTATION OF PLANT DESIGN
- ° 1 NOTICE OF VIOLATION UNDER CONSIDERATION
 - °° FAILURE TO FOLLOW PROCEDURES

CONCLUSION

ALTHOUGH THE LICENSEE HAS ENCOUNTERED A NUMBER OF OPERATIONAL PROBLEMS SINCE OL ISSUANCE, SUCH EXPERIENCE APPEARS TO BE NORMAL. IN ADDITION, THE LICENSEE APPEARS TO BE TAKING AGRESSIVE CORRECTIVE ACTION. BASED ON ITS OBSERVATIONS AND ASSESSMENTS, REGION V CONCLUDES THERE IS REASONABLE ASSURANCE THAT THE LICENSEE CAN SAFELY OPERATE SAN ONOFRE UNIT 2.

AMENDMENTS TO OPERATING LICENSE

- AMENDMENTS 1-5 ISSUED TO DATE - MADE MINOR CHANGES TO THE TECHNICAL SPECIFICATIONS AND LICENSE CONDITIONS

- PROPOSED AMENDMENT 6 MAKES THE FOLLOWING CHANGES:
 - ALLOWS FULL POWER OPERATION
 - IMPOSES CONDITIONS REQUIRED BY ALSB ORDER - ALL ARE EMERGENCY PREPAREDNESS ITEMS
 - CHANGES TECHNICAL SPECIFICATIONS
 - REQUIRES E. Q. MAINTENANCE AND SURVEILLANCE PROGRAM AFTER FIRST REFUELING
 - REQUIRES RCS DEPRESSURIZATION SYSTEM:
 - DESIGN BY JULY 1, 1983
 - INSTALLATION BY FIRST REFUELING THAT OCCURS 24 MONTHS OR MORE AFTER STAFF APPROVAL OF DESIGN
 - REQUIRES DESIGN OF AFW MOTOR BEARING PROTECTION HARDWARE BY OCTOBER 30, 1982.

LICENSE CONDITION REGARDING QUALIFICATION
OF AFW MOTOR BEARINGS

BY OCTOBER 30, 1982, SCE SHALL SUBMIT A PROPOSED HARDWARE MODIFICATION AND SCHEDULE FOR IMPLEMENTATION THAT WILL INCREASE THE RELIABILITY OF THE AFW MOTOR-DRIVEN PUMPS IN THE EVENT OF A BREAK IN THE HIGH ENERGY LINE FEEDING THE STEAM-DRIVEN PUMP. IN THE INTERIM, SCE WILL PERFORM AN AUGMENTED IN-SERVICE INSPECTION OF THE STEAM LINE.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SOUTHERN CALIFORNIA EDISON COMPANY

SAN DIEGO GAS AND ELECTRIC COMPANY

THE CITY OF RIVERSIDE CALIFORNIA

THE CITY OF ANAHEIM, CALIFORNIA

DOCKET NO. 50-361

SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 6
License No. NPF-10

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for license for the San Onofre Nuclear Generating Station, Unit 2 (the facility) filed by the Southern California Edison Company on behalf of itself and San Diego Gas and Electric Company, The City of Riverside and The City of Anaheim, California (licensees) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations as set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
 - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public;
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraphs 2.C(1), 2.C(2), and 2.C(5)c, of Facility Operating License No. NPF-10 are hereby amended to read as follows:

(1) Maximum Power Level

Southern California Edison Company (SCE) is authorized to operate the facility at reactor core power levels not in excess of full power (3390 megawatts thermal).

(2) Technical Specifications

The Technical Specification contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 6, are hereby incorporated in the license. SCE shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(5) Environmental Qualification (Section 3.11 SER, SSER#3, SSER#4)

. . .

c. Prior to startup following the first refueling outage, SCE shall provide affirmation of implementation of the surveillance and maintenance program procedures.

In addition, paragraphs 2.C(23) and 2.C(24) to Operating License No. NPF-10 are hereby added, to read as follows:

(23) Conditions of ASLB Initial Decision of May 14, 1982

Within five (5) months of initially exceeding five (5) percent power, SCE shall:

a. Demonstrate that both meteorological towers and the Health Physics Computer system are fully installed and operational. SCE shall maintain offsite assessment and monitoring capabilities, essentially as described in the hearing (see Initial Decision, Section IV, Paragraph D.1-12, pp. 136-140), at no less than that level of readiness, pending development of satisfactory capability of offsite response organizations (see Initial Decision, Section IV, Paragraph D.27, pp. 145-146, and Section V, Paragraph B, pp. 213-214).

- b. Provide an assessment of whether public information regarding emergency planning should also be presented in Spanish (see Initial Decision, Section IV, Paragraph F.32, pp. 168, and Section V, Paragraph c.2, pp. 215).
- c. Provide plans demonstrating that SCE and offsite jurisdictions have developed and stand ready to implement arrangements for medical services for members of the offsite public. Documentation of the arrangements and provisions made shall be provided to the Atomic Safety and Licensing Board as well as to the NRC staff (see Initial Decision, Section III, pp. 43-47, and Section V, Paragraph D, pp. 216-217).
- d. Provide revised plans demonstrating that the "extended" Emergency Planning Zone (EPZ) concept has been deleted from the San Onofre onsite and offsite plans and the Plume Exposure EPZ boundary has been extended, along with siren coverage, to Dana Point and all of San Juan Capistrano (see Initial Decision, Section IV, Paragraph D.25, pp. 98, and Section V.C.5, pp. 216; See also Order (making clarifying change in Initial Decision) dated May 25, 1982).

(24) RCS Depressurization System

By July 1, 1983, the Licensee shall provide a design and supporting engineering study for valves, and associated hardware, controls and procedures, that could be added to the reactor coolant system to provide for its controlled, rapid depressurization. The depressurization system shall have high reliability and be sized to permit sufficient removal of decay heat by primary coolant makeup systems to prevent unacceptable core damage after a reactor scram from full power without reliance on heat transfer to steam generators and their feedwater systems. The study shall consider, but the design need not necessarily meet, general design criteria 1, 2, 3, 4, 14, 30 and 34 of Appendix A to 10 CFR Part 50. The study shall include cost/benefit analyses of design variations that would conform completely and to varying degrees with these general design criteria to demonstrate how the licensee's recommended design cost effectively satisfies its design objectives. The licensee shall install the depressurization system before startup following the next refueling outage or other outage of sufficient duration which commences 24 months after staff approval of the design.

3. This license amendment is effective as of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Darrell G. Eisenhut, Director
Division of Licensing

Date of Issuance:

12/81

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Meeting Title: Discussion of aid Vote on Fuel Power
Operating License for San Onofre-2

MEETING DATE:

7/28/82

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2. Amendment No. 6
License No. NPF-10

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