

# ORIGINAL

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the matter of:

COMMISSION MEETING

Continuation of Briefing  
on Davis-Besse

(Public Meeting)

Docket No.

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## 1 UNITED STATES OF AMERICA

## 2 NUCLEAR REGULATORY COMMISSION

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## 4 CONTINUATION OF BRIEFING ON DAVIS BESSE

5 - - -

## 6 PUBLIC MEETING

7 Room 1130

8 1717 H Street, N.W.

9 Washington, D.C.

10 Wednesday, 18 September,  
11 1985

12 The Commission met, pursuant to notice, at 9:35 a.m.

## 13 COMMISSIONERS PRESENT:

14 NUNZIO FALLADINO, Chairman of the Commission

15 THOMAS ROBERTS, Commissioner

16 JAMES ASSELSTINE, Commissioner

17 FREDERICK BERNTHAL, Commissioner

18 LANDO ZECH, Commissioner

## 19 STAFF AND PRESENTERS SEATED AT COMMISSION TABLE:

20 S. CHILK

21 H. DENTON

22 F. MIRAGLIA

23 J. TAYLOR

24 B. SHERON

25 M. BLUME

## P R O C E E D I N G S

CHAIRMAN PALLADINO: Good morning ladies and gentlemen. Commissioner Bernthal will be joining us. He was detained for a few minutes.

Yesterday the Commission heard from Toledo Edison regarding Davis Besse. Today the Staff will briefly address their activities regarding actions necessary for the restart of Davis Besse.

Subsequent to the event at Davis Besse the Staff was requested to identify any other operating nuclear power plant with specific features that needed to be modified or added, where the required corrective action has been outstanding for an extended period of time.

In response, Staff identified five facilities: Browns Ferry, Ft. St. Vrain, Rancho Seco, San Onofre 1 and Palisades.

I understand the Staff will address the current status of activities regarding these other five plants.

In addition the Staff will discuss two significant generic issues; fire protection and containment purge and vent.

I understand the Regional Administrator from Region III is on the telephone available to discuss Davis Besse concerns.

Do any of my fellow Commissioners have any other



1 opening remarks?

2 COMMISSIONER ASSELSTINE: No.

3 COMMISSIONER BERNTHAL: No.

4 COMMISSIONER ZECH: No.

5 CHAIRMAN PALLADINO: Let me go to Mr. Denton.

6 MR. DENTON: Thank you, Mr. Chairman. I would  
7 propose to pick up on the slides we were going to use  
8 yesterday, about how we were reviewing the new initiatives  
9 being carried out at Davis Besse and talk about those first.  
10 And then go to the five plants on the two generic issues.  
11 Then any other topics the Commission wishes.

12 So, I propose we start with the slide called Other  
13 Restart Considerations. It is about midway in the package,  
14 because everything before that has been covered and described  
15 in yesterday's briefing.

16 Slide 9.

17 (Slide)

18 I will just briefly mention that one of the things  
19 we have done in NRR is assign more resources to the Davis  
20 Besse project, and to all the B&W groups. We now have two  
21 project managers assigned to each project and traditional  
22 technical strength in that area. And I think Jim has done  
23 some of the same thing to monitor and inspect Davis Besse.

24 COMMISSIONER ASSELSTINE: Is this just for Davis  
25 Besse, Harold, or all B&W plants?

1           MR. DENTON: My actions were for all B&W plants.  
2           They all now have two project managers, and we have assigned  
3           two section leaders to the branch and a deputy branch chief.  
4           So this is -- looking to the new organization which will, in  
5           effect, double the amount of project management attention that  
6           B&W plants have been receiving.

7           MR. MIRAGLIA: Not all the plants now have two. Our  
8           intent is to get two. I believe there is one vacancy yet to  
9           fill. Our intent is to have two per plant.

10          MR. DENTON: I would like to start first and maybe  
11          answer some of the questions that were raised about feed and  
12          bleed issues at Davis Besse, and what we have done in that  
13          area.

14          Mr. Williams described the calculations he had done  
15          about the capability of the plant to be cooled in the absence  
16          of feedwater flow.

17          We have been doing similar calculations. I have  
18          requested that an ACRS subcommittee meet with us on the  
19          topic. The meeting has been held, and Brian Sheron will  
20          summarize the presentation we gave to the ACRS on that topic.

21          Then after that I will have Frank Miraglia go  
22          through and describe the other activities that are ongoing on  
23          the Davis Besse restart.

24          MR. SHERON: Let me pass out, if I could, some  
25          information on the feed and bleed capability at Davis Besse.

1           Basically what we did is -- when we looked at the  
2 feed and bleed capability of Davis Besse, we looked at it from  
3 two standpoints. One was actual analysis -- can you put in  
4 enough water and remove enough water to maintain the core  
5 covered condition and remove decay heat. The other was we  
6 looked at the systems that would be required, and could they  
7 be counted upon to operate in a feed and bleed mode, mainly  
8 the environmental qualification and the like.

9           You heard some of that yesterday from the Licensee.

10           They looked at the qualification of the Equipment.  
11 We basically agree with their assessment that there does  
12 appear to be a very high probability that feed and bleed  
13 would work at the plant.

14           Certain equipment are not fully qualified in a  
15 design base sense such that one could claim feed and bleed was  
16 a design base type of condition. But we don't see anything  
17 that was outstanding or glaring that would say the equipment  
18 would fail in the event it was used to feed and bleed.

19           COMMISSIONER ASSELSTINE: Is that the same kind of  
20 analysis that was done prior to the June 9th event that led  
21 you to the conclusion that the auxiliary feedwater system had  
22 a high degree of reliability; that is, assumptions that the  
23 equipment would be properly maintained?

24           MR. SHERON: I don't think maintenance came into our  
25 assessment on that. It is really a matter of, if the PORV is

1 called on to operate in the event say of a safety injection  
2 signal -- or for example, I know a lot of plants would isolate  
3 instrument error -- is this PORV powered or actuated by  
4 instrument error. And the answer is no, I believe it is the  
5 electromechanical.

6 MR. DENTON: That's a very fundamental question that  
7 you are asking.

8 One of the biggest efforts we are going to put into  
9 this restart will be assuring the safety systems are tested in  
10 the modes in which they are likely to be called upon, so that  
11 we have the assurance that they really have been tested and  
12 can perform in the manner in which they are expected to work.

13 Now, if the systems are not maintained in the way  
14 they are described in the application, that is a problem at  
15 any plant no matter how well designed.

16 I think we assume single failures, but we don't  
17 assume massive 15 different failures of equipment. What Brian  
18 is describing are some deterministic calculations that have  
19 been done using the latest TRAC Code and these kinds of  
20 things.

21 Assuming the equipment works, how does the thermal  
22 hydraulics of the core respond?

23 COMMISSIONER ASSELSTINE: Okay.

24 MR. DENTON: So Brian is really describing the mass  
25 and energy calculations he has done, assuming makeup pumps are

1 actually working.

2 COMMISSIONER ASSELSTINE: Yes. But it does seem to  
3 me that once you do that then you have to go back and look at  
4 the other part, which is, do we have sufficient confidence in  
5 the way this equipment has been maintained in the past and is  
6 likely to be maintained in the future to rest our judgment  
7 that yes, we can count on the equipment working and not have  
8 the kinds of massive failures that occurred.

9 MR. DENTON: I think two key areas that we will be  
10 covering at Davis Besse specifically are: Has the maintenance  
11 program really improved? Can we find that it has, and has the  
12 equipment then been tested before restart, and really  
13 demonstrated to work the way it is supposed to?

14 COMMISSIONER ASSELSTINE: Right. Okay.

15 MR. DENTON: This will maybe take five  
16 minutes, Brian, if you can summarize just what you did and the  
17 findings you came to.

18 MR. SHERON: We did three types of calculations.  
19 One was simplified mass and energy balances. These are hand  
20 calculations using steam tables and hand calculators.

21 MR. DENTON: These were done more or less  
22 immediately after the event and were reported to the ACRS  
23 about a month ago I guess.

24 MR. SHERON: Yes.

25 We also did analyses using research developed TRAC

1 PF-1 code at Los Alamos. And we also used the RELAP 5 code  
2 using the new plant analyzer, using the in-house facilities.  
3 So we had basically three sets of calculations.

4 Based on these calculations, our overall conclusion  
5 that we drew was that the current Davis Besse configuration  
6 can indeed go into a feed and bleed mode and successfully  
7 remove decay heat if the operator initiates it in a timely  
8 manner. This is using two makeup pumps and the PORV to remove  
9 decay heat.

10 COMMISSIONER ASSELSTINE: I take it none of those  
11 three pieces of equipment are safety grade?

12 MR. SHERON: The makeup pumps, I believe, are  
13 safety grade. And the PORV I don't think is fully safety  
14 grade.

15 COMMISSIONER ASSELSTINE: Okay.

16 MR. SHERON: Our conclusion was by timely operator  
17 actions if you initiate feed and bleed within 20 minutes --

18 MR. DENTON: I don't want to overemphasize the  
19 safety grade, because the two pumps that failed at Davis Besse  
20 were safety grade. So, there are other indicators of  
21 reliability other than that label that we stick on them.

22 COMMISSIONER ASSELSTINE: That's right.

23 MR. SHERON: Just to show you that we do have some  
24 confidence on our analysis codes, we did do a one calculation  
25 where we reproduced the Davis Besse event as it occurred, and

1 we got very good agreement between the computer code and the  
2 event. So we do have confidence that the codes, what they are  
3 telling us, is correct.

4 MR. DENTON: I think this is an important finding  
5 because remember, the first few days we had said that you  
6 could not feed and bleed at Davis Besse. And that was based  
7 on the considerations about the shuttle head of the pumps and  
8 the PORV relieving capability.

9 We have not looked that close at the capability of  
10 makeup pumps. Remember when you and I appeared in Congress I  
11 said the calculations appear to indicate that.

12 COMMISSIONER ASSELSTINE: That's right.

13 MR. DENTON: At that time we had the hand  
14 calculations and now we have the two more refined computer  
15 models which show the same thing; namely, the two makeup pumps  
16 and the PORV can keep the core sufficiently cool if they are  
17 turned on early in the event.

18 Then we went further and said, what else could we do  
19 with the PORV to enhance its relieving capability? And Brian,  
20 maybe you want to talk about that issue.

21 MR. SHERON: What we did is we understand on the  
22 Davis Besse plant there is a considerable length of piping  
23 that exists from the top of the pressurizer before it goes  
24 into the PORV. And so we looked at what would happen if we  
25 were to T off of that and add another PORV of about equal

1 relieving capacity as the one that is already there, which is  
2 around 210,000 pounds mass per hour.

3 When we ran the analysis using the RELAP 5 code with  
4 this additional PORV assumed to be on the plant, it did  
5 enhance the relieving capacity and the ability to depressurize  
6 and go on to the high-pressure injection system pretty much.

7 There is a question about, you know, when the  
8 ability to depressurize depends on when the operator actuates  
9 it, the PORVs. But the overall conclusion is that if you did  
10 put on a second PORV on the plant of equal relieving capacity,  
11 you would substantially increase the feed and bleed capability  
12 of the plant, and you would most likely be able to feed and  
13 bleed, maybe without even having to rely on makeup pumps, but  
14 just on HPI plus the PORVs.

15 COMMISSIONER ASSELSTINE: Even given the existing  
16 HPI pump as opposed to one that was with a larger pump  
17 capacity?

18 MR. SHERON: Yes, with the current low head which I  
19 think is around 1836 psi to shut off head.

20 CHAIRMAN PALLADINO: You recommend that they put  
21 such additional PORV on?

22 MR. DENTON: We are looking at it in the long term  
23 -- I don't recommend it prior to restart. But what I have  
24 asked the Division of System Integration to do is to take a  
25 relook at all plants in this area.



1           You had asked yesterday about which plants had which  
2   type of shutoff heads. Why don't we turn to that issue next  
3   --

4           COMMISSIONER ZECH: Also, you ought to look at the  
5   potential disadvantage of additional PORV because I am --  
6   that's an important factor to cover, I'm sure.

7           MR. DENTON: There is a wide spectrum of plants.  
8   And if you could pass around, Brian, the information we put  
9   together since your question yesterday, we will spend three  
10   minutes talking about which plants have shutoff heads equal to  
11   the relieving capacity, and which have lower.

12           But it is clear here that if they could add  
13   additional PORV capacity -- and Mr. Williams said there were  
14   some possibilities for that -- they could, in effect, look  
15   like typical Westinghouse plant then with regard to HPCI PORV.

16           If they have the Westinghouse type pump head  
17   capacity, shutoff head type Westinghouse pump, but they  
18   didn't have the PORV relieving capacity in most Westinghouse  
19   plants.

20           So Brian, why don't you just spend a few moments and  
21   give this broader look at all plants with regard to shutoff  
22   head and PORV capacities.

23           COMMISSIONER ASSELSTINE: Harold, just before he  
24   does that, let me ask just one more question about the  
25   analysis that you have done for Davis Besse as it is now

1 configured.

2 If you lost one or both of the makeup pumps, then  
3 what would that do to your analysis?

4 MR. SHERON: The plant right now we don't believe  
5 would be able to successfully feed and bleed with only one  
6 makeup pump in the current PORV, single PORV. And obviously  
7 -- let me qualify that. If the operators had one makeup pump  
8 and also started, properly started the current -- I'm sorry  
9 the startup feedwater pump that they have, the combination of  
10 the one makeup plus the startup feed pump would be able to  
11 remove all the decay energy and there would be high -- I  
12 guess a fairly high probability that it would be successful.

13 COMMISSIONER ASSELSTINE: But absent feedwater, get  
14 total loss of feedwater, you had lost one of the makeup pumps  
15 --

16 MR. SHERON: We don't believe one makeup pump would  
17 do it.

18 COMMISSIONER ASSELSTINE: Okay.

19 CHAIRMAN PALLADINO: What can you do with the  
20 high-pressure injection system?

21 MR. DENTON: You could raise the shutoff head. You  
22 could put in a pump with a high shutoff --

23 CHAIRMAN PALLADINO: The existing one, could they do  
24 anything in terms of feed and bleed by piggybacking,  
25 depressurizing?

1 MR. DENTON: The problem is the relief capacity of  
2 the PORV is not sufficient to blow the system down to even the  
3 cutoff head of the piggyback system, so they are limited at  
4 the moment by that PORV relieving capacity. It is relatively  
5 small compared to the relieving capacity in many plants.

6 CHAIRMAN PALLADINO: I thought they were able to do  
7 some injection by piggybacking.

8 MR. SHERON: The piggybacking is when they run the  
9 HPI pump suction from the low-pressure injection pumps. That  
10 has the effect of raising the pressure of the system. But it  
11 only raises it to about 1836 psi, I believe, shutoff head for  
12 maybe a pressure of around 1700.

13 So, it still doesn't raise it to the point where it  
14 can pump and raise the PORV valve.

15 MR. DENTON: I think there was some water going in  
16 the vessel during the event because of that, but that is  
17 because they did have the makeup pumps on, both of them, and  
18 they were beginning to get water into the steam generator  
19 also.

20 So that combination of those things were lowering  
21 the pressure sufficiently, so that piggybacking did become  
22 effective.

23 COMMISSIONER ASSELSTINE: Have any of these PORVs  
24 failed closed as opposed to failing open? Any history of  
25 PORVs failing closed?

1 MR. DENTON: We didn't bring down at this point our  
2 PORV experts.

3 COMMISSIONER ASSELSTINE: Maybe you will just let  
4 me know later.

5 CHAIRMAN PALLADINO: I think it would be of interest  
6 to all of us.

7 MR. DENTON: I think a key consideration in talking  
8 about this area is from early days on the primary mode of  
9 removing decay heat was through the steam generator. And the  
10 early plants were all designed to remove heat through the  
11 steam generator.

12 You recall some of the early plants did not have  
13 emergency cooling system. So there you had to rely on the  
14 steam generator. And everyone felt that the combination of  
15 main feed and some auxiliary feed was an adequate way to  
16 remove heat. And it is usually a very reliable way.

17 Emergency core cooling systems were designed to cope  
18 with pipe breaks, and they came in a variety of configurations  
19 and pressures and so forth.

20 It wasn't until after TMI that we started looking at  
21 -- let's assume then that you lost feedwater, can this system  
22 designed for emergency core cooling systems do feed and bleed?

23 And that is where there was a variety of plant  
24 designs and that is why I wanted Brian then to describe and  
25 respond to your question yesterday, Mr. Chairman. We can tell

1 you the groups of plants, and some plants do have higher  
2 shutoff heads than other groups, just because of the way they  
3 follow the ECCS criteria.

4 (Commissioner Bernthal arrived)

5 CHAIRMAN PALLADINO: Is the feed and bleed situation  
6 at Davis Besse similar to all the other B&W plants?

7 COMMISSIONER ASSELSTINE: It looks like there is a  
8 big range.

9 MR. DENTON: Why don't we start and give you five  
10 minutes to cover that topic, Brian.

11 COMMISSIONER ASSELSTINE: In fact, it looks like  
12 most of the B&W plants are in the better category.

13 MR. SHERON: That's correct.

14 All the B&W plants with the exception of Davis  
15 Besse have HPI pumps which have shutoff heads that are above  
16 the safety valve set point. I think some plants go up to  
17 about 2700 pounds, and another group can pump up to around  
18 2900 pounds.

19 CHAIRMAN PALLADINO: And where did Davis Besse  
20 happen to be the exception?

21 MR. DENTON: Well, in none of these plants did we  
22 have at the time a requirement to design for feed and  
23 bleed. So they all did their own balancing in how to meet the  
24 ECCS requirements. And so they ended up then with this mixed  
25 ability of the feed and bleed.

1 CHAIRMAN PALLADINO: Now which are the B&W?

2 COMMISSIONER ASSELSTINE: Arkansas, Rancho Seco,  
3 Crystal River, TMI-1, Oconee Plant 2 and 3.

4 MR. DENTON: Why don't you start with the first  
5 group Brian, describe what they are.

6 MR. SHERON: Okay.

7 Well the first group are plants that have an HPI  
8 shutoff head that is either equal -- approximately equal to  
9 the safety valve relief pressure, or actually greater than it.

10 The B&W plants are the ones that have the shutoff  
11 pressure that is much higher than a safety valve set point.

12 The Westinghouse plants, most of them have shutoff  
13 heads that are around the safety valve set point which is  
14 around 2500 pounds pressure.

15 MR. DENTON: Now in terms of feed and bleed  
16 capability, I would rate these the highest. Here you don't  
17 need to rely on the PORV. You don't need the PORVs, you can  
18 pump water right through against safety valves and have  
19 sufficient relieving capacity to keep the core cooled under  
20 all conditions just by the amount of water you are pumping  
21 through the core.

22 So I guess if you were looking at feed and bleed  
23 capability this would be the top group, because very little  
24 else has to function.

25 CHAIRMAN PALLADINO: When you open those valves and

1     reduce the pressure, can you create bubbles in the pressure  
2     vessel or elsewhere in the system?

3             MR. SHERON: Yes. Eventually -- it depends on when  
4     you are depressurizing from what condition. But once you  
5     depressurize to the point where the hottest fluid in the  
6     system reaches the saturation temperature -- or the pressure,  
7     I'm sorry, drops down such that it is at the saturation  
8     temperature, then the hottest water in the system will begin  
9     to flash.

10            Typically, that would be in the upper head or right  
11     above the core in that region, and you would start to void  
12     probably in the upper head of the vessel.

13            MR. DENTON: So I have covered the first group here,  
14     the ones that are say in the best position.

15            CHAIRMAN PALLADINO: Feed and bleed is to try to  
16     cool the reactor. Would we get into any trouble if we have  
17     too much depressurization capacity?

18            MR. SHERON: Actually, the concern was raised that  
19     if you remained at high pressure in a feed and bleed mode,  
20     namely, just at 2500 pounds, and you continued to put cold  
21     water into the primary system and relieve it through the PORV,  
22     what you are doing is you are cooling down the primary system  
23     at high pressure and you run a thermal shock type of  
24     concern. So it is actually desirable, if you are going to feed  
25     and bleed, to try and get the pressure down when you are doing



1     it. So even though these plants have the capability to feed  
2     and bleed at high pressure, it would be desirable for them to  
3     open the PORVs if they have them and try to get the pressure  
4     down anyway because getting the pressure down, besides  
5     reducing the pressure, also allows the pumps to put more water  
6     in at the lower pressure.

7             MR. DENTON: It certainly isn't the preferred way to  
8     cool. The steam generator should be used if at all available,  
9     but if for some reason you had neither main nor auxiliary  
10    feed, then you would go to this. So this group is clearly in  
11    the best position for feeding and bleeding if it is called  
12    for.

13            [Commissioner Bernthal rejoined the meeting.]

14            The next page shows the different categories, then,  
15    for pumps with the HPI shutoff head below the safety relief  
16    valve pressure.

17            Brian, why don't you describe those.

18            MR. SHERON: These plants, with the exception of  
19    Davis-Besse, which you know has the shut-off head around 1834  
20    pounds, I think, in the piggyback mode -- these are  
21    Westinghouse plants -- I'm sorry. Except there is, I believe  
22    -- there is a CE plant in here. You will note there is a bunch  
23    of two-loop plants in here, Point Beach, Prairie Island and  
24    Ginna -- I'm sorry -- and Kewaunee. These plants would have  
25    to open the PORVs and depressurize the primary system to below



1 approximately 1600 pounds before the HPI pumps could inject.

2 CHAIRMAN PALLADINO: All of them have to go to 1600,  
3 or don't I read the heading right? It says plants with HPI  
4 shut-off head approximately 1600.

5 MR. SHERON: Yes. They would have to pressurize to  
6 below 1600 before these pumps could inject.

7 CHAIRMAN PALLADINO: All of these plants?

8 MR. SHERON: Yes.

9 COMMISSIONER ASSELSTINE: Lift point for all of the  
10 code safeties is about the same, what, 20 --

11 MR. SHERON: 2500.

12 COMMISSIONER ASSELSTINE: 2500?

13 MR. SHERON: Yes.

14 MR. DENTON: The point I was trying to make  
15 yesterday and didn't do so clearly is most of these other  
16 plants, with the exception of Davis-Besse, have rather large  
17 PORV relieving capacity and can, in fact, blow the system down  
18 rather promptly to 1600. Is that a good characterization?

19 MR. SHERON: Yes. Most Westinghouse plants have  
20 either two and some plants have three PORVs.

21 MR. DENTON: In those type plants, you can get down  
22 to 1600 very fast. Then you can demonstrate that you can feed  
23 and bleed with the HPCI. Davis-Besse only has that one PORV,  
24 and a relatively small one, at that. So that is why we have  
25 kind of focused in seeing if we can increase the

1     PORV-relieving capacity of Davis-Besse to make it look similar  
2     to that other group of plants.

3             COMMISSIONER ASSELSTINE:   Is Davis-Besse the only  
4     one in that group that has that combination of the load head  
5     capacity on the pumps and the limited relieving capacity?

6             MR. SHERON:   Yes, that's correct.

7             MR. DENTON:   There are some further plants with even  
8     lower shut-off heads, so in terms of where Davis-Besse is,  
9     they are not the lowest shut-off head.   Why don't you drop  
10    down to Group 2?

11            MR. SHERON:   Okay. This group of plants are the  
12    Combustion Engineering plants, and these plants have a  
13    shut-off head of approximately 1300 pounds.   These plants take  
14    a lot longer to depressurize down to the safety injection  
15    actuation setpoint -- I'm sorry.   The shut-off head of the  
16    pump, 1300 pounds.

17            While these plants can feed and bleed, they require  
18    a lot more prompt operator action to initiate it because it  
19    takes so much longer to depressurize the system.   In other  
20    words, instead of having to go to 1600 pounds, you have to go  
21    to 1300 pounds.

22            One of the considerations is that when you  
23    depressurize these plants, usually the hottest fluid in the  
24    system will start to flash at around 1600 pounds.   That has  
25    the tendency to hold the pressure up once it starts flashing,

1 so you reach 1600 pounds and you go on\* a more -- a slow  
2 depressurization until you hit 1300 pounds.

3 So it takes longer and therefore the operators would  
4 have to initiate feed and bleed rather promptly.

5 CHAIRMAN PALLADINO: Do they have more relieving  
6 capacity than, say, Davis-Besse? How do they relate to the  
7 other plants except Davis-Besse in Group 1 so far as relieving  
8 capability is concerned?

9 MR. SHERON: With the exception Palo Verde, San  
10 Onofre and Waterford, all of which, as you know, don't have  
11 any PORVs and therefore don't have a feed and bleed  
12 capability, these plants all, I believe, have relieving  
13 capacity that would be greater than Davis-Besse.

14 COMMISSIONER ASSELSTINE: And those three Combustion  
15 plants rely on the core spray?

16 MR. SHERON: No, core spray can only be  
17 pressurized --

18 COMMISSIONER ASSELSTINE: Pressurizer spray.

19 MR. SHERON: Pressurizer spray can only be  
20 pressurized, but it doesn't allow you to put water into the  
21 system, so there is no relieving.

22 MR. DENTON: We put a great deal of faith in that  
23 so-called auxiliary pressurizer spray, and incidentally, it  
24 was tested at Palo Verde within the last week at 55 percent  
25 power. It's a safety grade system. It's designed for single

1 failures. It didn't work. So we are looking into the generic  
2 implications.

3 CHAIRMAN PALLADINO: In what way didn't it work? It  
4 didn't depressurize or something didn't function?

5 MR. DENTON: Its electrically-powered pump.  
6 It was one of the required tests. As they go up in power, they  
7 tripped from 55 percent power, and the test was supposed to  
8 demonstrate that this sort of equipment operated. Apparently,  
9 power never got to the pumps. The pump that powers --

10 MR. MIRAGLIA: The valves.

11 MR. DENTON: The event just happened. It's not fully  
12 understood but it is an indication that the system we are  
13 relying on, CE plants, needs to be looked at very  
14 carefully. That is a safety grade system and that didn't work  
15 properly.

16 COMMISSIONER ASSELSTINE: Maybe they will revisit  
17 that issue.

18 CHAIRMAN PALLADINO: I don't know whether it is  
19 something fundamental, and maybe you don't, to the design or  
20 whether we are just not hooked up right. Or the valves --

21 MR. DENTON: We don't know either. I understand  
22 they repeated the test shortly thereafter and everything did  
23 work, but we are looking into what happened, and it may be the  
24 way they arranged the turbine trip. They have to simulate  
25 loss of off-site power and that sort of thing.

1           In none of these plants, is this the main way of  
2   cooling. If you really wanted to design a plant to do feed  
3   and bleed, you would put in high pressure pumps with a high  
4   shut-off head. You would put in some control valves in order  
5   to control the blowdown so it wouldn't be PORV either open or  
6   shut.

7           We have struggled with this issue, and normally from  
8   a cost-benefit standpoint we cannot find the basis for  
9   requiring either PORVs at the CE plants, because it's unlikely  
10   that you lose feedwater and auxiliary feedwater to begin  
11   with. It's not a dominant contributor to risk, generally.

12           COMMISSIONER ASSELSTINE: Evidently it gets back to  
13   that assumption --

14           MR. DENTON: Feed and bleed is a last ditch stand to  
15   protect the core if you have lost all means of removing heat  
16   through the steam generator.

17           CHAIRMAN PALLADINO: You said feedwater reliability  
18   is high? I don't have that feeling.

19           MR. DENTON: After TMI, we adopted this criteria to  
20   try to get feedwater reliability up to 10 to the minus 4, 10  
21   to the minus 5, the idea being that it is very expensive to  
22   change the PORV HPI system because it is designed for one  
23   purpose and you want to make it do another purpose. There is  
24   a lot of effort required to do that. Let's instead work on  
25   the reliability of feedwater.

1           That is when the Staff adopted in the Standard  
2   Review Plan this 10 to the minus 4, 10 to the minus 5 goal for  
3   auxiliary feedwater reliability. Of course, that assumed that  
4   the systems were well maintained and were tested properly and  
5   would operate reliably. There is a mixture of those systems,  
6   and I put on the next page the types of auxiliary feedwater  
7   systems that are out there.

8           You recall we have done several PRA studies of every  
9   plant's auxiliary feedwater system.

10           [Slide.]

11           And we have required a number of plants to add  
12   additional pumps in their auxiliary feedwater system to bring  
13   them up.

14           CHAIRMAN PALLADINO: Let me ask a question and maybe  
15   make an observation independent from exactly what we are  
16   talking about here. The Staff is learning a lot of things by  
17   all this review, and I was wondering, had you ever thought of  
18   sitting down and saying if we were designing a plant to  
19   optimize its safety and without getting too complicated, what  
20   would you do? I think that would be a useful exercise. But  
21   that is an aside.

22           MR. DENTON: A lot of this thinking is going into  
23   that new EPRI design, which is trying to design up a safer,  
24   more reliable plant of the future. These kinds of  
25   considerations are the starting point there.

1                   COMMISSIONER BERNTHAL: I think it is worth noting  
2                   that that is the very issue that the Advanced Reactor Policy  
3                   Statement intended to address. Whatever else might be said  
4                   about current generation plants, that the objective of this  
5                   agency as the guardian, if you will, of public health and  
6                   safety should be that the next generation have improvements,  
7                   and that is the main thrust of that policy statement.

8                   I had to get in my editorial here.

9                   CHAIRMAN PALLADINO: I was just trying to take  
10                  advantage of the current Staff thinking to get it set down.

11                 MR. DENTON: The point, I think, from our point of  
12                 view is even one pump is sufficient if it works. You know, we  
13                 have always required single failure, so we require two pumps.  
14                 Three pumps give you more redundancy, and we would like to go  
15                 for diversity, but if a plant is really being operated poorly  
16                 and not maintained well, then all these concepts of redundancy  
17                 in operation would be kind of ineffective.

18                 Let me go to the auxiliary feedwater systems because  
19                 that is really what we have been relying on rather than feed  
20                 and bleed. We always realized feed and bleed is a backup to  
21                 auxiliary feedwater reliability.

22                 COMMISSIONER ASSELSTINE: Before we do that, I think  
23                 the point, Joe, you were raising and Fred was raising is one  
24                 that is worth capturing just for the moment. That is, if  
25                 there really is a consensus on the part of the Commissioners,



1     what we want the Staff to do with any future plants is to make  
2     sure as a broad matter there is a higher margin of safety in  
3     those plants. I think that is a point that is well worth  
4     noting because I think that concept has somehow alluded us in  
5     various policy statements that the Commission has dealt with.  
6     I think that is a good point worth noting.

7             MR. DENTON: It is a lot easier to deal with in a  
8     new design than, say, the diversity of all designs, and that  
9     is why we have been struggling with some of the USIs for old  
10    designs, because they are so varied.

11            MR. MIRAGLIA: I think, Commissioner Asselstine, the  
12    very point in TMI in looking at aux feed reliability has led  
13    to those kinds of changes to seek those improvements to the  
14    extent possible with the designs that we had out there,  
15    looking at the stage of design that we are in.

16            COMMISSIONER BERNTHAL: I think in part what the  
17    Chairman, I assume, is talking about here in my judgment was a  
18    very important part of another policy statement, one which we  
19    have approved, in fact, now, and that is the severe accident  
20    policy statement.

21            If I understand what you are saying, Joe, I gather  
22    it is that now is the time to sit down and for the plants we  
23    have already got, this diversity of plant, is sit down and do  
24    what we have talked about doing and do what is in that  
25    policy statement, and you guys with all the expertise you



1 have, put your compasses on those plants that in your judgment  
2 need some special attention and need some PRA work done,  
3 perhaps, or whatever it takes.

4 If you will indulge me for a second, I am curious to  
5 know about the Combustion plants, particularly.

6 Surely there has been something close to a  
7 full-blown PRA now done on those plants in connection with  
8 their seeking final design approval, I guess, or something  
9 closely akin to that?

10 There has not been a PRA done on it?

11 MR. MIRAGLIA: No, sir. It is one of the things they  
12 would have to commit to in order to get --

13 COMMISSIONER BERNTHAL: I see. So that has not yet  
14 been done.

15 MR. MIRAGLIA: For the Combustion Engineering  
16 system 80 plant, that's correct, sir.

17 COMMISSIONER BERNTHAL: I was curious as to whether  
18 it picked up these -- obviously it didn't pick up that the  
19 pump failed, but if that is a single item event, it sounds  
20 like there is a vulnerability there.

21 MR. DENTON: Not in a sour grapes vein, but I  
22 proposed to the Commission when we reviewed Palo Verde that we  
23 have them study a design for PORV, but I was not able to  
24 substantiate that it would really be that valuable an  
25 addition, all things considered, because it did have a

1 negative side. It also put in a valve which could stick open  
2 and actually cause the reaction we were trying to prevent.

3 So a lot of study went into that, and finally the  
4 Staff concluded that, on balance, considering all the  
5 advantages and disadvantages of PORVs, we could not justify  
6 requiring a PORV on CE plants. But there was credit given in  
7 those considerations to this auxiliary feedwater system, and I  
8 think it is important to find out why it failed at Palo Verde  
9 so that we can make sure that it doesn't fail again if called  
10 upon in real life.

11 This time we detected it during a plant test, which  
12 was what the test was intended for.

13 COMMISSIONER ZECH: I think it is very important.  
14 I hope you follow it through and let us know about that  
15 particular situation at Palo Verde. I would be most  
16 interested to find out how that turns out.

17 MR. DENTON: This slide, then -- I just want to  
18 spend a moment, since feed and bleed is not a solution to core  
19 cooling --

20 COMMISSIONER ASSELSTINE: Not the preferred one.

21 MR. DENTON: Not the preferred one. Just look at  
22 the diversity of auxiliary feedwater systems which have been  
23 designed.

24 Brian, why don't you give just a brief rundown on  
25 these categories, and I will remind the Commission we did a

1 PRA study of every plant's auxiliary feedwater system in the  
2 years following TMI, and that led to improvements in many of  
3 these plants.

4 MR. SHERON: The Vu-graph that you see there, I  
5 think is kind of self-explanatory on summarizing the auxiliary  
6 feedwater systems in the operating plants today.

7 As Harold said, we did an evaluation of the  
8 reliability of these systems following TMI, and from this  
9 list, we have identified seven plants which we are currently  
10 proposing to go to CRGR and require that these plants improve  
11 the reliability of their auxiliary feedwater systems. These  
12 are Prairie Island-1 and 2, Arkansas Unit 1, Arkansas Unit 2,  
13 Fort Calhoun, Crystal River-3, and Rancho Seco.

14 We are not proposing at this time that any definite  
15 hardware be added to these plants. We are not trying to  
16 backfit new pumps or anything of the like. What we are trying  
17 to backfit is the reliability criteria. We are saying that  
18 these plants should meet the reliability criteria set forth in  
19 the Standard Review Plan, Chapter 10, which is a 10 to the -4,  
20 10 to the -5 reliability.

21 COMMISSIONER ASSELSTINE: Which category do those  
22 plants fall in, the ones that you just mentioned, in this  
23 list?

24 MR. MIRAGLIA: I think it's both, Commissioner  
25 Asselstine. What it shows is for 50 plants, that's the kind

1 of configurations you see, and what you see are the exceptions  
2 to that general configuration of two motor, one steam, or one  
3 each.

4 COMMISSIONER ASSELSTINE: Some of these that you  
5 mentioned might well have two motor-driven pumps and a  
6 steam-driven pump, but you're not satisfied with the  
7 reliability of the system.

8 MR. SHERON: That's correct.

9 MR. MIRAGLIA: That's correct.

10 COMMISSIONER ASSELSTINE: Ginna looks terrific, four  
11 motor-driven pumps and a steam. Are those all full  
12 capacities?

13 MR. SHERON: I don't know.

14 MR. DENTON: From a designer standpoint ideally, as  
15 we have talked about before, you would want diversity, you  
16 would want both. Electric pumps are more reliable for  
17 steam-driven pumps, but for station blackouts you'd want  
18 steam-driven.

19 Jim, you might want to mention your look at the  
20 Turkey Point steam side recently as another example where you  
21 think a plant has highly reliable systems. Then when you look  
22 into some details, you begin to wonder about its maintenance.

23 I know this isn't the planned Davis-Besse  
24 presentation, but I thought I would use it to answer the broad  
25 question of feedwater, feed and bleed, auxiliary, because it's

1 bigger than a Davis-Besse issue.

2 COMMISSIONER ASSELSTINE: That Turkey Point  
3 configuration is a strange bird.

4 [Laughter.]

5 MR. TAYLOR: We just exited at Turkey Point last  
6 Friday. I went down last Thursday. We had a group of people  
7 in there. What I did is, I combined people really learning  
8 from Davis-Besse. I was concerned that some of the messages  
9 out of Davis-Besse went beyond what we frequently call pure  
10 maintenance to engineering and test and system actions. So I  
11 put together a group.

12 The team leader is here, Mr. Joe Callan.

13 And what I did is, I took two systems engineer  
14 consultants, electrical and mechanical, that I had confidence  
15 in, put several PAT people with them and several Regional  
16 people from Region II, and we spent essentially the better  
17 part of two weeks at Turkey Point reviewing the auxiliary  
18 feedwater system.

19 The inspection report is not finished yet, but we  
20 have a number of issues of unrecognized casualty conditions  
21 that the team was able to develop, and where both the training  
22 and procedures were not in place for various casualties  
23 affecting the auxiliary feedwater system that could occur, and  
24 we did find a situation that is a system that has many  
25 air-operated valves in it, using -- and I think even ACRS has

1        been into that -- using instrument or service type air, which  
2        they back up with a safety grade nitrogen -- pressurized  
3        nitrogen system.

4                One of the teams -- the team looked at that nitrogen  
5        system in detail, and the design people did a quick  
6        calculation on the capacity of that system and the ability to  
7        operate in automatic when you lost the air system. And our  
8        design people said, "Gee, the numbers that the operators have  
9        are off by a factor of two or four from the way that system  
10       would really behave."

11               The system had never been tested, completely  
12       tested. They ran static tests on it. At our request, Florida  
13       Power & Light did a test, and the calculated predictions by  
14       our design engineers were that the system would sustain --  
15       that is, the nitrogen system would sustain the auxiliary  
16       feedwater system for roughly about five minutes, and the  
17       company was using numbers between ten and twenty minutes. In  
18       reality, it became about six minutes.

19               For other unanalyzed conditions in that system, at  
20       my request, the company did two things over the weekend. They  
21       put in effect certain procedures to both recognize the  
22       casualties that could occur -- that's a shared system for  
23       Units 3 and 4 -- and they also conducted training over the  
24       weekend. That led me to believe, at least, their immediate  
25       remedial actions were sufficient, that we should not take

1 sterner action at that time.

2 But the maintenance situation in the air system was  
3 not good. The steam system, the steam supply to the auxiliary  
4 feedwater system leaks by all the valves, such that they have  
5 had to sustain drains open constantly to drain the condensate  
6 of the auxiliary feedwater system.

7 One of the reasons we are worried about that is, if  
8 you get slugs of water -- it takes quite a bit; Davis-Besse  
9 did -- you can trip the turbines on the aux feed system. With  
10 the drain conditions, they had tested and the pumps did  
11 respond, but it is of concern that they have got so many  
12 maintenance difficulties.

13 I have the team leader. I didn't intend to get into  
14 all of the details of that inspection, because we have not  
15 finished even the report yet. But I think we have an  
16 inspection process that will help us.

17 And by the way, we went to Turkey Point at the  
18 request and suggestion of the Regional Administrator down  
19 there, because there has been a continuing issue about  
20 maintenance and system type problems.

21 COMMISSIONER ASSELSTINE: Wasn't there a loss of  
22 that system a couple of years ago, I think due to valve  
23 configuration?

24 MR. TAYLOR: Does anybody here know? I don't know.

25 Joe? This is Mr. Joe Callan. Joe, would you like



1 to come up and answer that question?

2 CHAIRMAN PALLADINO: I wonder if we should get more  
3 deeply into that. I think we will be diverted.

4 MR. TAYLOR: I don't mean to divert.

5 Joe, can you answer the question.

6 MR. CALLAN: Recently in July, the end of July, they  
7 had overspeed problems on the auxiliary feedwater pumps. They  
8 also had failures of their flow control valves, those  
9 air-operated valves. A number of years ago -- the exact  
10 number escapes me -- they had valve lineup problems, that with  
11 manual valves shut, that disabled the entire system of both  
12 units.

13 CHAIRMAN PALLADINO: That's the one I was thinking  
14 about.

15 MR. CALLAN: About three years ago.

16 COMMISSIONER ASSELSTINE: It's such a Rube Goldberg  
17 type of system.

18 MR. CALLAN: It's a very strange system.

19 MR. DENTON: I think I achieved my purpose in  
20 raising the whole issue of auxiliary feedwater systems and  
21 feed and bleed. We've had a great deal of activity in this  
22 area for years, trying to raise everyone up to the right  
23 level. And I will just observe that we would probably be more  
24 effective if we didn't put any more effort into the  
25 Davis-Besse review and we went out and reviewed some other



1 plant, because we have now gotten Davis-Besse's attention to  
2 the need for a reliable auxiliary feedwater system. But there  
3 are a lot of other plants out there that we have never looked  
4 at that hard.

5 CHAIRMAN PALLADINO: They sort of get added to that  
6 list of five for different reasons.

7 COMMISSIONER ASSELSTINE: I would just add, Joe -- I  
8 don't want to belabor the point -- on Turkey Point, I think  
9 the Staff is to be commended on doing the type of special  
10 inspection that they did. I think both Nelson and Jim, you  
11 put that kind of effort on it, and I think that's really  
12 good.

13 And I think Harold's right. The key is to begin to  
14 look for some others where you have these kinds of  
15 vulnerabilities that somehow have escaped the system in the  
16 past and where operating experience is telling us that the  
17 reliability is not what it has to be for those systems.

18 MR. DENTON: These systems are not called upon to  
19 operate very often, and they are not the normal,  
20 well-maintained system as a system that's continually  
21 operating.

22 COMMISSIONER ASSELSTINE: As you say, that's the  
23 system you are really relying upon in this kind of situation,  
24 and the backups aren't nearly so good.

25 MR. DENTON: I think originally in the designer's

1 mind you rely on main feedwater. Very rarely would you have  
2 to go to auxiliary feedwater.

3 Let's come back to the planned briefing. Frank, why  
4 don't you pick it up at the second bullet.

5 MR. MIRAGLIA: Slide 9.

6 CHAIRMAN PALLADINO: We're back on --

7 MR. MIRAGLIA: On the Davis-Besse handout from  
8 yesterday, Mr. Chairman, starting with the slide that reads,  
9 "Other NRC Restart Considerations."

10 [Slide.]

11 The initial part of the briefing essentially  
12 parallels the information you heard yesterday. The utility  
13 was sent the 50.54(f) letter and was told to deal with the  
14 equipment issues identified as a result of the event and the  
15 other programmatic issues stemming from the analysis of the  
16 event, and that response was received on the 12th of September  
17 and is undergoing Staff review.

18 This chart here is to indicate some of the other  
19 activities that the Staff has underway with respect to the  
20 Davis-Besse restart.

21 Mr. Denton has already discussed the first bullet.  
22 There is a briefing of the ACRS in October, the subcommittee.  
23 They have tentatively scheduled a meeting at the site or the  
24 site vicinity for early October, I believe the 4th of October.

25 In addition, the Staff is looking at the utility's

1 response to determine and fully agree with and assess the  
2 actions that need to be completed prior to startup and what we  
3 might want to see subsequent to startup.

4 A number of special investigations and inspections  
5 have been underway, conducted out of Region III, Mr. Keppler's  
6 office, following the troubleshooting and corrective action  
7 programs that the utility has in effect to assure that they  
8 were done according to the protocols that were agreed upon  
9 when the special investigation team was sent to Davis-Besse.

10 In addition, the NRR and the Region are conducting a  
11 special maintenance assessment at the facility. There is a  
12 team at the site this week. This is a pilot program that we  
13 had started to go out, and based upon Regional input, look at  
14 plants that we thought had relatively good maintenance  
15 programs, get some assessment as to what the performance  
16 indicators were, to get a feel for that.

17 We have done one or two of those, and we thought it  
18 would be useful, based on those kinds of things, to go in and  
19 look at Davis-Besse, since we talked about maintenance being a  
20 problem, do an assessment there, get a report from the team as  
21 to what they see the issues with respect to the maintenance  
22 program being, and that team is there next week.

23 A training accreditation site review is scheduled  
24 for next week at Davis-Besse. This is the normal type of  
25 review, which was scheduled even prior to the event. It is

1 not a special activity. It was occurring before the event,  
2 and we also expect to look at the results of that review and  
3 consider that.

4 CHAIRMAN PALLADINO: Is that the INPO accreditation  
5 training?

6 MR. MIRAGLIA: I think this is our assessment of  
7 where they are with INPO, what have they provided INPO, and  
8 its our look at that kind of accreditation.

9 CHAIRMAN PALLADINO: It is related to INPO?

10 MR. MIRAGLIA: Yes.

11 COMMISSIONER ASSELSTINE: I gather the Staff had  
12 picked a few plants to go out and look at.

13 MR. MIRAGLIA: This one was already scheduled. The  
14 Licensee also, as they indicated yesterday, had agreed to a  
15 performance improvement program in concert with Region III  
16 last year, and has relooked and reexamined that. And we are  
17 also going to evaluate his response to implementing those  
18 concerns. As he indicated yesterday, he is aggressively  
19 trying to close out many of those issues.

20 In addition, we are going to evaluate the changes to  
21 the operating procedures that have been made. A new  
22 philosophy was outlined to you yesterday by the utility. I  
23 think there is some evidence that that philosophy is being put  
24 into place, and we're going to continue to watch and see that  
25 progress.

1 CHAIRMAN PALLADINO: What was the philosophy?

2 MR. MIRAGLIA: As the utility indicated to you  
3 yesterday, it is, "Safety First, and Enhance Performance," and  
4 I think that is going to result in lots of changes in  
5 operating procedures, some of which may not be related to this  
6 event at all. But I think we're going to be interested in  
7 seeing how that program gets implemented and follow through on  
8 it.

9 COMMISSIONER ASSELSTINE: Frank, in terms of the  
10 improvement program, this improvement program was started, I  
11 guess over a year before or about a year before the June 9th  
12 event and had been underway for some time. I gather from what  
13 the company had said yesterday, that they are still pretty  
14 satisfied that that improvement program addresses the right  
15 things and represents the right way to go, with some  
16 modifications, and there have been a lot of interim measures.  
17 It sounds like mostly reorganizing people, bringing in some  
18 new people, and beefing up their efforts in some areas.

19 How is the Staff going to go about satisfying  
20 itself, and what are you going to be able to tell us to  
21 satisfy us about the overall adequacy of the improvement  
22 program?

23 Again, as we go back to these improvement programs,  
24 they all look good on paper, they all sound pretty good, but  
25 how are we going to have confidence that, yes, in fact, that

1 program really needs --

2 MR. DENTON: I think Jim Keppler is listening in,  
3 and since he started the improvement program, maybe he would  
4 like to respond to that first.

5 Jim, are you with us?

6 MR. KEPPLER: Can you hear me? Yes.

7 COMMISSIONER ASSELSTINE: Barely. It could be a  
8 little louder.

9 MR. KEPPLER: Can you hear me now?

10 COMMISSIONER ASSELSTINE: Yes.

11 CHAIRMAN PALLADINO: Yes.

12 MR. KEPPLER: The comment I would make on that is  
13 that the program was always viewed as being pretty good on  
14 paper, but in terms of implementing the program, it fell  
15 short. We conducted a review with the consultant on the  
16 program, and he does consider the program to be basically  
17 sound, but he had felt that they need to prioritize certain  
18 things, so that the accomplishments can be recognized. And I  
19 think that's what we're going to have to do, to follow it  
20 through to see that the program is actually being implemented,  
21 and that's where we're going to put our efforts.

22 COMMISSIONER ZECH: That was my impression when I  
23 visited out there not to long ago, too, that the program was a  
24 fine plan, and there was a lot of emphasis on the planning,  
25 but there wasn't as much emphasis on execution. And so I

1 think that's exactly what is happening now. And as I  
2 understand it, that's what Joe Williams and the new management  
3 team is intending to focus on, is execution as well as the  
4 planning, and I think that's the right approach.

5 CHAIRMAN PALLADINO: Jim, I think we heard you. We  
6 just didn't acknowledge that we had heard you.

7 MR. DENTON: We are somewhat behind schedule in this  
8 briefing. The next point, though, is one that deserves a  
9 little bit of mention. This is the testing of systems and  
10 equipment and the need to review the startup test program, and  
11 this is something that I&E and the Region and NRR are all  
12 working closely together on. I think this one area is going  
13 to take a lot of our attention, to be sure that all of the  
14 equipment which either failed or was modified has been  
15 properly restored to service and that they have done the right  
16 tests, so that when the plant restarts, we can be sure that  
17 all of the safety systems will perform in all the modes in  
18 which they might be called upon.

19 I think testing is the key area. The company has  
20 not fully developed the type of test that is going to be  
21 done. We have not reviewed it. But I think there is  
22 agreement between the company and us as to the objective, and  
23 that is to make sure that all safety systems will perform  
24 under all conditions under which they might be called upon.  
25 Implementing that and carrying out those reviews and

1 inspections is going to be a big effort for the Staff.

2 MR. TAYLOR: Some of the testing will probably have  
3 to be done after they return to some power level, too. I  
4 wouldn't be surprised.

5 COMMISSIONER ASSELSTINE: Would that mean actually  
6 doing tests for every configuration of the plant for which the  
7 safety analyses have depended?

8 MR. MIRAGLIA: With respect to that issue,  
9 Mr. Asselstine, when Mr. Denton and Mr. Keppler and I were at  
10 the site last week, we said that that should be the operating  
11 philosophy or the objective of such a test program. We  
12 recognize that whether we can get them all may not be  
13 possible, but to the extent that they can be done, and if they  
14 can't be done, what can we do to get some confidence, because  
15 some tests you just may not want to put the challenges within  
16 the system. But as an overall objective, that should be the  
17 goal of such a test program, and they have indicated that that  
18 was their intent. That's why they're doing these systems  
19 reviews, to try to pick out those things and what additional  
20 tests are really needed to identify those.

21 MR. DENTON: They have submitted quite a bit of  
22 information on testing, but the actual tests to be performed,  
23 I don't think will be developed by the company until the end  
24 of this month. So about that time, then, we can start looking  
25 in detail at what are they actually going to be able to do.



1                   COMMISSIONER ASSELSTINE: Do you have a feel for how  
2 many tests you are talking about, how many different system  
3 configurations?

4                   MR. MIRAGLIA: No, we don't. We got the briefing  
5 yesterday about the five groupings, the groupings of systems  
6 that they are looking at, and those systems reviews are  
7 underway, and they are scheduled to be completed towards the  
8 end of this month.

9                   We hope to start interacting with the utility as  
10 they feel they are complete enough on the first system, so we  
11 can get an idea of, how are they going about that, what is the  
12 scope of the testing for these systems, and interact as early  
13 as possible with them.

14                  COMMISSIONER ASSELSTINE: They can start with the  
15 primary system?

16                  MR. MIRAGLIA: I'm not sure which system is first.

17                  MR. DENTON: The last item on this slide was  
18 enforcement considerations. We didn't really want to talk  
19 about that today. We'll just flag it.

20                  CHAIRMAN PALLADINO: Have we identified the  
21 violations?

22                  MR. TAYLOR: Our headquarters staff is working with  
23 the Region, and we're laboring --

24                  CHAIRMAN PALLADINO: With the what?

25                  MR. TAYLOR: With the Region, with Region III.

1       We're working on it.

2               MR. DENTON: In view of the time, Mr. Chairman, we  
3       could go on in more detail, but I tried to give the impression  
4       we're following up on these items, or we could go to the five  
5       plants. It's your choice as to how we spend the remaining  
6       time this morning.

7               CHAIRMAN PALLADINO: I think it might be valuable to  
8       go to the five plants unless there are specific points of  
9       interest.

10              COMMISSIONER ASSELSTINE: It might be good to go  
11      ahead.

12              COMMISSIONER ZECH: That would be good.

13              CHAIRMAN PALLADINO: All right. You might dwell for  
14      a moment on the significance of the five plants compared to  
15      statements I remember reading in some of the documentation,  
16      that while these plants are plants that have a lot of things  
17      that need attention, they are not necessarily the plants that  
18      have the most significant safety issues, or words to that  
19      effect, let me say, most significant problems.

20              MR. DENTON: That's true.

21              CHAIRMAN PALLADINO: So putting that in context  
22      would be helpful to me because, you know, you form an  
23      impression "There are five plants, well, we will fix them  
24      up." But really, we have some other plants we ought to be  
25      giving attention to as well.

1                   MR. DENTON: I think our intent in identifying these  
2 five has not been fully understood the way we intended it. A  
3 few days after Davis Besse we asked ourselves, "Well, what are  
4 the long-lingering issues that are frustrating the project  
5 managers?" We didn't ask them which were the five most safe  
6 or the five least safe plants, but I was trying to identify  
7 long-lingering frustrating issues.

8                   We sent out a questionnaire to all the NRR project  
9 managers and got back their responses. And if you look at the  
10 five, you will find there are really two classes of these  
11 plants. Browns Ferry, Fort St. Vrain, and Rancho Seco are  
12 management-related issues. They are the kind of issues you  
13 have been hearing from the regional administrator about, and  
14 us, where the management is not giving adequate attention or  
15 resources, in our view.

16                   That's quite different from the Davis Besse  
17 third-pump issue, which was a lot of back-and-forth on the PRA  
18 studies. If you look at the Palisades issue, that's an issue  
19 where the company had committed to put a valve in and then had  
20 analyses where they felt justified taking it out. So that's  
21 more of an NRR sort of design issue.

22                   Likewise, San Onofre is not presenting us any  
23 problems from a management standpoint. We're quite satisfied  
24 with the way San Onofre 1 is being managed and operated.

25                   But there are a lot of items that had been deferred

1 at that plant. The fact when they shut down, they were not  
2 clearly going to resume operation. They have now committed to  
3 put most of those in during this outage, and that should make  
4 that one go away.

5 So these are not at all what I felt the five least  
6 safe plants or the plants we expect problems with in the  
7 future, but they were the ones which for some reason or other  
8 there was a long issue of frustrating the PM.

9 I have the PMs down here today, and I would propose  
10 to walk through each plant very briefly, and if you have some  
11 questions about some aspect, then we can have someone clarify.

12 Browns Ferry, I think we've said enough about the  
13 last couple of days, and I wouldn't do any more. We did send  
14 out the letter to Chairman Dean this week from Bill Dircks  
15 that gave to him our view of the SALP performance. And I  
16 think we discussed that with the Commission just a day or two  
17 ago.

18 MR. MIRAGLIA: You might point out, Harold, these  
19 plants were identified in response to the Chairman's request  
20 back in August, and we have provided a monthly update and sent  
21 it down to the Commission, dated yesterday.

22 MR. DENTON: Fort St. Vrain is the plant where I  
23 sent them a letter over a year ago that identified essentially  
24 the same list of issues. And they have been -- at that time,  
25 the main issue that led to the shutdown was the failure in the

1 control rod drive system, which was the final straw for the  
2 staff.

3 (Slide.)

4 Many of these issues have still not gotten resolved  
5 and were identified by the PM because they had been  
6 outstanding and lingering for a long time, and management  
7 seems to have difficulty putting these issues to bed.

8 CHAIRMAN PALLADINO: You call that the management  
9 problem plant?

10 MR. DENTON: Yes.

11 COMMISSIONER ASSELSTINE: It has been for years,  
12 really.

13 MR. DENTON: It's a small plant, a small company  
14 that operates it. We've had several meetings in Bethesda with  
15 the management, who is committed, they say, to bringing it up  
16 to modern-day reactor standards. But when it was built, they  
17 didn't really see it as having necessarily to meet the kinds  
18 of requirements that we expect today.

19 COMMISSIONER ASSELSTINE: How old about? Was it a  
20 year and a half or two years ago? Authority for Fort  
21 St. Vrain was transferred to Region IV, and the idea was that  
22 we would have a small group of people there that could really  
23 give this plant attention. They could concentrate their  
24 efforts on it. It would be a lot closer. It could be more  
25 responsive to the utility but at the same time could be more

1 aggressive from our standpoint in making sure that kind of  
2 changes that needed to be made there would get done.

3 Has that process not worked very well?

4 MR. DENTON: We've decided, I think, the regional  
5 administrator and I, to return the project management to  
6 headquarters for a variety of reasons. The regional  
7 administrator has his hands full with other types of plants,  
8 as it turns out, with the Waterfords and Wolf Creeks and  
9 Comanche Peaks, and has not been able to give it undivided  
10 attention. Plus, these kinds of issues require a large  
11 technical staff and unique skills to deal with it.

12 So a lot of progress was made in getting amendments  
13 issued at one time, but it just seems that these issues are  
14 still lingering. But we do have a commitment from the upper  
15 management of Fort St. Vrain to not let them linger, not  
16 much longer. So we have schedules, and they have a  
17 performance enhancement program such as Davis Besse had, with  
18 operating tech specs. And they've requested our approval now  
19 for low-power operation in order to dry out the core again.

20 It is a unique plant -- it's not a light-water plant  
21 -- in that it has different safety features, very slow to  
22 respond to system upsets, and doesn't heat up very fast. So  
23 we tried to take all this into account. But nonetheless, I  
24 think they operated for a long thinking there were just a lot  
25 of requirements that they just didn't have to meet. And we

1       felt different.

2               COMMISSIONER BERNTHAL: Is it really certain in your  
3       mind that there is a reasonable position being taken by us as  
4       an agency, by you as the technical people that have to  
5       evaluate their problems out there? I have to confess that I  
6       have been to Fort St. Vrain twice, once out of curiosity when  
7       I worked in another place and was a supporter, and still am,  
8       of that concept; a second time as a regulator. And neither  
9       time have I been particularly impressed by the management.

10              But aside from that, it is a very forgiving plant  
11       design, and one wonders whether that buys you quite a bit or a  
12       little bit or -- I grant you that we all have our justified  
13       prejudices on how a plant ought to look and how the management  
14       ought to be responding. But it's somewhat more important when  
15       you are driving a Ferrari than when you are driving a golf  
16       cart, I guess.

17              (Laughter.)

18              COMMISSIONER ASSELSTINE: You don't want the wheels  
19       to fall off.

20              (Laughter.)

21              MR. DENTON: We have wrestled with that. We have  
22       retained Los Alamos as our technical consultant, who knows  
23       quite a bit about that.

24              Let me ask Ed Butcher, who I think is our branch  
25       chief for this group. We did that special inspection about a



1 year ago and found a lot of things that were bothersome to us,  
2 and that did lead to a plant shutdown.

3 COMMISSIONER ASSELSTINE: I think Victor had gone  
4 out there just before that, hadn't he, and found just a lot of  
5 things that were troublesome?

6 MR. DENTON: What this illustrates, I think, if you  
7 get into a plant that is management-related, we don't have a  
8 lot of criteria as we do for hardware in our rules and GDCs,  
9 and it's very hard. The regulatory tools that we have for  
10 a plant where we think that management attention isn't being  
11 given are pretty bleak. It's either: suspend the authority  
12 to operate, or not. We're not urging the company to give it  
13 more management attention to fix these problems, but we can't  
14 point to a detailed Part 20 and say, "Do this thing and  
15 everything will be all right."

16 COMMISSIONER BERNTHAL: I guess I am really asking  
17 how good is your baseline here? We are used to operating  
18 within a certain framework, I think, of a broad understanding  
19 of what PRA and your vast engineering experience and the years  
20 since Three Mile Island have taught you in terms of technical  
21 requirements and acceptability of the light-water systems.

22 But this is a very different plant, very different  
23 design, and I guess I would appreciate knowing whether you  
24 think you have that kind of baseline understanding and  
25 confidence and knowledge based, in part, perhaps on a PRA.



1           I sort of doubt that you have that so that you  
2 really know what the appropriate stance of the regulator is in  
3 the case of an HTGR, given the forgiving nature of the  
4 design. Or are we applying to that plant standards that are  
5 more appropriately applied to the LWR?

6           MR. DENTON: Our staff have asked that kind of  
7 question. Let me ask Ed, since he's responsible for Fort  
8 St. Vrain and deals with it day-to-day, to answer that.

9           MR. BUTCHER: I think Commissioner Bernthal is going  
10 right to the heart of the problem for regulating a plant like  
11 Fort St. Vrain. We struggle with that issue every day. There  
12 are some unique design characteristics of the plant which tend  
13 to temper our application of the regulations, and sometimes  
14 it's very difficult to make an interpretation of the  
15 regulations which fit the unique characteristics of Fort  
16 St. Vrain.

17           But if I might use your Ferrari-and-golf-cart  
18 analogy -- and I believe it was Commissioner Asselstine that  
19 said, "The wheels must stay on both, regardless," and there  
20 are certain fundamental requirements -- and equipment  
21 qualification is a good example -- which received very little  
22 attention at Fort St. Vrain until very recently.

23           Regardless of how much time you have to deal with  
24 the accident, there is certain equipment which must survive  
25 the initial severe environment. And to that extent, the

1 equipment qualification regulations are just as applicable to  
2 Fort St. Vrain as they are to any other reactor.

3 COMMISSIONER BERNTHAL: Providing that the  
4 probability of having those severe conditions is in the same  
5 ballpark as the probability of having similar severe  
6 conditions in LWRs.

7 MR. BUTCHER: To some extent, the probability of  
8 certain pipe breaks is higher at Fort St. Vrain than it is at  
9 other plants because of higher operating temperatures and  
10 pressures.

11 There are characteristics of the plant which make  
12 it safer; there are characteristics of the plant which make it  
13 necessary for you to direct additional attention to it.

14 There are assumptions about operator action which  
15 are very important at Fort St. Vrain. You can make  
16 assumptions that nothing happens for, say, 12 hours in the  
17 case of loss of forced circulation. However, in the case of a  
18 break in one of the main steam lines, operator action is  
19 necessary within four minutes to make that a tolerable  
20 situation, given certain assumptions about failures of  
21 equipment when there is doubt about its qualification.

22 So you can see that things happen awful fast in an  
23 HGTR, and they happen awful slow. So it's the unique  
24 characteristics of the plant, in fact, that the regulations  
25 were not written to accommodate those characteristics which

1 make it difficult for both the staff and the licensee to deal  
2 with it.

3 However, I must say at this point my own experience  
4 indicates that the licensee has not regarded this plant as a  
5 power reactor in the sense that the reactor regulations  
6 apply to a power reactor.

7 There has been a certain tendency on the part of  
8 both the licensee and the staff to regard it as a  
9 developmental research type of facility and attempt to  
10 regulate it in that manner. It seems to me that for the  
11 future we have to regard this plant as a power reactor, giving  
12 special considerations to its unique design characteristics,  
13 and regulate it in that manner.

14 COMMISSIONER ASSELSTINE: In fact, I thought the  
15 effort over the past couple of years to grant some license  
16 amendments was to give them some leeway in those areas where  
17 they could demonstrate the characteristics of the plant were  
18 different from the light-water reactors that had led to our  
19 basis for regulations.

20 I guess my concern goes more to just the broader  
21 question of the quality of operation and the quality of  
22 management attention, quality of day-to-day operations at the  
23 plant. I am not sure that, at least when you get to that  
24 point, that you can grant major exceptions and say we're  
25 prepared to accept a much lower level of performance across

1 the board simply because this is an HTGR as opposed to a  
2 light-water reactor.

3 CHAIRMAN PALLADINO: Do we see any progress in terms  
4 of management attention, the progress that gives you a greater  
5 degree of confidence in the resolution of some of these  
6 problems?

7 MR. DENTON: The last time I met with them, we did  
8 get this assurance they were going to commit the resources and  
9 management attention to it. It is a small plant, so it  
10 doesn't earn a lot of money. In fact, it probably loses  
11 money.

12 But let me ask Ed if he sees -- what sort of  
13 progress he is seeing, since it is his group that identified  
14 it.

15 MR. BUTCHER: I would have to say, particularly in  
16 the last six months, that I have seen what I would consider an  
17 improvement in the management situation, management's  
18 recognition of the importance of treating this reactor like a  
19 power reactor. They made commitments to substantially  
20 increase their staff. I don't remember the exact numbers, but  
21 in the order of 60 to 70 additional personnel which they are  
22 bringing on to the plant.

23 I have made tours through the plant, and I have seen  
24 a marked improvement in housekeepign and what appears to be an  
25 improvement in maintenance. It is a very nice-looking plant

1 now in that regard, and it has been cleaned up.

2 The staff, the morale of the staff is good at the  
3 site now, and there seems to be a genuine recognition of the  
4 fact that there needs to be greater attention laid to  
5 regulatory compliance and the kinds of things we do for power  
6 reactors in general.

7 MR. TAYLOR: I would echo that, I think, for the  
8 Region, speaking for Bob Martin, who is gone. I was at the  
9 last SALP out there. Very definitely, I would echo that.

10 COMMISSIONER BERNTHAL: I am pleased to hear that  
11 because I think it's important that that plant be a bit of a  
12 showcase, if possible. I don't like to have to rely on the  
13 feeling like I had somewhat in the past that it must be safe.  
14 I won't say any more than that.

15 CHAIRMAN PALLADINO: I grant you the plant is small  
16 and they're probably not earning any money for the company.  
17 They do have people assigned to them. There is plant  
18 management, and the plant management ought to shape up or ship  
19 out. I know that sometimes it's a question of resources, and  
20 that's where the upper management perhaps fits more into this  
21 situation. But I am glad to hear that you are seeing some  
22 progress.

23 MR. DENTON: The next plant, I think, is on the list  
24 mainly for management-related issues. Also, you know, Jack  
25 Martin has had many, many meetings with the Rancho Seco

1 utility and the board of directors, and there has been a lot  
2 of studies.

3 (Slide.)

4 We just had, I guess, a SALP meeting with the  
5 licensee, and Jack told me yesterday that he is now of the  
6 view that when these latest commitments are met, he is willing  
7 to let the plant resume.

8 We don't have an order shutting the plant down. I  
9 understand the plant would be expected to resume operation  
10 early in October, and in Jack's view, that is fine. So it's a  
11 management issue. It has gotten a lot of attention by Jack.

12 CHAIRMAN PALLADINO: What are the things that are  
13 going to be done before they start up, or the significant  
14 ones?

15 MR. DENTON: These are ones that exist in the Region  
16 V confirmation. Let me ask Sid Minor who was out there  
17 recently, maybe to hit the highlights of a few of the major  
18 items.

19 MR. MINOR: There were a number of mechanical  
20 problems that they had found because of lack of supports and  
21 then went on an extensive support program. That has all been  
22 fixed.

23 CHAIRMAN PALLADINO: What was it?

24 MR. MINOR: They had an unisolable leak in the high  
25 point vents. They discovered it was due to a lack of supports

1 in the system.

2 They extended that to look at a little over 2000  
3 additional items in other systems. And that has all been  
4 finished.

5 The main thing right now that they have to complete  
6 is something that is a result of an INPO inspection that had  
7 to do with some training, some additional training of their  
8 nonlicensed operators; some procedural stuff to get their  
9 supervisory people more in the plant to assure that they are  
10 making sure that the people are adhering to procedures.

11 And the third thing that came up was, some  
12 maintenance activities were going on without notifying the  
13 control room. The control room didn't know it was going on.  
14 they are correcting that item.

15 When these things get implemented and the licensee  
16 has assured himself that they are adequately implemented --  
17 and I think they are going to do one more thing. They are  
18 going to get INPO back to reevaluate these things to make  
19 sure that INPO is satisfied with them, then they will start  
20 up. And that is expected to be early October.

21 MR. TAYLOR: I might add that INPO I believe has  
22 been in the plant this week, and I think part of last week.  
23 INPO has been out there following up on some of their issues,  
24 and they may even conclude the end of this week.

25 The company has committed to the Regional

1 Administrator to meet with him and go over the things that  
2 they have taken care of as further assurance that there aren't  
3 any lingering things before they start up. Startup could come  
4 in the latter part of this month as against in October. But  
5 INPO is currently there.

6 So, Sid, I don't know whether you knew that.

7 COMMISSIONER ASSELSTINE: Have we seen the July  
8 INPO report?

9 MR. DENTON: I suspect the region has --

10 MR. TAYLOR: I don't know whether the report has  
11 caught up with everything else. Region was briefed by the  
12 company on all the issues that were significant. So the ties  
13 have been made.

14 The company, of course, has the interface with  
15 INPO. But the company came and laid out to Martin and  
16 Falkenberg -- really Martin was on leave -- the issues that  
17 they had agreed with INPO that they would get fixed. Probably  
18 some of the things that Sid has mentioned.

19 COMMISSIONER ASSELSTINE: The word we had heard on  
20 the INPO appraisal was that the concerns were so serious that  
21 INPO said the plant should not operate.

22 Is that accurate? Have we found out if that in fact  
23 was an accurate assessment?

24 And if that is the case, I'm not aware of any other  
25 instance in which INPO has said their concerns are so serious



1       that the plant shouldn't operate until their concerns are  
2       fixed.

3               MR. TAYLOR: INPO said that they wanted to come back  
4       before they ran it, and that is what they are doing.

5               I don't know the record on that. That's the one  
6       that I know about.

7               MR. DENTON: I think many of the issues have been  
8       recognized; poor performance, poor QA, poor engineering, these  
9       are ones that Jack has been working to improve for some time.  
10      And this plant shut down for refueling early this year, and I  
11      know that Jack has had endless meetings on these points.

12              Whether INPO recognized the same points or some  
13      additional ones I'm not certain, but in talking to Jack he  
14      thinks now that the plant is in much better shape than it was  
15      when he began his concerns.

16              COMMISSIONER ASSELSTINE: On the high point vent  
17      question, are there programmatic aspects of that?

18              Why did that happen? Do we know why it happened?

19              Were they not managing their design process, did  
20      their modifications work? Were they just relying on  
21      contractors that were operating without adequate supervision  
22      and direction?

23              What were the sort of root causes of that problem?

24              MR. DENTON: I'll just mention, you realize it is  
25      another small utility, public utility that has probably had

1 trouble getting a large capable engineering staff and keeping  
2 them. I understand they paid rather low salaries out there  
3 for a long time. And those sort of problems may be the  
4 fundamental root cause for many of these issues.

5 MR. TAYLOR: As I understand that event which  
6 precipitated this rather extensive inspection of supports, the  
7 high point vent was added as a post-TMI fix and they used  
8 architect engineering support. And there were several  
9 supports -- this thing actually failed of fatigue, which is  
10 kind of unusual.

11 The support -- there was an error in the drawing  
12 from the original design drawing to the field drawing. But  
13 then there was a QC failure because QC did not pick up one or  
14 two of the supports that were remaining, because if they just  
15 had even the rudiments of support they wouldn't have had a  
16 fatigue factor.

17 So they really ended up with a length of line that  
18 was essentially unsupported on one side due to a combination  
19 of those two, which is what precipitated the crawl back to the  
20 original design drawings, back to the working drawings and the  
21 QC followup on all the support areas and the changes that they  
22 have made for, I guess, the last four or five years.

23 COMMISSIONER ASSELSTINE: So in essence they are  
24 going back a period of time --

25 MR. TAYLOR: Again. That's what has been taking

1 several months as they followed up because of this breakdown.

2 COMMISSIONER ASSELSTINE: Do you have a good sense  
3 for what they found in that review?

4 MR. TAYLOR: Yes. I think they found one other  
5 instance where there were some strap supports for two solenoid  
6 operated valves which were the only cases in which they found  
7 where loadings could come that would exceed design. But it  
8 wasn't the same kind of thing where this thing was working in  
9 fatigue.

10 In all other cases, although they saw some  
11 aberrations as you always do when you crawl supports, you  
12 know, something not exactly in line, everything was well  
13 within design which was the typical kind of pattern in the  
14 support areas.

15 MR. DENTON: I think we may be stealing their thunder  
16 for when Region V and Region IV come back.

17 Palisades, I think we have already briefed you about  
18 --

19 CHAIRMAN PALLADINO: Can I ask one question on  
20 Rancho Seco?

21 Do you foresee a near term startup date?

22 MR. DENTON: Yes.

23 CHAIRMAN PALLADINO: like what?

24 MR. DENTON: I will refer to Jim.

25 MR. TAYLOR: As I said, INPO is wrapping up as I

1 understand at the end of the week. The company is obliged to  
2 gather with the region which, if the company indeed has  
3 corrected the conditions, some of which got down to the  
4 unlicensed watch people, then I presume the company would want  
5 to come in and talk to the region in the next week.

6 CHAIRMAN PALLADINO: And will the region have a  
7 basis, or will you have a basis for authorizing or agreeing to  
8 restart?

9 MR. TAYLOR: Right. We have a confirmatory action  
10 letter which requires the company -- and they, of course, have  
11 agreed -- to come in and brief the region on all corrections,  
12 and we will, of course, have our inspectors making sure -- and  
13 you know that they will be aware of all the issues.

14 That is where it is. There is no real formal hold  
15 other than the confirmatory action letters, which Martin has  
16 put out.

17 MR. DENTON: Basically on Palisades, during the SEP  
18 program they committed to fix the problem in the main steam  
19 line in 1982. And in 1983 they proposed to defer it until a  
20 PRA could be done.

21 This one is not a management sort of issue, it is a  
22 design detail. They came in, they added a third auxiliary  
23 feedwater pump and they went to new procedures and so forth,  
24 and are trying to convince us that their commitment no longer  
25 needs to be met.

1 I have told the Staff I want a decision either up or  
2 down on that by the end of the year, and we will meet that.

3 CHAIRMAN PALLADINO: Up or down on which?

4 MR. DENTON: That we will either require them to fix  
5 it as they originally committed, or we will agree it doesn't  
6 need to be fixed. But it is one of these issues that my  
7 survey was intended to flush out, where it has been a long,  
8 lingering issue back and forth.

9 After we originally had a commitment to get it  
10 fixed, they keep bringing forth arguments. And we want to be  
11 always open to new information, and so we keep postponing our  
12 decision saying, yes, we will wait until you do that.

13 The next two issues were generic issues.  
14 Containment purge and vent.

15 (Slide)

16 This goes back to an abnormal occurrence in 1978, I  
17 believe, where we found problems in containment purge valves  
18 being able to close under design basis accident conditions.  
19 We started a program to be sure that everyone would maintain  
20 containment integrity. We are down to just a handful of  
21 plants left.

22 Let me ask the project manager, who has a duty  
23 following this action, to summarize briefly for you the table.

24 CHAIRMAN PALLADINO: These are big valves?

25 MR. DENTON: Yes.

1                   CHAIRMAN PALLADINO: 60 inches?

2                   MR. DENTON: I think we have worked through the big  
3 valves and have now satisfied ourselves -- I know item 1, for  
4 example, which is the Dresden 2, 3, Quad Cities valves are 18  
5 inches.

6                   CHAIRMAN PALLADINO: Where are you looking at item  
7 1?

8                   MR. DENTON: Containment purge and vent.

9                   CHAIRMAN PALLADINO: Is that something we have got?

10                  MR. DENTON: It is at the back of the individual  
11 plants.

12                  Ed, do you want to just summarize what is on that  
13 table, or where we stand?

14                  MR. REEVES: This table indicates the last elements  
15 of this longstanding issue that started in November of 1978.  
16 The Staff has essentially got all of this complete. There is  
17 only one valve, one Licensee with a valve that has not been  
18 proven to -- reviewed by the Licensee and analyzed by our  
19 staff, but still has questions. And that is the Quad Cities  
20 and Dresden plants.

21                  I understand as of yesterday they have done a  
22 reanalysis on our last questions back to them and with our  
23 added conservatisms they are indicating to us that these  
24 18-inch valves will stand a LOCA consideration, and we feel  
25 that by December we will be able to write off on that issue.

1 CHAIRMAN PALLADINO: Are these valves --

2 MR. REEVES: Those were the large valves, sir. When  
3 we started off, some of them were as large as 66 inches in  
4 diameter down to someplace in the BWRs in the small 2-inch  
5 valves.

6 CHAIRMAN PALLADINO: How much?

7 MR. REEVES: 2 inches. And that is the next  
8 question which came up in the --

9 CHAIRMAN PALLADINO: Let me ask you though, aren't  
10 those valves normally closed?

11 MR. REEVES: All these BWRs, they are closed except  
12 during inerting and de-inerting. And the Staff concern is  
13 when the reactor coolant system temperature is above 200  
14 degrees, whether the plant is operating in power or not. The  
15 source term is the same, and if you had the LOCA at pressure  
16 and temperature above 200 degrees with these valves open, the  
17 same amount of the source term reactivity would exit  
18 containment fairly rapidly.

19 So there is a much bigger concern with the 3-inch  
20 valves -- 2-inch valves.

21 And the second part of this --

22 CHAIRMAN PALLADINO: I was getting to why are they  
23 open?

24 MR. DENTON: What we found back in 1978 was, I  
25 guess, many of these purge valves were open in order to keep

1 the temperature down or keep down radiation levels in the  
2 containment if they could exhaust the containment and still  
3 meet Appendix I levels.

4 And then the issue became I think originally, over  
5 some of the linkages between the motor and the valve. It  
6 might not have been designed to close --

7 CHAIRMAN PALLADINO: See, I was getting more  
8 fundamental. You know containment to me, I picture it as  
9 containment. And when you have got a big valve that is open,  
10 I don't feel like you have got a containment.

11 MR. DENTON: Well that is item 3. There are still a  
12 number of Licensees --

13 MR. REEVES: Mr. Chairman, all of those large valves  
14 are shut and are maintained shut. Originally when this came  
15 up they were not. Plant probably had a 40-inch valve fully  
16 open all the time. Rancho Seco had the 66 open all the time.  
17 All those are shut now. That's not the problem any more.

18 CHAIRMAN PALLADINO: Thank you for at least giving  
19 me that one.

20 Now get me on to where you want me to go.

21 MR. REEVES: The second point was the automatic --

22 CHAIRMAN PALLADINO: What sort of lines are we  
23 talking about now?

24 MR. REEVES: We are talking about the 2-inch or so  
25 valve on the MARK I BWRs that did not have a radiation signal



1 closure. Had all the other required closures, but did not  
2 have a radiation signal closure, which after TMI the Staff put  
3 a position out that said 2.E.42 position 7, they would close  
4 on all valves that ventilated, would close on high radiation  
5 signal as an additional diversity.

6 All of them in the operating plants do that now  
7 except for a few of them and these are the ones that are  
8 listed here that appeal this decision. We have gone back and  
9 forth for several years.

10 The Staff is prepared now, after doing the last  
11 analysis of radiological consequences, by the end of October  
12 we will give an evaluation on that issue of whether those very  
13 small valves have to have the same diversity on radiation  
14 signal that all the larger valves have.

15 MR. DENTON: The utilities have been trying to  
16 demonstrate that they will still meet Part 100 with these  
17 valves open.

18 MR. REEVES: That's correct. And the BWR owners  
19 group has an analysis in here that shows that is the case.

20 MR. DENTON: So this falls in the category, not a  
21 management issue, but one of these long back and forth low  
22 priority sort of issues, but an important issue.

23 If it were a higher priority we would have solved it  
24 a long time ago. But it is one where a small subset in this  
25 group has continued to debate it.

1 CHAIRMAN PALLADINO: Is this only a problem in BWRs?

2 MR. DENTON: Yes. I think it is only BWRs, and only  
3 some of the BWRs.

4 MR. REEVES: Only the older ones. Most of them  
5 committed, sir, except the ones that are listed here. They  
6 appealed.

7 The final item was time constraints on how long you  
8 can purge and vent these containments. All the Licensees have  
9 committed to vent and purge operations for safety-related  
10 reasons only.

11 They have technical specifications which in some  
12 cases are still being processed on a plant specific basis  
13 and we assume -- we are scheduling all these to be complete  
14 FY'86. But the ramifications are so different with so many  
15 different plants of different designs, that the technical  
16 specifications have to be worked on a plant unique basis and  
17 are being done so.

18 CHAIRMAN PALLADINO: Are you saying this is not a  
19 serious problem at the present time? That it is one under  
20 control, but it is serious?

21 MR. DENTON: It was certainly serious when we  
22 started in 1978. We have made great strides, but --

23 CHAIRMAN PALLADINO: I came in with the premise it  
24 was serious, then you talked me out of it.

25 MR. DENTON: We have got it down to just a handful

1 of issues and I think Ed would like to get back to other  
2 activities and wrap this issue up. And it just shows how some  
3 of the things we started down the road to do, by the time you  
4 do them all at these diverse plants, it takes a long time.

5 So it is serious enough it deserves our attention.  
6 I've asked for a monthly report on all these issues to put  
7 them behind us so we can clear the deck, so to speak, and work  
8 on more recent problems than some of these older ones.

9 CHAIRMAN PALLADINO: But how did it get to be listed  
10 as one of your two generic items of significance?

11 MR. DENTON: A number of project managers identified  
12 that as a frustrating and long lingering issue that they have  
13 not been able to close on.

14 CHAIRMAN PALLADINO: I see.

15 MR. REEVES: The length of time required for  
16 documentation is a many-faceted issue of compliance with the  
17 containment, with our requirements that we have issued in  
18 1978. And then TMI came along and quite a long review for  
19 each plant. Each one unique.

20 COMMISSIONER ASSELSTINE: What is the backfitting  
21 rule going to do to your efforts to try and bring about an  
22 early resolution of these items?

23 Are you now going to have to go back and redo an  
24 analysis, do a new analysis, go back to CRGR because these  
25 affect more than one plant?

1 MR. MIRAGLIA: I think this was approved as a  
2 multi-plant issue prior to CRGR, and is going to get closure.  
3 It is a multi-plant action that we are seeking closure on.

4 MR. DENTON: We would not propose to run this one  
5 back through. It is one the system had approved and is nearly  
6 completely implemented.

7 COMMISSIONER ASSELSTINE: Okay.

8 MR. DENTON: But that issue is beginning to surface  
9 in other areas already.

10 MR. REEVES: It is essentially closed on this issue  
11 except for the technical specifications. One-valve write off.

12 MR. DENTON: The last plant was San Onofre 1 and  
13 somehow we didn't get the slide into the handout.

14 I made the point San Onofre 1 is not a management  
15 issue. We are very satisfied with the way that plant has been  
16 running since it started.

17 (Slide)

18 But there were some long-term seismic upgradings,  
19 fire protection, EQ, auxiliary feedwater issue, TDI issue,  
20 control room issue, and a number of others. And those things,  
21 the great bulk of them, are due to be implemented during this  
22 forthcoming outage.

23 And so it was listed by the PM as having a lot of  
24 things. But in my view they were -- it is not a management  
25 issue because these were deferred back when there was

1       uncertainty about whether the plant would ever be allowed to  
2       return to operation or not.

3               Once that decision was made they have aggressively  
4       moved, and I don't think you will see this plant on the list  
5       the next time around if we do this kind of survey again.

6               MR. MIRAGLIA: They had a large number of issues and  
7       they are a facility that has availed itself of the integrated  
8       scheduling. And we have agreed on a scope of work to the  
9       plant in this outage which is a substantive part.

10              We have resolved many of the issues that are on the  
11       list and the commitments are at the next refueling outage,  
12       have the decks cleared.

13              MR. DENTON: I guess the last generic issue we  
14       mentioned in our memo to you is fire protection, which was due  
15       to be discussed in a separate forum.

16              COMMISSIONER ASSELSTINE: Before you leave San  
17       Onofre, in terms of the long-term seismic upgrade program,  
18       which approach are they taking?

19              Or is it clear yet which approach they are taking?

20              More modifications to the plant or an attempt to  
21       justify the adequacy of the existing plant through analysis?

22              MR. MIRAGLIA: I think it is a mixture of both. The  
23       project manager, Dick Dudley is here, and perhaps he could add  
24       to it.

25              We have been interacting with them as part of the

1 integrated systematic evaluation program, agreeing on the  
2 criteria of what they are going to look at, the criteria that  
3 is going to apply and the kinds of judgments they are going to  
4 reach.

5 So I think in some areas you will see upgrades. I  
6 think in other areas they will be justifying the design as is  
7 is sufficient.

8 Dick, would you want to add anything to that?

9 MR. DUDLEY: I guess they were originally designed  
10 to .5g. They're operating to .67. It will be a hardware  
11 fix, a lot more bracing and more reinforcement of the  
12 components.

13 The staff is doing what we can in many cases to come  
14 up with different acceptance criteria and perhaps in the  
15 seismic analysis and perhaps remove a conservatism or two that  
16 may not be necessary. But they will be upgrading to .67g  
17 design.

18 COMMISSIONER ASSELSTINE: Will that work, or at  
19 least will there be an agreement by the end of this next  
20 refueling outage on what has to be done?

21 MR. DUDLEY: They will be completed by the end --

22 COMMISSIONER ASSELSTINE: The work will be done as  
23 well?

24 MR. DUDLEY: Yes. The analysis is ongoing. The  
25 staff review is ongoing. The commitment is there to be fixed

1 before they start on the 11/30/85 refueling outage.

2 COMMISSIONER ASSELSTINE: Okay. Thanks.

3 MR. DENTON: So I think the plants which deserve our  
4 attention are the Browns Ferry-type units, which are getting  
5 considerable attention from all quarters. The Palisades-type  
6 issues are important, but they are not of large safety  
7 significance. The survey was intended to find those things so  
8 we could deal with them, not let them lie and linger.

9 COMMISSIONER BERNTHAL: Harold, as a matter of  
10 curiosity, is this list of plants and of issues something  
11 which we should take or I should take as representing the kind  
12 of action plan, for want of a better word, that I had presumed  
13 should follow in the wake of the severe-accident policy  
14 statement, or are you envisioning a much broader, more  
15 detailed kind of effort? And if so, how soon will we be able  
16 to see your action plan reflecting the policy and set forth in  
17 the severe-accident policy --

18 MR. DENTON: It's definitely the latter. The latter  
19 view is the correct view. I will have to get back to you on  
20 what our schedule is. It involves IDCOR interaction. As I  
21 recall, we're waiting for Research to complete some  
22 plant-specific reviews which were scheduled. I think they  
23 have fix or six plants, and we're going to use that result to  
24 apply against all of the existing plants. So I think that's  
25 off a few months before we would even begin to see the results

1 of that.

2 If I were looking in the interim for plants that we  
3 can focus on, I would look to the SALP reviews, the ones which  
4 have 3s in maintenance operations.

5 COMMISSIONER BERNTHAL: Okay.

6 CHAIRMAN PALLADINO: Okay. Any other questions or  
7 comments?

8 COMMISSIONER ASSELSTINE: Just one last question on  
9 that last point. For a plant that has a 3 in maintenance,  
10 particularly for those who have had 3s in maintenance for more  
11 than one SALP period, why shouldn't we just assume that the  
12 reliability of the system is questionable, much more  
13 questionable than for a plant where we assume the equipment is  
14 being maintained properly, and put a high-priority attention  
15 on digging back into those systems to decide if something more  
16 needs to be done?

17 MR. DENTON: Jim and I have talked about that, "What  
18 is a SALP? If you get a SALP 3 in maintenance, what does it  
19 mean, and how can we couple, say, NRR's knowledge of the  
20 design with the Region's knowledge of the -- what area of  
21 maintenance is going down?"

22 We need to come up with something that would  
23 integrate those problems. We don't have it yet.

24 MR. TAYLOR: I would agree with that. Clearly, it's  
25 a flag, and you have to get into what are the symptoms?



1 You've got to do a little bit of analysis. But that's the  
2 intention of what we're doing. Sometimes, you know, it can be  
3 a close call, and it's on specific issues and not a broader  
4 issue.

5 So your question is right, and I think we are trying  
6 to see. That's at least what SALP was always -- it was  
7 supposed to be a flag to them.

8 COMMISSIONER ASSELSTINE: That's right.

9 MR. TAYLOR: It's supposed to tell them, "Fix it."

10 MR. DENTON: I have gotten concerned, like Jim, I am  
11 sure, if you see a recurring SALP 3 and you ask them, what  
12 are we accomplishing? We're only verifying that it really is  
13 a 3. If we had inspections and we find out, "Well, last time  
14 we were right. It really was a 3," that doesn't mean that  
15 it's necessarily that it has been fixed. We may have  
16 inspected it more; we may have more knowledge about it. But  
17 what we really want is a change in the plant.

18 Just inspecting more doesn't necessarily -- it often  
19 does. Many utilities don't like SALP 3s, and they respond  
20 vigorously to get out of that category. But then we have some  
21 examples where utilities appear stuck in the Category 3.

22 COMMISSIONER ASSELSTINE: It does seem to me that  
23 maybe if not the most important, certainly one important  
24 lesson from Davis Besse is that when you see that kind of a  
25 breakdown in maintenance, it certainly has the potential to

1       lead to widespread equipment failures that we have previously  
2       assumed just wouldn't happen.

3               MR. DENTON: I think this whole area of maintenance  
4       is worthy of more attention. NUMARC, INPO has talked about  
5       it, we've talked about it. But certainly, the key, the key to  
6       the plants running safely for 40 years after we've gone  
7       through all this design review, testing, and peer review of  
8       the original concept is to maintain the plant in the  
9       configuration that it was intended to be.

10              COMMISSIONER ASSELSTINE: What is the status of the  
11       maintenance program plan, the discussions with NUMARC? I  
12       guess we said we would be willing to let them take a shot at  
13       presenting something, but I am beginning to get increasingly  
14       concerned that this is a sufficiently serious problem that we  
15       just can't wait forever, we've got to get something done.

16              MR. STELLO: Let me first say that we're not  
17       waiting. What Jim has talked about in Turkey Point is what we  
18       are getting underway. Where we have a concern in a plant,  
19       we're not waiting for anything. I think in terms of looking  
20       at how well the industry is responding too, that is something  
21       that we still are reflecting on. They have recently agreed on  
22       the kinds of performance indicators that they as an industry  
23       ought to be interested in, and are now, I believe.

24              In the last week or they two have sent out letters  
25       to all the utilities to require -- this is INPO -- the

1 utilities to gather that kind of data so that they will be  
2 able to look at the kind of trip points that indicate the  
3 kinds of problems they are having.

4 And all I can say is we are watching, we are  
5 encouraged. We will be meeting with them again to look at the  
6 progress they have made. I think it's scheduled for next  
7 month.

8 Our mode at the moment is to watch and see how well  
9 the industry is reacting to it. But I think we basically have  
10 concluded that we're not going to sit back and not take any  
11 action on a plant when we believe there's a problem. We're  
12 doing the kinds of things that Jim has just described that  
13 we've done. We're getting more and more into it.

14 COMMISSIONER ASSELSTINE: Joe, I would suggest -- I  
15 don't know when our next meeting with the NUMARC people is --  
16 but that we communicate to them that maintenance is one of the  
17 issues that we would like to discuss.

18 And, Harold, I would like to. I think, take a fresh  
19 look at the maintenance program plan that you had discussed at  
20 the ACRS some months ago in preparation for that.

21 CHAIRMAN PALLADINO: Why don't we ask SECY to make  
22 sure that that gets out as the next item?

23 I wonder if I might return briefly to Davis Besse.  
24 It seems to me there is a lot of activity still to be  
25 completed before restart. There seemed to be a sense of

1 optimism for early November yesterday, but I want to make sure  
2 that when the plant is restarted, that the staff is satisfied  
3 that all of the appropriate things have been completed.

4 One issue that I have been asked about I was asked  
5 yesterday in a press statement, "Well, does the Commission get  
6 involved in a decision to restart?" And I said, "Well, we  
7 will be in close -- the staff will maintain close consultation  
8 with the Commission."

9 But the Commission has not decided whether or not  
10 it's going to interject itself into this decision. And I  
11 think this is something we ought to clear up in the reasonably  
12 close future, and I don't know whether we should seek a staff  
13 paper on the extent to which the Commission should get into it  
14 or the Commissioners want to express their own individual  
15 feelings.

16 But I think we ought to have SECY polled in a  
17 notation sort of a vote on how the Commissioners feel on this  
18 question.

19 COMMISSIONER ASSELSTINE: I certainly agree with  
20 that, Joe. As you know, several weeks ago I tried to provide  
21 a catalyst for getting positions on that very issue as well as  
22 some others. I think we ought to come to a resolution on it  
23 as soon as possible.

24 I read the staff's responses to my memo as basically  
25 saying that they thought that there should at least be

1 thorough Commission briefing before any decision is made for  
2 restart.

3 CHAIRMAN PALLADINO: Yes.

4 Well, could I ask each Commissioner to send SECY a  
5 note, if possible by the end of this month, expressing your  
6 opinions or seeking any information to help you make a  
7 decision?

8 COMMISSIONER ZECH: Sure.

9 COMMISSIONER ROBERTS: Yes.

10 COMMISSIONER ASSELSTINE: Fine.

11 CHAIRMAN PALLADINO: Anything more that should come  
12 before us?

13 COMMISSIONER ZECH: I would just like to say I think  
14 this briefing has been very helpful and very well done by the  
15 staff.

16 Also, I would like to thank -- I believe they are  
17 handling these issues in a very responsible manner. I think I  
18 understand exactly what you are telling us about the issues  
19 you presented to us and why they're frustrating issues, some  
20 of them, as well as the Davis Besse issue itself and others  
21 and your reference to the maintenance problems and other  
22 hardware problems.

23 But I think it was very well done, and again I think  
24 from my view, you are handling it in a very responsible  
25 manner.

1                   CHAIRMAN PALLADINO: Thank you very much,  
2 gentlemen. I think Commissioner Zech spoke for all of us when  
3 he complimented you on your work.

4                   Okay, we will stand adjourned.

5                   (Whereupon, at 11:20 a.m., the Commission meeting  
6 was adjourned.)

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1 CERTIFICATE OF OFFICIAL REPORTER

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4  
5 This is to certify that the attached proceedings  
6 before the United States Nuclear Regulatory Commission in the  
7 matter of: COMMISSION MEETING

8  
9 Name of Proceeding: Continuation of Briefing on Davis-Besse  
10 (Public Meeting)

11 Docket No.:

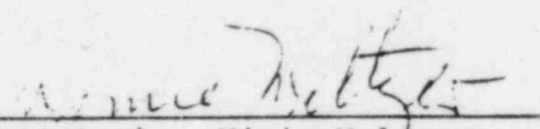
12 Place: Washington, D. C.

13 Date: Wednesday, September 18, 1985

14  
15 were held as herein appears and that this is the original  
16 transcript thereof for the file of the United States Nuclear  
17 Regulatory Commission.

18  
19 (Signature)

(Typed Name of Reporter)

  
Mimie Meltzer

20  
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23 Ann Riley & Associates, Ltd.  
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# **COMMISSION BRIEFING**

## **September 17, 1985**

Followup Actions Resulting From  
The Davis-Besse June 9, 1985 Event



# **AGENDA**

- I. Plant-Specific Actions
- II. Generic Actions

# PLANT STATUS

- Facility In Cold Shutdown
- Troubleshooting and Corrective Action In Progress
- System Modifications in Progress, Including Installation of Diverse Drive AFW Pump
- Licensee Forecasts Ready to Restart Early in November

Contact:  
D. Eisenhut, NRR

# **NRC RESTART REVIEW MILESTONES**

- Findings and Conclusions of Incident Investigation Team (NUREG-1154) Issued in July 1985
- Staff Action Items Established by EDO on August 5, 1985
- 50.54(F) Request Issued to Toledo Edison on August 14, 1985
- Licensee Met with Staff on September 4, 1985
- Staff Reviewing Licensee's Root Cause and Corrective Action Reports
- Licensee's Response to 50.54(F) Letter Received September 12, 1985

Contact:  
D. Eisenhut, NRR

# RESTART EVALUATION ITEMS

- Derived from Staff Concerns in 50.54(F) Letter
- Completion of Event Investigation
  - Completion of the Investigation of Equipment Malfunctions and Operator Errors
  - Determination of Root Causes of the Malfunctions and Errors and Implications to the Restart of the Plant
  - Corrective Actions Needed to Assure the Reliability of Systems Which Mitigate Loss of Feedwater Events

Contact:  
D. Eisenhut, NRR

# **RESTART EVALUATION ITEMS (CONTINUED)**

- Concerns Directly Related to June 9, 1985 Event  
Evaluate Licensee's Response to Concerns Identified in NUREG-1154:
  - (1) Adequacy of Loss of Feedwater Analysis
  - (2) Adequacy of Design/Operation of SFRCS
  - (3) Physical Security and Administrative Features
  - (4) Role of STA
  - (5) Reliability of AFW Containment Isolation Valves and Other Safety-Related Valves
  - (6) Adequacy of ENS Reporting
  - (7) Reliability of AFW System, Pumps, and Need for Diverse Pump

Contact:  
D. Eisenhut, NRR

## **RESTART EVALUATION ITEMS (CONTINUED)**

- (8) Reliability of PORV
- (9) Adequacy of Control Room Instrumentation and Controls
- (10) Inability to Place Startup FW Pump in Service from Control Room
- (11) Resolution of Other Equipment Deficiencies
- (12) Adequacy of Procedures for "Drastic" Action
- (13) Adequacy of Safety System Testing

Contact:  
D. Eisenhut, NRR

# **RESTART EVALUATION ITEMS (CONTINUED)**

- Evaluate Licensee's Response to Additional NRC Concerns
  - Adequacy of Procedures, Equipment and Training for Restoring Equipment for LOF Mitigation
  - Adequacy of Programs to Resolve Likelihood of Inadvertent Isolation of AFW to Both Steam Generators
  - Installation of Diverse Drive AFW Pump
  - Other ESF Systems Adequacy in Light of Single Failure Vulnerabilities Identified in SFRCS and AFW Systems

Contact:  
D. Eisenhut, NRR

# **RESTART EVALUATION ITEMS (CONTINUED)**

- Evaluate Licensee's Response to Management and Programmatic Concerns
  - Adequacy of Management Practices
  - Adequacy of Maintenance Program Improvements
  - Adequacy of the Implementation of the Performance Enhancement Program
  - Adequacy of the Resources Committed to the Davis-Besse Facility for the Investigation of the Event, Resolution of Findings and Conclusions, and Longer Term Actions
- May Be Additional Restart Issues as a Results of Continuing Staff Review

Contact:  
D. Eisenhut, NRR



# OTHER NRC RESTART CONSIDERATIONS

- Organizational
  - Regional III Section Created to Monitor Davis-Besse
  - NRR Enhanced B&W Projects Group; E.G., Extra Project Managers
- ACRS Briefing in October on Davis-Besse Restart
- Determine Actions to be Completed Prior to and Subsequent to Facility Restart
- Conduct Special Inspections of Licensee's Corrective Action Programs; Inspections to Monitor and Evaluate Troubleshooting
- NRR-Region Maintenance Assessment - Prior to Restart
- NRR-Region Training Accreditation Site Review - Prior to Restart

Contact:  
D. Eisenhut, NRR

## **OTHER NRC RESTART CONSIDERATIONS (CONTINUED)**

- Evaluate Licensee Programs Being Implemented to Address NRC Concerns Relating to Regulatory Performance
- Evaluate Changes to Operating Procedures and Philosophy
- Inspect Special Confirmatory Testing of Systems and Equipment Involved in June 9, 1985 Event
- Conduct Augmented Inspections During Startup and Operation
- Enforcement Action Consideration

Contact:  
D. Eisenhut, NRR

# **NRC GENERIC TECHNICAL ACTIONS**

- Immediate Generic Issues - None
- Short Term Generic Issues
  - Potential Inability to Remove Decay Heat Because of Questionable Reliability of AFWS
  - Adequacy of Emergency Procedures, Operator Training and Available Plant Monitoring Systems for Determining Need to Initiate Feed and Bleed Cooling
  - Physical Security System Constraints which could
  - Deny Timely Access to Vital Equipment
  - Prioritization of Short Term Issues is Nearly Complete

Contact:  
D. Eisenhut, NRR

# **NRC GENERIC TECHNICAL ACTIONS (CONTINUED)**

- **Potential Long Term Generic Issues**

- (1) Availability and Role of STA
- (2) Actions to Improve Reliability of PORV, and Need for Failure Mitigation
- (3) Adequacy of Requirements for SPDS Availability
- (4) Need for Plant-Specific Simulator
- (5) Adequacy of Safety System Testing
- (6) Re-Evaluate NUREG-0737 Item II.E.1.1 (AFW System Reliability)

Contact:  
D. Eisenhut, NRR

# **NRC GENERIC TECHNICAL ACTIONS (CONTINUED)**

- (7) Adequacy of Maintenance Requirements
- (8) Adequacy of Single-Failure Aspects of Steam Line/Feed Line Break Mitigation Systems
- (9) Effects of Loss of Feedwater On OTSG
- (10) Thermal-Hydraulic Aspects of Loss of Feedwater Event on Reactor Vessel
- (11) Re-Examine PRA-Based Estimates of Core Damage Resulting from Loss of Feedwater
  - Other Additional Issues, as Identified

Contact:  
D. Eisenhut, NRR

# **NRC GENERIC TECHNICAL ACTIONS (CONTINUED)**

- Information Notices - Bulletins

## **ISSUE**

Generic Applicability of  
Failure of Safety-Related  
Valves

Guidance on Notification  
of Most Severe Plant  
Condition

## **ACTION**

Bulletin Drafted and Distributed  
for Comment. Plan to Meet with  
CRGR in Early October

Prepare Information Notices by  
October 15 on "Emergency  
Notifications" and "Timely  
Declaration of an Emergency  
Class and Implementation of an  
Emergency Plan"

Contact:  
J. Taylor, IE

# **NRC GENERIC TECHNICAL ACTIONS (CONTINUED)**

## **ISSUE**

Generic Aspects of Auxiliary  
Feedwater Turbine Reliability

Generic Aspects of Equipment  
Malfunctions from Table 5.1  
of NUREG-1154

## **ACTION**

Following Confirmation of Failure  
Cause at Davis-Besse, Issue  
Information Notice or Bulletin on  
Generic Problems

Possible Actions are with Respect  
to Startup and Post  
Modifications Testing.  
Action Planned by October 25

Following Confirmation of Failure  
Cause at Davis-Besse, Issue  
Information Notice or Bulletin  
on Challenges to Safety Systems.

Contact:  
J. Taylor, IE

# **NRC GENERIC TECHNICAL ACTIONS (CONTINUED)**

- Generic Long-Term Studies
  - Assess Safety-Related Motor Operated Valve Failures and Failure Modes Affecting Valve Performance Under Design Basis Conditions
  - Conduct Study of Steam-Turbine Driven Pump Performance to Determine Root Cause(s) of Overspeed Trips

Contact:  
T. Ippolito, AEOD



## SAN ONOFRE UNIT 1

### CURRENT PLANT STATUS:

93% POWER; NEXT SCHEDULED REFUELING OUTAGE 11/30/85.

### SUMMARY OF ITEMS:

1. LONG-TERM SEISMIC UPGRADE - ANALYSIS AND HARDWARE IMPLEMENTATION
2. FIRE PROTECTION - DESIGN AND INSTALLATION OF A DEDICATED SAFE SHUTDOWN SYSTEM AND OTHER APPENDIX F MODIFICATIONS
3. EQUIPMENT QUALIFICATION - QUALIFICATION OR REPLACEMENT OF ALL REMAINING NON-QUALIFIED EQUIPMENT
4. INSTALLATION OF A THIRD AUXILIARY FEEDWATER PUMP
5. UPGRADE AUXILIARY FEEDWATER TO THIRD (SAFETY-GRADE) TRAIN
6. TDI-DIESEL GENERATORS - STAFF REVIEW OF ACTIONS REQUIRED TO ENSURE LONG TERM OPERABILITY
7. CONTROL ROOM HABITABILITY - FURTHER DOCUMENTATION OF ANALYSES TO DETERMINE IF REDUNDANT CONTROL ROOM FIRE SYSTEM IS NEEDED
8. SUPPLEMENT 1 TO 0737; DCRDR, SPDS, REG. GUIDE 1.97

### CURRENT RESOLUTION

- ITEMS 1-4 - TO BE COMPLETED PRIOR TO RESTART FROM 11/30/85 OUTAGE
- ITEM 5 - TO BE COMPLETED DURING NEXT REFUELING OUTAGE
- ITEM 6 - STAFF SER PRIOR TO RESTART FROM 11/30/85 OUTAGE
- ITEM 7 - LICENSEE SUBMITTAL BY SEPTEMBER 30, 1985; STAFF REVIEW BY 12/1/85
- ITEM 8 - DCRDR PROGRAM PLAN DUE 12/16/85
- REG. GUIDE 1.97 SUBMITTAL DUE 12/16/85
- SPDS SUBMITTAL DUE 1/9/87

## BROWNS FERRY UNITS 1, 2 AND 3

### PLANT STATUS

UNIT 1 SHUT DOWN 03/19/85 DUE TO FAILURE OF SEVERAL CONTAINMENT ISOLATION VALVES TO PASS LOCAL LEAK RATE TEST.

UNIT 2 SHUT DOWN 09/15/84 FOR REFUELING.

UNIT 3 SHUT DOWN 03/09/85 DUE TO REACTOR VESSEL WATER LEVEL INSTRUMENTATION DISCREPANCIES.

#### TVA PROJECTED RESTART DATES:

UNIT 1 - LATE 1986

UNIT 2 - FIRST QUARTER 1986

UNIT 3 - SPRING 1987

### SUMMARY OF ITEMS

#### HPCI RELIABILITY QUESTION

TVA TASK FORCE EVALUATED PROBLEMS

CONTRACTED GE TO EVALUATE

#### FIRE PROTECTION

SUBMITTING REVISED DESIGN - JANUARY 1986

REQUESTED SCHEDULAR EXEMPTIONS

DELAYED IMPLEMENTATION OF MODIFICATIONS

## BROWNS FERRY (CONT.)

### NRC-REQUIRED MODIFICATIONS

DELAYED IMPLEMENTATION OF SOME MODIFICATIONS

### INEFFECTIVE MANAGEMENT

### POOR OPERATING PERFORMANCE

ABOVE AVERAGE NUMBER OF VIOLATIONS

ABOVE AVERAGE NUMBER OF ABNORMAL OCCURRENCES AND EVENTS

### CURRENT RESOLUTION

#### HPCI

MODIFICATIONS TO SYSTEM

NRC REVIEW INDICATES RESOLUTION BEING ACHIEVED

#### FIRE PROTECTION

NRC/CONTRACTOR REVIEW OF REVISED DESIGN

COMPENSATORY MEASURES BEING REQUIRED

### INTEGRATED SCHEDULED FOR NRC REQUIRED MODIFICATIONS

REVISED SCHEDULE TO BE DISCUSSED 10/02/85

NRC EVALUATION

INPO ASSISTANCE

INCREASED NRC ATTENTION ON TVA PLANNING AND SCHEDULING  
PROBLEMS

BROWNS FERRY (CONT.)

NRC EXECUTIVE TEAM ESTABLISHED TO PROVIDE OVERVIEW \_ 04/12/85

SECY 85-231 ISSUED 06/28/85 DESCRIBING NRC LONG-TERM PLAN OF ACTION

TVA'S PLAN OF ACTION PRESENTED TO NRC 09/06/85

COMMISSION BRIEFING 09/12/85

SPECIAL EDO SALP ISSUED 09/17/85

50.54(F) LETTER ISSUED 09/17/85

INCREASED NRC INSPECTIONS

CLOSER NRC ATTENTION TO CORPORATE AND PLANT PERFORMANCE

OPERATIONAL READINESS REVIEW PRIOR TO RESTART OF ANY UNIT.

## FORT ST. VRAIN NUCLEAR GENERATING STATION

### CURRENT PLANT STATUS

- PLANT SHUT DOWN

### SUMMARY OF ITEMS

- |  |                                      |
|--|--------------------------------------|
| - EMERGENCY DIESEL GENERATORS              | - FIRE PROTECTION (APPENDIX R)       |
| - FIREWATER SYSTEM (SAFEGUARDS PROTECTION) | - ISI/IST                            |
| - STATION BATTERIES                        | - PCRV INTEGRITY (TENDONS AND LINER) |
| - CONTROL ROD DRIVE MECHANISMS             | - OVERALL PLANT TECH. SPEC. UPGRADE  |
| - CONTROL ROD POSITION INSTRUMENTATION     | - LIQUID EFFLUENT RELEASES           |
| - HELIUM CIRCULATORS                       | - EQUIPMENT QUALIFICATION            |
| - MANAGEMENT CONTROL                       | - MOISTURE INGRESS                   |

FORT ST. VRAIN (CONT.)

- BUILDING 10 CONSTRUCTION
- CRACKED FUEL BLOCKS
- CHLORIDES IN REACTOR

ONGOING STAFF AND LICENSEE ACTIONS

- A DETAILED TECHNICAL REVIEW BY THE STAFF OF EACH OF THE OPEN ISSUES IS ONGOING WITH SCHEDULES ESTABLISHED
- LICENSEE HAS INITIATED A PERFORMANCE ENHANCEMENT PROGRAM
- PLANT TECHNICAL SPECIFICATIONS ARE BEING UPGRADED TO STS FORMAT
- LICENSEE HAS REQUESTED NRC APPROVAL OF LIMITED LOW POWER OPERATION TO CONTINUE REACTOR "DRY OUT"

# RANCHO SECO NUCLEAR GENERATING STATION

## CURRENT STATUS

SHUT DOWN FOR REFUELING OUTAGE MARCH 1985

LICENSEE PROJECTED RESTART: EARLY OCTOBER

## SUMMARY OF ITEMS

NON-ISOLABLE HIGH POINT VENT LEAK

INPO APPRAISAL

INDEPENDENT CONSULTANT ORGANIZATIONAL REVIEW

- HISTORY OF POOR PERFORMANCE QA/QC, ENGINEERING CONSTRUCTION, RADIOLOGICAL CONTROLS

## CURRENT RESOLUTION

- PRIOR TO STARTUP (REGION V CONFIRMATION ACTION LETTERS)
  - O REPAIR HIGH POINT VENT PIPING AND SUPPORTS
  - O COMPLETE SAFETY SYSTEM SUPPORT WALKDOWN

## RANCHO SECO (CONT.)

- 0 EVALUATION OF OTHER SYSTEMS I.E. CABLE TRAY SUPPORTS

- 0 INPO APPRAISAL

- SUPERVISORY INVOLVEMENT IN ADHERENCE TO PROCEDURES

- CONTROL OF MAINTENANCE ACTIVITIES

- WATCH STANDING PRACTICES OF NON-LICENSED OPERATORS

- 0 MANAGEMENT REORGANIZATION

- 0 SALP MEETING WITH LICENSEE

- LONGER-TERM ITEMS

- 0 TRAINING QA/QC PERSONNEL

- 0 NEW ENGINEERING PROCEDURES

- 0 TRAINING OF CRAFT PERSONNEL

- 0 PURCHASE SIMULATOR

- 0 IMPLEMENT ROOT CAUSE PROGRAM

- 0 IMPLEMENTATION OF CONSULTANT RECOMMENDATIONS



## PALISADES PLANT

### PLANT STATUS

90% POWER; NEXT SCHEDULED REFUELING OUTAGE 11/30/85

### ITEM

MAIN STEAM LINE BREAK WITH SINGLE FAILURE OF MAIN STEAM ISOLATION VALVE.

### CURRENT

- IDENTIFIED IN SEP IN 1982
- LICENSEE INITIALLY COMMITTED TO FIX
- IN AUGUST '83, LICENSEE REQUESTED DEFERRAL UNTIL PRA COULD BE DONE
- MAY '85 SUBMITTAL OF PRA CONCLUDES FIX NOT NECESSARY
- STAFF IS REVIEWING-TARGET DECISION DATE 12/85
- JUSTIFICATION FOR OPERATING UNTIL REVIEW COMPLETE

## PALISADES (CONT.)

- HIGHLY UNLIKELY EVENT LIMITED TO SMALL FRACTION OF STEAM LINE
- ADDED THIRD AUXILIARY FEEDWATER PUMP (2 MOTOR DRIVEN- ONE STEAM TURBINE-DRIVEN) REDUCING LIKELIHOOD OF DRYOUT
- PROCEDURES UPGRADED TO USE CONDENSATE PUMPS AND SYSTEM AS BACK-UP TO AFW
- ADDED WIDE RANGE STEAM GENERATOR LEVEL INSTRUMENT
- NEW AUXILIARY FEEDWATER LINES AND SPARGER
- FAVORABLE INSERVICE INSPECTION RESULTS OF STEAM LINES 1979 AND 1983

## CONTAINMENT PURGE AND VENT

1. ISSUE: CONTAINMENT PURGE VALVE OPERABILITY FOLLOWING  
DESIGN BASIS LOCA

SOURCE OF GENERIC REQUIREMENT: GENERIC LETTER DATED  
NOVEMBER 29, 1978.

AFFECTED PLANTS: DRESDEN 2, 3 AND QUAD CITIES 1, 2

STATUS LICENSEE INFO DUE 10/85. STAFF RESOLUTION 12/85.

2. ISSUE: AUTOMATIC ISOLATION OF PURGE VALVES IN SMALL LINES  
BY HIGH RADIATION SIGNAL

SOURCE OF GENERIC REQUIREMENT: NUREG-0737, ITEM II.E.4.2(7)

AFFECTED PLANTS HATCH 1, 2, PILGRIM 1, PEACH BOTTOM 2, 3

STATUS THE BWR OWNERS GROUP APPEALED SIGNALS FOR SMALL  
LINES ( $\approx$  2 INCH). STAFF EVALUATION SCHEDULED FOR  
10/31/85.

3. ISSUE: TIME CONSTRAINTS ON CONTAINMENT VENTING/PURGING  
OPERATIONS

SOURCE OF GENERIC REQUIREMENT: GENERIC LETTER DATED  
NOVEMBER 29, 1978.

## CONTAINMENT PURGE AND VENT (CONT.)

AFFECTED PLANTS:     SEE STATUS DISCUSSION

STATUS     ALL LICENSEES HAVE COMMITTED TO VENT/PURGE FOR  
SAFETY-RELATED REASONS. TECHNICAL SPECIFICATIONS  
BEING PROCESSED ON A PLANT-SPECIFIC BASIS.  
SCHEDULE COMPLETIONS FY 86.

## FEED AND BLEED CAPABILITY AT DAVIS BESSE

### STAFF SUMMARY

-STAFF PERFORMED A NUMBER OF INDEPENDENT CALCULATIONS OF  
FEED-AND-BLEED CAPABILITY OF DAVIS-BESSE

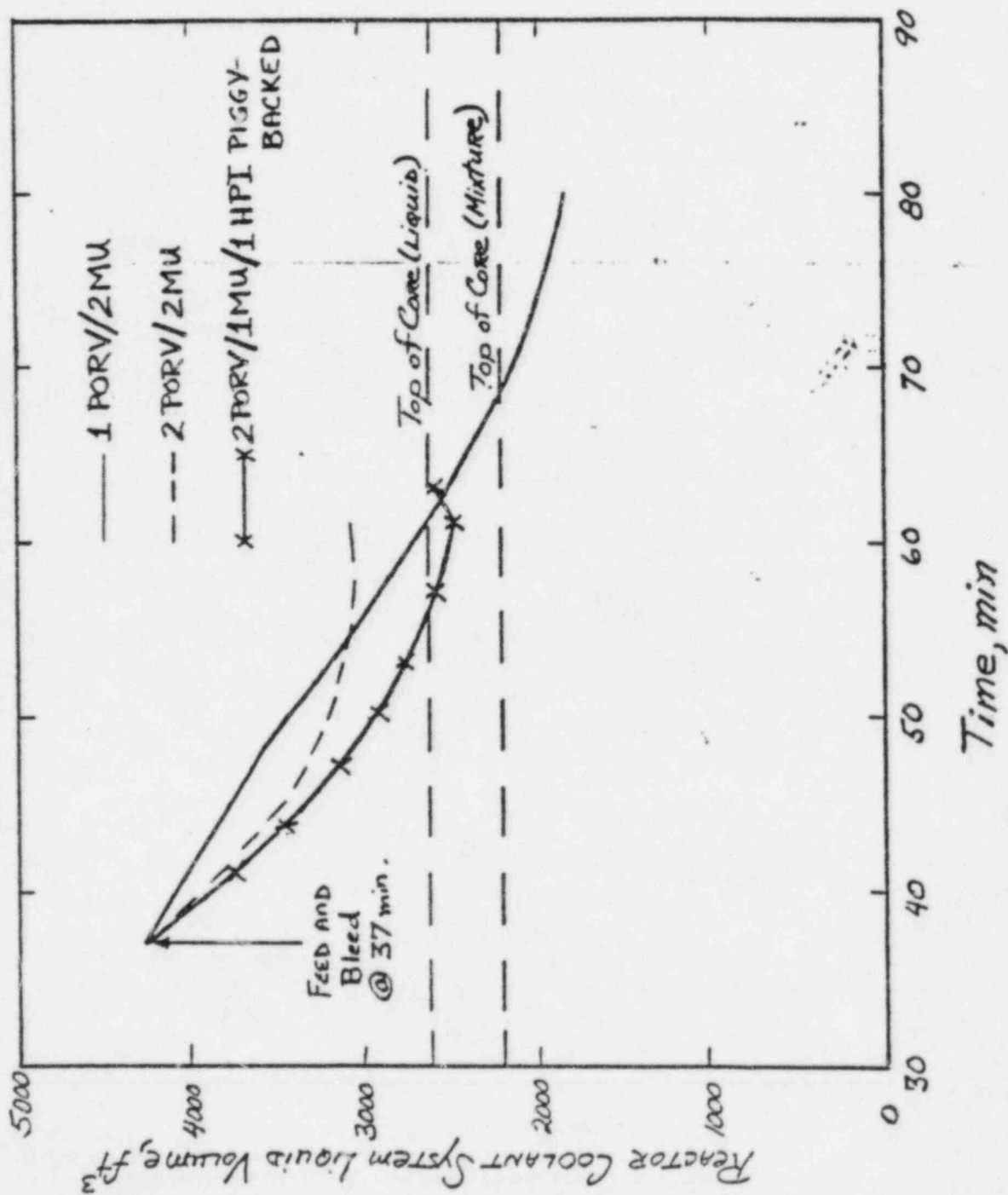
- SIMPLIFIED MASS AND ENERGY BALANCE ANALYSES
- ANALYSES USING TRAC-PF1 CODE AT LANL
- IN-HOUSE ANALYSES USING RELAP5 AND NUCLEAR PLANT  
ANALYZER

### OVERALL CONCLUSIONS:

- BASED ON ABOVE ANALYSES, STAFF AGREES THAT CURRENT  
DAVIS-BESSE CONFIGURATION (1 PORV + 2 MU PUMPS) IS  
CAPABLE OF SUCCESSFUL FEED AND BLEED IF INITIATED  
WITHIN 20 MINUTES.
- STAFF ANALYSES INDICATE THE ADDITION OF A SECOND  
PORV OF CAPACITY EQUAL TO THE EXISTING PORV ENHANCES  
FEED AND BLEED CAPABILITY (TIME AVAILABLE FOR OPERATOR  
ACTION IS GREATLY EXTENDED, RELIANCE ON MU PUMPS GREATLY  
DECREASED OR PERHAPS ELIMINATED).

# Summary of Davis-Besse Feed-and-Bleed Calculations =

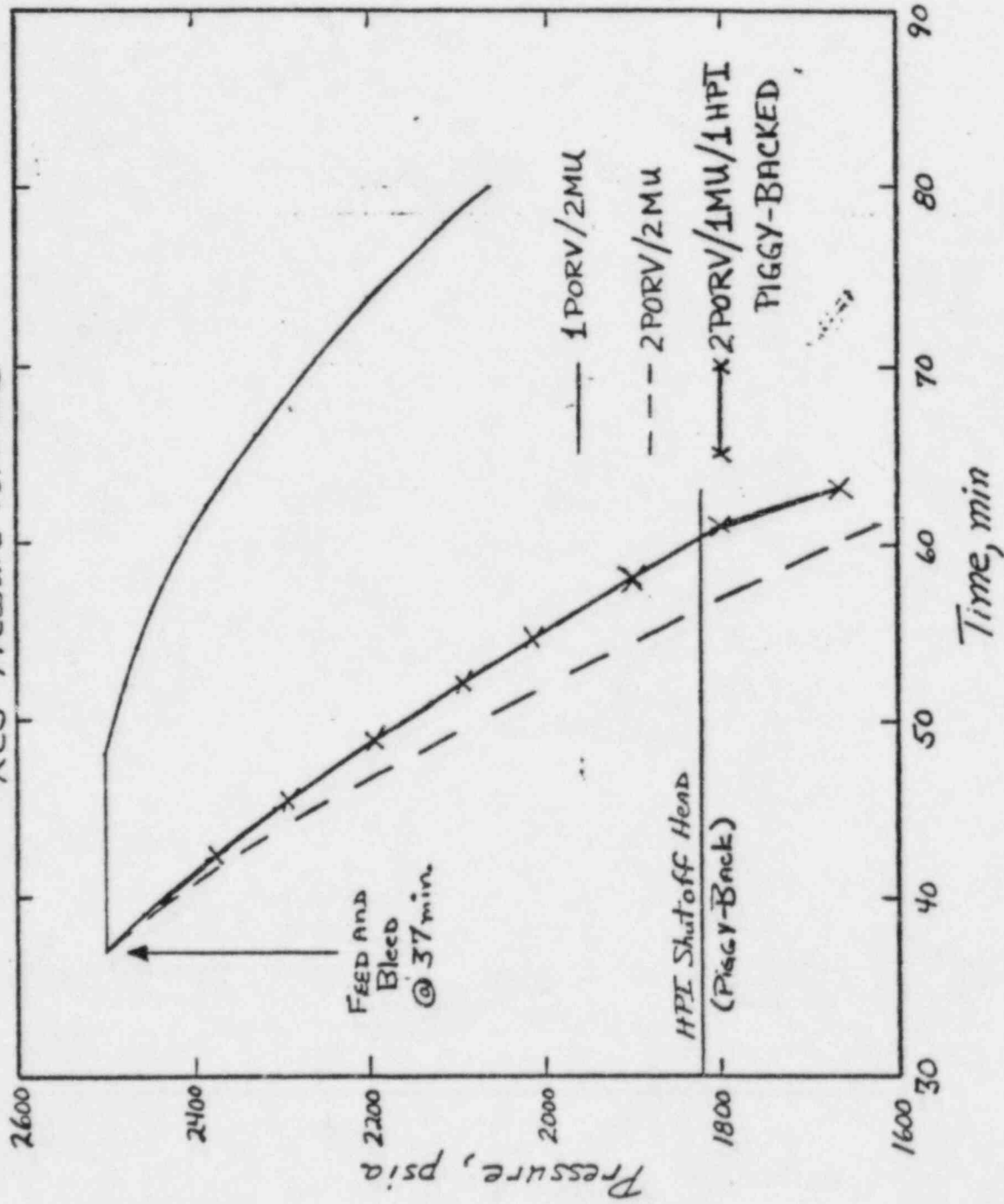
RCS Liquid Volume vs. Time



# Summary of Davis-Besse Feed-and-Bleed

## Calculations

RCS Pressure vs. Time



9/85

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