

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the matter of:

COMMISSION MEETING

Discussion of Environmental  
Qualification Exemption  
Request - Fort St. Vrain

• (Public Meeting)

Docket No.

Location: Washington, D. C.

Date: Tuesday, November 19, 1985

Pages: 1 - 71

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1 UNITED STATES OF AMERICA  
2 NUCLEAR REGULATORY COMMISSION

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4 DISCUSSION OF ENVIRONMENTAL QUALIFICATION

5 EXEMPTION REQUEST - FORT ST. VRAIN

6 \*\*\*

7 PUBLIC MEETING

8 \*\*\*

9 Nuclear Regulatory Commission

10 Room 1130

11 1717 H Street, Northwest

12 Washington, D.C.

13  
14 Tuesday, November 19, 1985

15  
16 The Commission met in open session, pursuant to  
17 notice, at 2:06 p.m., the Honorable NUNZIO J. PALLADINO,  
18 Chairman of the Commission, presiding.

19 COMMISSIONERS PRESENT:

20 NUNZIO J. PALLADINO, Chairman of the Commission

21 THOMAS M. ROBERTS, Member of the Commission

22 JAMES K. ASSELSTINE, Member of the Commission

23 FREDERICK M. BERNTHAL, Member of the Commission

24 LANDO W. ZECH, JR., Member of the Commission

25

## 1 STAFF AND PRESENTERS SEATED AT COMMISSION TABLE:

2 S. CHILK

3 H. PLAINE

4 K. HEITNER

5 E. BUTCHER

6 H. DENTON

7 F. MIRAGLIA

8 R. V. ER

9 O. LEE  
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## P R O C E E D I N G S

CHAIRMAN PALLADINO: Good afternoon, ladies and gentlemen. Today we meet with members of the NRC Staff to discuss the environmental qualification of electrical equipment at the Fort St. Vrain Nuclear Plant.

By generic letter in early August licensees were advised of the Commission's intention to grant exemptions only in rare circumstances, and that enforcement action will be taken against licensees who continue to operate the plants with unqualified equipment beyond November 30, 1985 without approved extensions. Justifications for continued operation have to be provided to the Staff and extensions will have to be approved by the Commission.

By letter dated September 24th, 1985 the Public Service Company of Colorado requested an extension until March 31st, 1985 -- in 1985, excuse me -- to complete environmental qualification at Fort St. Vrain. The NRC Staff is presently evaluating the licensee's submittal.

Due to the short period of time between now and November 30 deadline, the Staff has been asked to provide a status of their review. Therefore, the objective of today's meeting is to afford the Staff an opportunity to brief the Commission on the preliminary evaluation of licensee's request, and to advise the Commission of the Staff's schedule for submitting the Staff's recommendation.

1 I understand that representatives of Public Service  
2 Company are in the audience and available to answer any  
3 questions which the Commission may have. I also understand  
4 that Region -- representatives from Region IV are listening in  
5 by telephone.

6 Do any of my fellow commissioners have any additional  
7 opening remarks at this time?

8 COMMISSIONER ZECH: No.

9 COMMISSIONER ASSELSTINE: Just one item.

10 CHAIRMAN PALLADINO: Sure.

11 COMMISSIONER ASSELSTINE: Perhaps the Staff,  
12 particularly given the information that we just received on  
13 the status of JCO, perhaps the Staff could describe what  
14 justifications for continued operation this plant has been  
15 using for the past several years for equipment qualification,  
16 and what we now understand about the adequacy of those JCOs.

17 CHAIRMAN PALLADINO: Okay, can you do that during  
18 the presentation?

19 MR. DENTON: Yes

20 CHAIRMAN PALLADINO: Any other comments?

21 COMMISSIONER ZECH: No.

22 CHAIRMAN PALLADINO: All right, then let's turn the  
23 meeting over to Harold Denton.

24 MR. DENTON: Thank you, Mr. Chairman. Today we have  
25 here at the table Frank Miraglia on my right, Ed Butcher on my

1 left, who will be making the presentation. He will be assisted  
2 by Ken Heitner, the project manager for this plant. And we  
3 have a number of other people that might assist us in the  
4 discussions.

5 We're proposing today to summarize for you the  
6 results of our review, which will be to deny in part and to  
7 grant in part the proposal. The licensee and our Staff have  
8 worked on this issue, and I think it's fair to characterize  
9 the licensee's position as one which he does not disagree with  
10 the position.

11 As you know, this plant has some unusual and unique  
12 characteristics. Has a very high heat capacity, very slow  
13 thermal response to upsets. And it's because of this that  
14 we've arrived at a solution for this issue that's somewhat  
15 different than we have proposed for the light water plants.

16 Just to refresh your memory slightly, the heat  
17 capacity of a light water plant is largely due to the water  
18 that's inside the reactor vessel, not the fuel. The heat  
19 capacity in this plant is largely due to the fuel in the  
20 graphite matrix, not the helium. So it's a very different  
21 situation in terms of the thermal response of the core. And  
22 this core heats up very slowly.

23 With that introduction, let me have Ed go through  
24 the five slides or so that we have distributed and tell you  
25 how we've come to the conclusion that we propose.

1 MR. BUTCHER: We'll start with the first slide.

2 [Slide.]

3 MR. BUTCHER: This licensee in their September 24th,  
4 1985 submittal addressed the two key areas which were  
5 identified in the guidance provided by the Commission. They  
6 identified the exceptional circumstances that applied to their  
7 case and they provided justification for interim operation are  
8 based upon the unique characteristics of the plant, one of  
9 which Harold has just spoke to.

10 The Staff reviewed the information provided by the  
11 licensee. However, we were unable to conclude and agree with  
12 their finding that justification with the unqualified equipment  
13 identified was -- had been satisfied. Our principal concern in  
14 this area had to do with the operation of a new system which  
15 they had proposed to design and install to isolate  
16 automatically high energy line breaks. And also the operation  
17 of filtration systems, which would control leaks following an  
18 accident.

19 In the process of performing our evaluation of their  
20 application we did, however, identify that there was a  
21 threshold upon which you did not have to rely upon these  
22 systems. And the Staff's calculation was that it was roughly  
23 somewhere in the neighborhood of 30 percent.

24 When it became clear that we were not going to be  
25 able to agree with the licensee on 100 percent power, that we

1       were not able to conclude that it was justified, the licensee  
2       did some independent work of their own and was able to confirm  
3       that, yes, the reactor could be operated safely at 35 percent  
4       power and came in and presented the results of that analysis  
5       to the Staff. We have reviewed what the licensee submitted,  
6       and it is consistent with our own independent analysis.

7               On the basis of these discussions, the licensee has  
8       determined that if they were allowed to operate at 35 percent  
9       power there would be no health and safety concerns and that  
10      they could complete all of the equipment qualification to  
11      completely qualify all the equipment in the plant by May 31st,  
12      1986.

13             CHAIRMAN PALLADINO: Would that mean another shutdown  
14      in order to install the equipment?

15             MR. BUTCHER: There will be some required shutdowns  
16      in the interim period in order to install some of the  
17      additional equipment.

18             COMMISSIONER BERNTHAL: How many pieces altogether  
19      are there? How much -- what are we talking about?

20             COMMISSIONER ASSELSTINE: Items and components.

21             CHAIRMAN PALLADINO: What's that?

22             COMMISSIONER ASSELSTINE: How many items and  
23      components?

24             MR. BUTCHER: The licensee identified in their  
25      submittal that of 207 items of equipment on their qualification

1 list, 156 of the items would have to be considered unqualified  
2 in accordance with the most recent guidance and positions taken  
3 by the Staff. That would leave 51 items considered qualified.

4 CHAIRMAN PALLADINO: Are those items that are  
5 installed now?

6 MR. BUTCHER: The 51 items are items that are  
7 largely made up of equipment that is necessary for the new  
8 steam line rupture detection and isolation.

9 CHAIRMAN PALLADINO: So it's not installed now?

10 MR. BUTCHER: No.

11 COMMISSIONER ASSELSTINE: So the 51, I take it, have  
12 been closed out?

13 MR. BUTCHER: The 51 we have not reviewed. The  
14 licensee was taking the position that that equipment would be  
15 qualified prior to November 30th, and it would be largely made  
16 up of new equipment to be installed.

17 COMMISSIONER ASSELSTINE: So it's 156 as of November  
18 30th would still not be qualified?

19 MR. BUTCHER: That's correct.

20 COMMISSIONER ASSELSTINE: How many components would  
21 that --

22 MR. BUTCHER: That constitutes, according to the  
23 licensee's submittal, 1246 pieces of equipment.

24 We're prepared to go on and discuss our basis --

25 CHAIRMAN PALLADINO: Now they think they can do the

1 1246 pieces by March 31st?

2 COMMISSIONER ASSELSTINE: May.

3 CHAIRMAN PALLADINO: May 31st, '86?

4 MR. BUTCHER: The licensee has confirmed again this  
5 morning that that's a date that they can meet. And it is a  
6 date which the Staff has some confidence that can be achieved.  
7 They have a lot of work to do in that interim time, but it  
8 appears to be a realistic date at this point.

9 CHAIRMAN PALLADINO: So you think it is a realistic  
10 date?

11 MR. BUTCHER: Yes, sir.

12 COMMISSIONER BERNTHAL: Is that partly because they  
13 are having to meet generally less stringent requirements for a  
14 lot of this equipment because of the nature of the facility?  
15 Or how do you define the parameters, temperature, pressure,  
16 moisture, whatever? Let's see, I guess moisture is not a fine  
17 parameter here.

18 MR. MIRAGLIA: I think that that date is to come in  
19 compliance with 50.49, which means you would apply the same  
20 methodology that's been used to qualify light water reactor  
21 components. Certainly the pressure/temperature profiles for  
22 this particular plant are different. That would be to comply  
23 with the requirements of 50.49.

24 COMMISSIONER BERNTHAL: I understand that, but what  
25 I'm saying is -- or what I'm asking is whether this plant

1 generally, for the equipment you have, if I looked at the  
2 temperatures and maybe moisture or whatever, that that  
3 equipment is required to meet, is this an easier, a less  
4 stringent requirement because of the nature of the facility or  
5 not?

6 MR. MIRAGLIA: I think some of the temperature  
7 profiles are higher.

8 MR. HEITNER: Yes. And you don't have to qualify  
9 equipment also. But you don't have to qualify equipment for  
10 radiation.

11 COMMISSIONER BERNTHAL: Radiation.

12 MR. HEITNER: And you don't have to qualify equipment  
13 nominally for submersions.

14 COMMISSIONER BERNTHAL: That's the question, yes.

15 CHAIRMAN PALLADINO: For what?

16 MR. HEITNER: Submersions, flood.

17 COMMISSIONER BERNTHAL: Right.

18 MR. BUTCHER: For certain scenarios there are higher  
19 temperatures and pressures that you see, but those are just  
20 for particular scenarios. With the new steam line detection  
21 -- steam line rupture detection isolation system you'll have  
22 automatic isolation of all the breaks, which should  
23 substantially reduce the environment, which will make the  
24 qualification easier. And I'm presuming that that's the basis  
25 upon which the qualification can be achieved in May.



1 [Commissioner Bernthal left the room.]

2 CHAIRMAN PALLADINO: Their request had been for an  
3 extension to March 31st, 1986. Does this modify that request,  
4 the last statement, licensee has committed to complete all EQ  
5 by May 31st, 1986?

6 MR. DENTON: I think the way we've approached this,  
7 Mr. Chairman, is that at this lower level of operation they  
8 don't really need to have the equipment qualified because of  
9 the response characteristics of the core, and could run  
10 perhaps indefinitely, like we've let other plants run with  
11 JCOs.

12 But in the theory of having to bring this issue to a  
13 close in the near future, we thought they should complete the  
14 job in roughly the same time frame as some of the other plants  
15 that we've talked about. And they actually proposed the  
16 date. They wanted more time than the March date that they had  
17 originally proposed. But I didn't see that from a safety  
18 standpoint, whether it was March, April, May or June was that  
19 important, just provided we had a date certain.

20 So I understand that that's the date which they've  
21 set, they feel comfortable they can come into full compliance  
22 with.

23 [Commissioner Roberts left the room.]

24 CHAIRMAN PALLADINO: So are you saying that you're  
25 recommending an extension to May 31st, 1986?

1 MR. DENTON: Yes. We recommend that they be  
2 permitted to run at 35 percent power up until that time, and  
3 then require they come into full compliance.

4 MR. BUTCHER: If we can turn to the justification  
5 for continued operation at 35 percent.

6 [Commissioner Roberts returned.]

7 CHAIRMAN PALLADINO: I don't want to get hung up on  
8 a procedural matter, but nevertheless let me clear it up.  
9 Would it take a request from them for us to act, or --

10 MR. MIRAGLIA: They will have to modify the request.

11 CHAIRMAN PALLADINO: The request.

12 MR. MIRAGLIA: Yes. The information that Mr. Butcher  
13 referred to was presented to us yesterday at a meeting and all  
14 those analysis would have to be documented, docketed on the  
15 record. And that would indicate a modification of request to  
16 operate at 100 percent power, and the 31st of March date would  
17 be reflected in that submittal.

18 CHAIRMAN PALLADINO: 31st of May.

19 MR. MIRAGLIA: Yes, it would be changed to say 35  
20 percent until the 31st of May.

21 CHAIRMAN PALLADINO: Okay.

22 MR. DENTON: I think if the Commission concurs with  
23 the course of action we're on, we'll write up a paper and the  
24 company would submit the necessary documentation between now  
25 and November 30th, when we'd send this down.

1 MR. BUTCHER: If we can turn to the justification  
2 for continued operation.

3 [Slide.]

4 MR. BUTCHER: The first bullet there is very  
5 significant. At 35 percent power there is no electrical  
6 equipment required to be qualified in order to safely shut the  
7 reactor down. At 35 percent there's also adequate time  
8 available for manual action to initiate the one engineer  
9 safety feature system which would have to function. That's  
10 the liner cooling system.

11 CHAIRMAN PALLADINO: Now is that the one that the  
12 requirement is for 10 minutes? You've got to be able to  
13 actuate in 10 minutes?

14 MR. BUTCHER: No, sir, that system --

15 CHAIRMAN PALLADINO: Go ahead.

16 MR. BUTCHER: As I go on here -- the worst case core  
17 temperature that would be achieved in the reactor if no action  
18 were taken would be 2900 degrees Fahrenheit at 80 hours.

19 CHAIRMAN PALLADINO: I see.

20 MR. BUTCHER: Now the liner cooling system has to be  
21 initiated prior to the 80 hours. It can't be initiated right  
22 at 79 hours. It has to be initiated prior to the 80 hours.

23 The calculations that we have done so far and that  
24 were presented preliminarily yesterday indicate that it's on  
25 the order of a couple of days as opposed to hours. The

1     licensee is going to go back and refine that calculation, and  
2     we are also going to confirm the exact time that it must be  
3     initiated. But we are quite confident that it's on the order  
4     of days.

5             CHAIRMAN PALLADINO: But it is less than 80?

6             MR. BUTCHER: Yes, sir.

7             MR. DENTON: Well, I think this is a key point and  
8     goes back to the comment I made at the beginning. If they  
9     have no electrical equipment working for whatever reason, this  
10    core heats up very, very slowly. It's not a matter of minutes  
11    and hours as you have in a light water plant. It's a matter  
12    of hours and days before it heats up to a temperature of  
13    concern.

14            So there's much more opportunity for operators to  
15    take action to either restore the circulators or restore liner  
16    cooling. In fact, I understand the fire prevention system can  
17    be used with the liner cooling and so forth. So they have a  
18    lot of options in that several day period to get some sort of  
19    cooling provided to bring the temperatures back down.

20            And therefore, I think overall EQ is just not that  
21    big an issue in this plant at these lower powers.

22            COMMISSIONER ASSELSTINE: Now when did the Staff  
23    receive the analysis supporting this JCO?

24            MR. BUTCHER: For 35 percent power?

25            COMMISSIONER ASSELSTINE: Yes.

1 MR. BUTCHER: We were informed verbally of it over  
2 the weekend, but it was confirmatory in nature. The Staff had  
3 done its own calculations and had concluded that likely a case  
4 could be made here. Over the weekend the licensee elected to  
5 drop from the 100 percent and to make a case at 35 percent,  
6 because we didn't think a case could be made at 100 percent.

7 COMMISSIONER ASSELSTINE: Okay.

8 MR. BUTCHER: So the Staff has known about this  
9 option for perhaps 30 days or longer, a little bit longer.  
10 But just yesterday received the licensee's calculations.

11 MR. DENTON: Well, I think the applicant, however,  
12 provided a different case. He's been -- he provided a  
13 different case the first time the Commission issued its rule  
14 and we've been arguing over whether his case was the correct  
15 one or not. Because, I guess all along he's thought he could  
16 initiate liner cooling much faster, and circulate action much  
17 faster. So over the several years he's had a different bases  
18 for the plant than we've come around to.

19 COMMISSIONER ASSELSTINE: Okay, so going back to the  
20 time when the rule was issued and whenever we went through all  
21 those iterations of JCOs all the way along, I take it, the  
22 licensee's position has been that they could operate the plant  
23 at 100 percent.

24 MR. MIRAGLIA: And they believe to be in compliance.

25 MR. DENTON: Yes, and that they thought they had

1 enough time even at 100 percent to take whatever operator  
2 actions were necessary to keep core temperatures down.

3 COMMISSIONER ASSELSTINE: And I take it, we've never  
4 really agreed with that position all the way along?

5 MR. DENTON: Well, we didn't give this plant the  
6 same attention that we did others because of its unique  
7 characteristics. You know, it has such a slow thermal response  
8 it just didn't get looked at that hard because we knew it  
9 wasn't as crucial as for light water plants.

10 COMMISSIONER ASSELSTINE: Did the plant operate at  
11 100 percent power at any time after the rule was adopted.

12 MR. MIRAGLIA: I don't believe that to be the case.  
13 I'm not sure.

14 COMMISSIONER ASSELSTINE: Did it operate above 35  
15 percent?

16 MR. MIRAGLIA: I don't think it's been to 100  
17 percent power at all.

18 MR. DENTON: I don't know for sure, Commissioner.  
19 I'd have to ask the company.

20 COMMISSIONER ASSELSTINE: Okay.

21 MR. MIRAGLIA: I think the highest power level it  
22 got to was on the order of 80 percent, I believe.

23 COMMISSIONER ASSELSTINE: Okay.

24 MR. MIRAGLIA: The utility is here and could --

25 COMMISSIONER ASSELSTINE: I can ask them when they

1 make their presentation.

2 MR. MIRAGLIA: -- confirm it.

3 CHAIRMAN PALLADINO: Are they going to make a  
4 presentation?

5 MR. DENTON: They're prepared to.

6 MR. MIRAGLIA: They're available for any questions  
7 the Commission might have.

8 MR. DENTON: I think we just have a couple more  
9 slides to show the basis for the proposal we have here and  
10 then --

11 CHAIRMAN PALLADINO: I remember reading about the 80  
12 hours at least somewhere. There was also another question  
13 about 10 minutes. Could you clear up --

14 MR. HEITNER: Okay, that's the question of -- in the  
15 initial design of the plant, breaks in certain steam lines,  
16 the hot and cold reheat lines are operated -- are isolated  
17 manually by the operators taking the actions manually. Now  
18 the original design basis to the plant as it was licensed in  
19 '73 and reconfirmed in let's say, '76, '77 was that the  
20 operators could detect the break from the instrumentation and  
21 take the necessary actions in the control room within four  
22 minutes.

23 And of course, the Staff's human factors criteria  
24 now are much more severe and they would require a much more  
25 conservative assumption about the operators taking their first



1 action in 10 minutes, and completing the necessary actions  
2 four minutes later. So you're talking about an operator time  
3 of more like 14 minutes.

4 So that's been an issue also in trying to arrive at  
5 the basis for determining what is the environment to which the  
6 equipment has to be qualified. Because if you allow the  
7 breaks to go for long periods of time, the temperatures that  
8 you do get, the harsh environment that you do get has a much  
9 higher temperature profile. And that's why, in the long run,  
10 the licensee has proposed an automatic isolation system.

11 CHAIRMAN PALLADINO: I see, that's the way they're  
12 solving it.

13 MR. MIRAGLIA: It moots the question of whether it's  
14 four or --

15 MR. BUTCHER: And that question is only relevant for  
16 100 percent operation.

17 CHAIRMAN PALLADINO: Yes, I appreciate that. All  
18 right.

19 MR. BUTCHER: Another significant factor and a  
20 justification for continued operation at 35 percent power is  
21 the small doses that you receive from this event. And the  
22 scenario we postulate are that the doses that you could expect  
23 in the worst case situation would be on the order of a few rem  
24 and no more than that.

25 [Commissioner Bernthal returned.]



1 MR. BUTCHER: In a more likely scenario it's on the  
2 order of millirem. It's very difficult to calculate it's so  
3 low.

4 All of the work that the licensee has presented has  
5 been, to some extent, verified by our consultants at Oak Ridge  
6 by independent calculations. In fact, as I indicated, we were  
7 aware of this situation earlier, about a month ago.

8 We have some remaining actions which have to be done  
9 in order for the Staff to draw a bottom line on this.

10 [Slide.]

11 MR. BUTCHER: We just received the licensee's  
12 calculations yesterday. And the licensee has some follow up  
13 actions and we have some follow up actions.

14 COMMISSIONER BERNTHAL: What is that, about 100  
15 megawatts then, megawatts electric.

16 MR. MIRAGLIA: That's about right.

17 CHAIRMAN PALLADINO: You mean at 35 percent?

18 COMMISSIONER BERNTHAL: Yes.

19 MR. BUTCHER: The licensee needs to complete these  
20 calculations which were presented to us in preliminary form to  
21 confirm that, in fact, the analysis is correct. There are  
22 approximately 12 different areas that they have to look into.  
23 These calculations are all confirmatory in nature, and they  
24 have to docket the material in order for us to consider it.

25 CHAIRMAN PALLADINO: Now is that a time consuming

1 problem?

2 MR. BUTCHER: We don't estimate that it will take a  
3 great deal of time. Our current estimates are something like  
4 10 days. We will have performed our independent confirmation  
5 by that time also.

6 CHAIRMAN PALLADINO: Now these are items that have  
7 to be done before you allow them to continue at 35 percent?

8 MR. BUTCHER: Yes, sir.

9 MR. HEITNER: Well, right now they have no  
10 authorization to operate.

11 CHAIRMAN PALLADINO: Yes. But --

12 MR. BUTCHER: The plant is shut down now and it has  
13 no authorization. It's under confirmatory action letter right  
14 now.

15 CHAIRMAN PALLADINO: So these calculations would  
16 have to be submitted and approved by the Staff prior to  
17 authorizing them to go to 35 percent?

18 MR. BUTCHER: Yes, sir.

19 MR. MIRAGLIA: They would form the basis of the  
20 Staff's recommendation to the Commission saying, we authorize  
21 operation at 35 percent past -- through --

22 CHAIRMAN PALLADINO: Does this have to be done  
23 before November 30th, I guess is what I --

24 MR. DENTON: We'd like to get it done before the  
25 30th, yes.

1           CHAIRMAN PALLADINO: And we have to act on it before  
2   the 30th?

3           MR. DENTON: I think, yes, ideally.

4           CHAIRMAN PALLADINO: The last time the Commission is  
5   together is the 26th, if I --

6           MR. MIRAGLIA: It would appear to me that the  
7   utility is down now. It would be -- if we can get it before  
8   the 30th of November that would be fine. If it's --

9           MR. BUTCHER: The schedule --

10          MR. MIRAGLIA: He requires an authorization by the  
11   Staff to start up. The Staff wouldn't be able to authorize  
12   that without also the grant of the extension past the 30th.

13          COMMISSIONER BERNTHAL: Is there going to be a SECY  
14   paper, I presume?

15          COMMISSIONER ASSELSTINE: Yes, Harold said he was  
16   going to give us a paper.

17          MR. DENTON: Yes.

18          COMMISSIONER BERNTHAL: Is there any reason why we  
19   can't do it by then?

20          CHAIRMAN PALLADINO: Well, only because these things  
21   have to be done. We could do our part.

22          MR. DENTON: We see these as confirmatory, and if  
23   you agreed with the approach we would proceed this way.

24          CHAIRMAN PALLADINO: All right, we could make that a  
25   condition.

1           MR. BUTCHER: And actually that's one approach. The  
2 Commission's approval could be conditional upon the Staff  
3 completing its evaluation, and then we could act on our own at  
4 that point.

5           CHAIRMAN PALLADINO: Yes.

6           MR. BUTCHER: They are truly confirmatory. We have  
7 done some calculations already.

8           COMMISSIONER ASSELSTINE: Is the system dried out  
9 now, or do they have a dry-out period they have to do through?

10          MR. BUTCHER: There will be a dry-out period -- an  
11 additional dry-out period that they have to go through to  
12 return to even 35 percent power. They have been in the last  
13 45 days under a restriction of operation at 8 percent in order  
14 to dry out. And I believe the licensee has stated that  
15 they've gotten as much moisture out as they can get out at  
16 that power level, and that it will require higher power level  
17 to get additional moisture out.

18          The Staff follow up actions, of course, are to  
19 review confirmatory calculations that the licensee provides,  
20 and to do some independent work of our own.

21          The schedule right now is dictated by the licensee.  
22 I estimated here two to three weeks, depending on when the  
23 licensee could provide their additional information back to  
24 us, their confirmatory analysis. We're prepared to move on it  
25 as soon as we receive it.

1           CHAIRMAN PALLADINO: But you wouldn't necessarily  
2 have to have it to give a SECY paper to the Commission for  
3 action.

4           MR. DENTON: That's right. We could give you the  
5 paper saying how we were going to proceed.

6           CHAIRMAN PALLADINO: All right.

7           MR. BUTCHER: That concludes our prepared remarks  
8 with the exception of, if the Commission wishes some additional  
9 details on the operation of the plant and its layout, we're  
10 prepared to do it.

11          MR. DENTON: Maybe it will be worthwhile if the  
12 project manager spent just a moment or two on the last two  
13 slides to show you why this presents quite a different question  
14 than in the normal light water plant that's inside  
15 containment. Maybe you should just cover the last two to show  
16 the areas and assumptions we've been working on.

17          MR. HEITNER: Could we have the next slide, D-1?

18               [Slide.]

19          COMMISSIONER ASSELSTINE: Turn it sideways, please.

20          CHAIRMAN PALLADINO: Other way.

21          COMMISSIONER ASSELSTINE: Other way.

22          MR. HEITNER: Thank you. The harsh environment can  
23 be created at Fort St. Vrain in two areas. In the annular  
24 region in the reactor and --

25          CHAIRMAN PALLADINO: Excuse me, can people hear in

1 the back?

2 MR. MIRAGLIA: Move the microphone over.

3 COMMISSIONER ASSELSTINE: Use that mike there.

4 MR. HEITNER: The harsh environment for Fort  
5 St. Vrain is created in two areas. In the reactor building,  
6 in the annular outside the reactor vessel, and in the turbine  
7 building, depending upon where the steam line break that's the  
8 limiting accident takes place.

9 In order to either check on the operation of certain  
10 equipment that would be required to restore the liner cooling  
11 system, which is the basic system that we're depending on for  
12 this limited period of time, or to restore the circulators to  
13 operations, the operators have to be able to get access to  
14 these two areas.

15 And what the licensee has done is developed curves  
16 which -- and through the process of developing these curves it  
17 indicates that that access will be available to the operators  
18 in the order of a day's time. That's assuming that the  
19 equipment that would be normally running has failed and  
20 some restorative manual actions on the part of the operators  
21 is necessary.

22 May I have the next slide, D-2?

23 [Slide.]

24 MR. DENTON: There are just two things you need to  
25 cool this core, two options. One is, you can cool it with a

1 liner cooling system, which are the coils around the outside  
2 of the vessel.

3 CHAIRMAN PALLADINO: Outside of the concrete vessel?

4 MR. HEITNER: Go back to D-1, please.

5 [Slide.]

6 CHAIRMAN PALLADINO: Where are these?

7 MR. HEITNER: The liner cooling system is a series  
8 of cooling pipes through which water passes that entirely  
9 surrounds the reactor vessel.

10 CHAIRMAN PALLADINO: The steel liner?

11 MR. HEITNER: And the steel liner, and keeps that  
12 cool.

13 CHAIRMAN PALLADINO: So it's inside --

14 MR. DENTON: Yes.

15 CHAIRMAN PALLADINO: It's inside the concrete?

16 MR. DENTON: So that's one way to get heat out and  
17 keep the core down. And the other is to keep the circulators  
18 running.

19 MR. HEITNER: The second way is to supply pressurized  
20 water to pelham wheels that drive the helium circulators.  
21 These four devices here (indicating) that circulate the helium  
22 through the core and remove heat through the steam generator  
23 tubes, much like you do in a normal pressurized water reactor.

24 CHAIRMAN PALLADINO: How does environment get over  
25 to this turbine generator? Or did I misunderstand?



1           MR. HEITNER: Well, the steam lines run from the  
2 bottom of the steam generators up and over to the turbine  
3 hall. And so, depending upon where the break takes place, the  
4 harsh environment can be created in either building, and the  
5 equipment that the operators need to manipulate for shutdown  
6 is in these two areas. And those are the areas that they have  
7 to have access to in order to manually --

8           CHAIRMAN PALLADINO: You're saying if it breaks  
9 inside the pressure vessel then --

10          MR. HEITNER: That's an entirely separate situation.  
11 But it's not going to create a harsh environment out here where  
12 the other equipment is.

13          CHAIRMAN PALLADINO: Where does it have to break for  
14 it to get the harsh environment over there?

15          MR. HEITNER: Outside in the reactor building here  
16 (indicating.) That's what we're considering.

17          MR. DENTON: In the steam line passing through that  
18 area.

19          MR. HEITNER: Right, in the steam line passing  
20 through those areas.

21          CHAIRMAN PALLADINO: Okay, any place in that  
22 building.

23          MR. DENTON: Yes. Then let's go to the next slide.

24          MR. HEITNER: D-2, please.

25               [Slide.]



1 MR. DENTON: The data we're showing here is what's  
2 attributable -- or rather than my explain it, why don't you  
3 explain this one.

4 MR. HEITNER: What we've done is we've calculated  
5 the peak temperature in the core of the reactor based on the  
6 liner cooling system which is the most basic, simple system  
7 that can be used to cool the reactor and remove decay heat  
8 operating.

9 There are two options involved and that has to do  
10 with whether the reactor is allowed to remain pressurized, or  
11 whether the helium from the reactor is released separately and  
12 the reactor is bled down effectively to atmospheric pressure.

13 CHAIRMAN PALLADINO: Are the circulators running?

14 MR. HEITNER: No, the circulators are not running.  
15 Only the liner cooling system is running.

16 Now we've calculated here is a percent, as a  
17 percentage of the full power at which the reactor is operating  
18 what the peak temperature is as the core heats up, because the  
19 core heats up to some peak temperature and then cools down  
20 again. And what the calculations show is that the 35 percent  
21 power level, that you're not going to get to the 2900 degrees  
22 Fahrenheit -- that's the magic number for the fuel to actually  
23 fail.

24 In other words, the calculations show that the fuel  
25 is going to remain at or below the fuel failure limits, so no

1 radioactive material will actually be released from the  
2 individual fuel pellets, and therefore, no radioactivity can  
3 be released to the outside of the reactor. Now those are our  
4 calculations, and the licensee is doing its own confirmatory  
5 calculations to bear those, our calculations out.

6 MR. DENTON: And this is the temperature at the 80  
7 hours that we're talking about. So a lot of time has passed  
8 from the original break. And that's what leads us to think  
9 there's plenty of time for restorative actions to be taken by  
10 the operator to get the circulators running, or to get the  
11 liner running and so forth.

12 CHAIRMAN PALLADINO: Or to get what?

13 MR. DENTON: To get the liner system running if it  
14 wasn't running at the beginning.

15 CHAIRMAN PALLADINO: Those are the two actions that  
16 --

17 MR. DENTON: They are the two key ones to take, yes,  
18 sir.

19 MR. BUTCHER: These data on this graph here are very  
20 conservative. They are based upon the conservative assumptions  
21 as the licensing basis for the plant. There have actually been  
22 a number of experiments done which show that there's probably  
23 several hundred degrees of conservatism in these data, and that  
24 information was presented by the licensee also.

25 COMMISSIONER BERNTHAL: Is this core or vessel

1 jacket coolant normally running, or is that an emergency --

2 MR. HEITNER: Yes.

3 COMMISSIONER BERNTHAL: Is that normally in  
4 operation?

5 MR. HEITNER: The liner coolant system is running  
6 normally.

7 CHAIRMAN PALLADINO: Is what?

8 MR. HEITNER: Is normally running.

9 MR. DENTON: But if it got knocked out, we thought  
10 it could be restored within a day by actions that didn't  
11 require superhuman procedures and staffing and so forth, and  
12 that's what these calculations are based on.

13 COMMISSIONER BERNTHAL: That's the protection of the  
14 concrete that surrounds the vessel essentially? Is that the  
15 reason for that jacket around the vessel?

16 MR. MIRAGLIA: Protects the concrete vessel as well  
17 as the fuel temperature.

18 MR. DENTON: As it removes heat.

19 MR. BUTCHER: It can be used to remove decay heat  
20 but it was not put in the plant for that purpose. It's  
21 primarily to control the temperatures of the concrete.

22 COMMISSIONER BERNTHAL: So what the British do in  
23 the AGR with insulation you do with an active water cooling  
24 system?

25 MR. BUTCHER: There's actually several layers of

1 insulation also.

2 MR. HEITNER: There's insulation also between the  
3 liner -- the cooling of the liner and the inside of the  
4 reactor. In other words, as you go in from the liner you then  
5 hit layers of insulation, and then you go into the core of  
6 the reactor.

7 MR. DENTON: So I see what we're proposing then as  
8 an extension. We're granting an extension to this utility for  
9 some period of time to come into full compliance at full  
10 power, but I don't see that this equipment is needed for the  
11 low power operation because of its different design features.

12 CHAIRMAN PALLADINO: This liner system has pumps in  
13 it?

14 MR. HEITNER: Yes. The normal pumps are exposed to  
15 the harsh -- potentially exposed to the harsh environment and  
16 currently not qualified. So what the operators would have to  
17 do, if the normal pumps fail, is line up the system with a  
18 source of cooling water from pumps that are outside the harsh  
19 environment which can be expected to continue to operate. And  
20 that would be done basically by manipulating -- manually  
21 manipulating valves.

22 CHAIRMAN PALLADINO: Are there off-site -- are there  
23 pumps outside that are connected to this system?

24 MR. HEITNER: Yes.

25 CHAIRMAN PALLADINO: That don't face the harsh

1 environment?

2 MR. HEITNER: Right, there are other pumps.

3 CHAIRMAN PALLADINO: They're all set up and all you  
4 have to do is start them and line them up --

5 MR. HEITNER: Yes, they're fire water pumps, right.

6 CHAIRMAN PALLADINO: Line up the valves?

7 MR. HEITNER: Right.

8 MR. DENTON: But they're not -- I wouldn't say  
9 they're all set up. But they could be set up in a day, we  
10 think.

11 CHAIRMAN PALLADINO: I see. That's what you're  
12 looking for a couple of days.

13 MR. DENTON: Yes.

14 CHAIRMAN PALLADINO: They aren't installed pumps.

15 MR. HEITNER: No, they are installed fire water  
16 pumps.

17 CHAIRMAN PALLADINO: They are installed?

18 MR. HEITNER: Right. Part of the normal --

19 MR. DENTON: But they're not routed this way. But  
20 we don't think it's necessary because you have plenty of time  
21 to take, sort of a jury-rigged approach if you have to in a  
22 matter of days.

23 CHAIRMAN PALLADINO: But they aren't piped to  
24 service this liner?

25 MR. HEITNER: They would require, I believe, some

1 spool pieces and some manual valve operations. And that  
2 equipment is available and in place right at the site where it  
3 is necessary to be used.

4 CHAIRMAN PALLADINO: But you'd have to connect  
5 piping?

6 MR. HEITNER: I believe you would have to install  
7 some spool pieces. The local NRC resident inspector has  
8 walked through the process with the licensee on this to  
9 confirm, and we have confidence, exactly what to do.

10 CHAIRMAN PALLADINO: And they would have the people  
11 to do it, properly trained?

12 MR. HEITNER: And there's procedures established at  
13 this point already to do it.

14 CHAIRMAN PALLADINO: Well, would they have available  
15 people to do it?

16 MR. DENTON: Well, that's why we think the 24-hour  
17 time --

18 CHAIRMAN PALLADINO: If you want to double it.

19 MR. DENTON: -- you'd make sure that they do have  
20 it. If they had to do this in a few hours we might not be so  
21 receptive to the approach. But the fact that it takes 80  
22 hours to get these temperatures indicates to us there's plenty  
23 of time and staff to do it.

24 MR. HEITNER: The necessity to do it, of course,  
25 would be dictated by the fact that the pumps failed inside,

1 and that there was no way to maintain circulation. And there  
2 is a fairly high level of confidence that you will maintain  
3 circulation, because the issues that are in question on the  
4 qualification of this equipment are fairly exotic issues.

5 In other words, there is some confidence now -- and  
6 a high level of confidence that the equipment that's there  
7 would, in fact, still remain operational.

8 COMMISSIONER BERNTHAL: Considering the fact that we  
9 are talking about four to eight hours in the station blackout  
10 rule, 80 hours seems fairly conservative here.

11 CHAIRMAN PALLADINO: But they do have -- that's why  
12 I was trying to understand what it is you have to do. I was  
13 trying to understand how difficult it is to do what you're  
14 requiring them to do in a couple days.

15 MR. DENTON: That would be one approach is to keep  
16 the liner working. The other would be to get the circulators  
17 back running. And if you could get the circulators running,  
18 that's another way to get heat out. So either path would  
19 provide a great deal of heat removal.

20 COMMISSIONER BERNTHAL: But the 80 hours is the  
21 worst case scenario, the sort of nothing works?

22 MR. HEITNER: That's the one that we have calculated,  
23 the worst case just standing there and looking at it.

24 COMMISSIONER BERNTHAL: Right.

25 CHAIRMAN PALLADINO: Do you have more to present us?



1           MR. DENTON: No, this concludes our presentation.  
2       We would -- if you concur with this course of action -- write  
3       up the paper the way we have the other papers and send it  
4       down, and work with the licensee on confirming that the  
5       calculations are really correct as he's presented them.

6           CHAIRMAN PALLADINO: But before we open for  
7       questions, let me make sure I understand what your thinking is  
8       now. That you say you would deny in part and you would  
9       approve in part. The denial would be that you wouldn't allow  
10      them to operate above 35 percent until they have made the  
11      modifications and got the equipment qualified.

12           But you would allow them to operate at up to 35  
13      percent during that time. And you would approve an extension  
14      for complete equipment qualification until May 31st, 1986.

15           MR. DENTON: Yes.

16           CHAIRMAN PALLADINO: All right.

17           COMMISSIONER ASSELSTINE: Although technically I  
18      gather from what you said earlier, the licensee will withdraw  
19      a pending request and substitute a request that conforms to  
20      what you're prepared to accept, which you would then propose  
21      to accept.

22           MR. DENTON: Yes, that's -- you might want to  
23      confirm it with him, but that's my understanding.

24           I think part of what led to this was his view that  
25      he really didn't need 100 percent authorization during this



1 period for other reasons. And while there are some esoteric  
2 issues to debate at full power, this would suit his operational  
3 needs and provide time to work out exactly what qualifications  
4 may be appropriate for full power.

5 CHAIRMAN PALLADINO: But I gather they would withdraw  
6 their current request and submit the new request for May 31st.

7 MR. DENTON: Yes.

8 COMMISSIONER BERNTHAL: Remind me again of how we  
9 got here in this particular case. It's a unique facility, but  
10 the EQ rule says things about beyond the licensee's control.  
11 And this case -- was it the fact that you and the licensee --  
12 our Staff and the licensee had not come to closure on exactly  
13 what needed to be done? Or what's the story?

14 MR. MIRAGLIA: I think that's a contributing factor,  
15 Commissioner Bernthal. The utility has maintained, up until I  
16 believe June of this year -- certainly March of this year in  
17 response to the generic letter we sent out, said, do you  
18 comply and do you need an extension -- it's always been the  
19 utility's view that they did comply with the EQ rule.

20 There were, during the Staff reviews, some questions  
21 concerning the four-minute rule. Did they adequately consider  
22 the question of aging. There were some questions in the  
23 Staff's mind regarding operability of -- you know, have you  
24 adequately demonstrated that the equipment can operate for  
25 that period of time required.

1           And those questions went to the utility, I guess it  
2   was early part of this year. And subsequent to the March time  
3   period the Staff has been working very, very closely with the  
4   utility in raising these kinds of concerns and issues. And  
5   it's in the examination of these issues that the utility has  
6   seen that it's going to be difficult to show in all cases that  
7   -- they've started an aging program. They've started an  
8   operability program. With respect to the four-minute criteria,  
9   it was going to be difficult to perhaps conclusively  
10   demonstrate for every piece of equipment required that they  
11   met the four minutes.

12           And they looked into this steam rupture isolation  
13   and detection system, which is a relatively new advent, which  
14   came in the September or August submittal to us. And so  
15   that's kind of the evolution.

16           CHAIRMAN PALLADINO: So we're not relying entirely  
17   on the fact that these matters were beyond the control of the  
18   licensee?

19           MR. DENTON: Well, I think it's analogous to what  
20   we've done in the other in that we're not permitting him to  
21   operate where he needs to show qualification beyond November  
22   30th is one way to look at it.

23           CHAIRMAN PALLADINO: Okay.

24           MR. DENTON: And when he goes beyond where he needs  
25   it, then he's got to be qualified. It just so happens he

1 doesn't -- whereas light water plants need it at pretty low  
2 levels -- he doesn't need until he gets up a ways, is the way  
3 I view it.

4 CHAIRMAN PALLADINO: Well, we are sort of departing  
5 from our criterion. But -- that's if we go along with your  
6 proposal, we're accepting that their combination of uniqueness,  
7 the fact they didn't have an owner's group to work with, the  
8 fact that they didn't get the Staff attention as promptly as  
9 the others did, and that there are complications that are  
10 associated with cooling modes that we haven't explored.

11 MR. DENTON: And that EQ is not as big an issue for  
12 this type of plant as it is for a light water plant where  
13 you've got instrumentation inside the containment. You've got  
14 to worry about getting the cooling, the medium back in there  
15 all the time. This is just a simpler core design to remove  
16 heat from.

17 CHAIRMAN PALLADINO: Yes, but that wouldn't justify  
18 the extension. That would say, ah-ha, should have done it  
19 sooner.

20 COMMISSIONER ASSELSTINE: Yes. I have much the same  
21 question and concern. And I just, quite frankly, after having  
22 heard your description of how this has evolved, I'm not sure I  
23 see a real big difference between this case and Brunswick.

24 I mean, it sounds like this licensee took the  
25 position up until well into this year that all the equipment

1 was qualified and they didn't have to do anything to qualify  
2 the equipment. When the Staff finally looked at that question,  
3 and the basis for it, the Staff had a lot of problems with  
4 that. Went back to them and said, wait a minute, we think  
5 you're wrong on several of these instances. And when the  
6 company looked at it, they said, well, you're right, we're  
7 wrong on these things.

8 That sounds to me like a licensee that didn't make a  
9 good faith effort starting when this rule was adopted to  
10 understand what the rule required; to do an analysis of its  
11 plant to determine what had to be done to qualify the  
12 equipment; and to vigorously pursue qualification of the  
13 equipment. I mean, it sounds much like the Brunswick.

14 It sounds a lot more like Brunswick than some of the  
15 other cases where we've granted exemptions where a licensee  
16 had a good program, they worked at it, and because of problems  
17 with equipment suppliers, or problems with particular outages  
18 they weren't able to get all the equipment installed by the  
19 deadline.

20 Am I wrong on that? I mean, what's -- it sounds to  
21 me like this is a case where the licensee has not made a  
22 good faith effort.

23 MR. DENTON: I think that's why we're down here is  
24 to interpret how you read -- is there anything beyond --

25 COMMISSIONER ASSELSTINE: Tell me your opinion. Is

1     it more like Brunswick? Or is it more like Point Beach, or  
2     Nine Mile Point where they had a good program, where they  
3     worked right along, where they kept the Staff informed of what  
4     was going on every step of the way, and where because of  
5     supply problems they weren't able to get the equipment and get  
6     it installed?

7             Or was it more like Brunswick where they just didn't  
8     have an effective program, and now they've got lots of  
9     equipment that hasn't been qualified?

10            CHAIRMAN PALLADINO: I'd like to hear that. But I  
11     should make the comment, the solution is between the two. It  
12     says, approve in part, deny in part. So even if it's more  
13     like one or the other, our solution is in between.

14            COMMISSIONER ASSELSTINE: Well, it's still giving  
15     them a fairly lengthy extension. The limitation is on our --

16            CHAIRMAN PALLADINO: No, no.

17            COMMISSIONER ASSELSTINE: The limitation is driven  
18     by the fact that the Staff can't at this date come up with an  
19     adequate justification for continued operation at 100 percent.

20            CHAIRMAN PALLADINO: Well, but that's why you're  
21     denying it.

22            MR. DENTON: I think this case has more merit than  
23     the Brunswick case did.

24            CHAIRMAN PALLADINO: What's that?

25            MR. DENTON: I think this has more merit than the

1 Brunswick case did. It's true we didn't give this plant a lot  
2 of attention. We've always given it very low levels of  
3 attention reflecting to some extent its design  
4 characteristics. And we're trying now to bring it up, treat  
5 it like light water plants and wherever they're comparable.

6 COMMISSIONER ASSELSTINE: But how about on the  
7 licensee's standpoint. What leads you to believe that this  
8 licensee made more of good faith effort to put in place a good  
9 program and to get its equipment qualified than CP&L did in  
10 Brunswick? What's the difference?

11 MR. DENTON: I think the difference -- I don't  
12 remember Brunswick that well since we've gone through 19 of  
13 them. But this one, I think the licensee originally thought  
14 he had to do very little qualification. And we had a --

15 MR. BUTCHER: That's correct. I don't want to be in  
16 the position of defending what the licensee did, but I would  
17 have to concede that the licensee did, in fact, inform us very  
18 early in the process that he felt that aging was not  
19 applicable to an HTGR because of the fact that they could  
20 regain access to the area and repair any equipment that would  
21 suffer aging problems, or suffer failures that resulted from  
22 aging. And he informed us of that, and we did not immediately  
23 reject that. We waited until fairly recently before we  
24 challenged him on that issue.

25 And the same is true of operability times. He said

1 it was not so significant how long it would operate in the  
2 environment, because even if it -- I did do a test and I ran  
3 my test for several hours, and then the Commission passed its  
4 EQ rule and asked me to look at it beyond that period of  
5 time. But since I have two days or a day or whatever to get  
6 in there, I can postulate that even if it does fail after the  
7 four hours, I'd still have 20 hours or 40 hours to repair it.

8 So he maintained his original position and informed  
9 us of it. We didn't challenge it until just recently.

10 COMMISSIONER ROBERTS: Let me ask a question. In  
11 their original submittal they enclosed a long chronology of  
12 their interpretation of the events. Not line by line, or word  
13 by word, but do you have any disagreement with what's in that  
14 attachment?

15 MR. BUTCHER: I would agree with his chronology. I  
16 would like to say something in defense of the Staff though.  
17 The licensee could have, if he were inclined to maintain a  
18 closer awareness of what was going on in the light water  
19 reactor industry, instead of just assuming that the large part  
20 of that was not applicable to his plant.

21 But I can understand his point of view when he's got  
22 48 hours to deal with an accident and somebody else has a  
23 half-hour to deal with it, to draw the conclusions he did.  
24 But I would have to agree with his chronology, and we don't  
25 take exception to that.



1 COMMISSIONER ROBERTS: Okay. Well, I mean, we all  
2 get overtaken by events. But they cite a meeting in 1980, NRC  
3 Staff stated that they were not exactly sure how to handle  
4 Fort St. Vrain other than the EQ schedule must be maintained.  
5 I wouldn't call that particularly enlightened guidance.

6 I would also point out in a meeting of 1980 --  
7 again, I ask you if you had any problems with the accuracy of  
8 this document and you tell me no -- reiterate that the NRC  
9 Staff was complete publication of the safety evaluation report  
10 by February 1, 1981. It was issued in July of 1985. At a  
11 meeting in 1981, it was stated by the Staff that Fort St. Vrain  
12 should receive their SER sometime in August of '81. I repeat,  
13 it was received, as I understand it, July of '85.

14 Here's a meeting in 1984, stated that the SER on  
15 Fort St. Vrain should be issued by September or October of  
16 1984. It's my understanding it was received July '85. So  
17 this is not -- I'm not coming down unduly or being terribly  
18 critical of Staff. I'm just saying, this is a complicated  
19 circumstance.

20 MR. DENTON: We didn't give this plant a lot of  
21 attention, as much attention as we gave other plants. And  
22 neither did this plant operate as much as other plants. You  
23 know, it's been down a lot. And when you allocate resources  
24 and you look and see a plant's down, they never get above --

25 COMMISSIONER ROBERTS: Don't be defensive.



1           MR. DENTON: But, just that's a part of the basis.  
2       So I think the difference between Brunswick and here, I don't  
3       think Brunswick ever intended to meet the Commission's EQ  
4       deadline. I think that they had planned -- the front office  
5       plan was not to meet it, and they thought they could get by  
6       with not meeting it.

7           I think this applicant had a differing view of what  
8       was required to meet it, and we didn't really focus on it  
9       until late in the review and came with some different  
10      positions. But it's clear that he's got quite a capability to  
11      cope with a lot of --

12           COMMISSIONER ROBERTS: No question.

13           MR. DENTON: -- transients, even with unqualified  
14      equipment.

15           COMMISSIONER ASSELSTINE: Well, it strikes me that  
16      -- granted, I'll give Commissioner Roberts his due on this --  
17      that the Staff's responsiveness may well have been a  
18      contributing factor in all of this. But it also strikes me  
19      that to a large extent it comes down to the reasonableness of  
20      the judgment that was made by the licensee when it took the  
21      position that, hey, we don't have to do anything to qualify  
22      this equipment.

23           There are other licensees out there for LWRs who  
24      have taken the position that their equipment is qualified. If  
25      we go out after the November deadline and find that there is

1 equipment that wasn't qualified and that clearly they should  
2 have known needed to be qualified, and we find that their  
3 judgments underlying their decision not to qualify -- that  
4 nothing further needed to be done to qualify the equipment are  
5 just without basis, we're going to do something about it.

6 And it strikes me that in this case, part of the  
7 question of whether they made a good faith effort is the  
8 reasonableness of those judgments. And I guess I'd be  
9 interested in your views on whether you think those were  
10 reasonable judgments for the licensee to make. Or whether  
11 they really were unsubstantiated.

12 MR. DENTON: You may disagree, Commissioner, with  
13 me, but my view was that we treated this plant somewhat like a  
14 research reactor for much of its life.

15 COMMISSIONER ASSELSTINE: No, I won't disagree with  
16 that. Whether we should have or not is a different question.

17 MR. DENTON: Right. And they weren't -- and so  
18 their views of issues like this were not unreasonable ones to  
19 hold. And I think we have become tougher in looking at this  
20 plant over the past few years than we were during its early  
21 life.

22 COMMISSIONER ASSELSTINE: Okay.

23 MR. DENTON: And I think -- so, to some extent, I  
24 think they're still catching up with our intent to force them  
25 to have operational controls, management systems, procedures,

1 as all other plants do, because I think they came up in a  
2 different era and were somewhat between a power reactor and a  
3 research reactor sort of approach to life.

4 COMMISSIONER ASSELSTINE: Given that context then,  
5 the sort of research reactor mentality that applied, would you  
6 say that those judgments were reasonable at the time the EQ  
7 rule was adopted, and up through a period, say earlier this  
8 year where we changed to more of a power reactor operating way  
9 of thinking?

10 MR. DENTON: I think it's reasonable. I don't think  
11 the Staff looked that hard. And no one was questioning their  
12 judgment that much a few years ago. It was just not thought  
13 to be a real problem.

14 MR. MIRAGLIA: Clearly, they made their judgments in  
15 submittals --

16 COMMISSIONER ASSELSTINE: We knew about it, we just  
17 accepted it.

18 MR. MIRAGLIA: -- and didn't give positive or  
19 negative feedback.

20 COMMISSIONER ASSELSTINE: If you were to apply the  
21 power reactor level of performance that we're now trying to  
22 apply, would you say those judgments are reasonable? If you  
23 say basically these people ought to be treated like a power  
24 reactor, they ought to maintain the same level of performance  
25 that we would expect of others.

1 MR. DENTON: Well, I think it would reasonable to  
2 expect that now because we've had several sessions with the  
3 company management about how things should go. I don't think  
4 in the future we won't be tending to look back and saying,  
5 you're excused because of this. I think it's much clearer now  
6 between ourselves and the company what is required.

7 But at the time, I think their arguments were  
8 certainly reasonable. And if we were to have a hearing on the  
9 topic, you know, they may prevail on whether their views on it  
10 all being qualified anyway is correct or not. We can't reach  
11 the same conclusion today that they've reached about some of  
12 this equipment.

13 COMMISSIONER ASSELSTINE: Now so I take it for this  
14 plant there really never was a JCO then for this plant, up  
15 until now, because the position they maintained was, the  
16 equipment was properly qualified.

17 MR. MIRAGLIA: That's correct.

18 COMMISSIONER ASSELSTINE: Okay.

19 CHAIRMAN PALLADINO: Did we determine what power  
20 level they operated at --

21 MR. MIRAGLIA: It was something asked --

22 COMMISSIONER ASSELSTINE: We're going to hear from  
23 the company.

24 MR. MIRAGLIA: The numbers that stick out in my mind  
25 is that the average capacity factor for this facility over its

1 operating life since licensing is less than 30 percent.

2 MR. HEITNER: Less than 20 percent.

3 MR. MIRAGLIA: About 20 percent.

4 CHAIRMAN PALLADINO: But there were times when they

5 went --

6 MR. MIRAGLIA: As high as 80, but I don't know for

7 how long.

8 MR. DENTON: Very brief times.

9 CHAIRMAN PALLADINO: 80 percent?

10 MR. MIRAGLIA: I'm not sure of the duration of

11 periods of time.

12 CHAIRMAN PALLADINO: It was 80 percent?

13 MR. MIRAGLIA: At 80 percent.

14 MR. DENTON: It seems to me that they scramed quite

15 often, and whenever they scram they got water in the system.

16 Then in order to dry it out they have to have an extended

17 outage at low power, and they went through that --

18 MR. MIRAGLIA: The reactor was shut down --

19 MR. DENTON: Often.

20 MR. MIRAGLIA: -- in June or July of '84, when it

21 experienced some control rod failures. And it was just

22 started up at the low power operation at July of this year.

23 So it's been shut down for --

24 COMMISSIONER BERNTHAL: Why did they scram so often?

25 MR. MIRAGLIA: It has to do with the -- I guess, the

1 moisture ingresses is one of the big problems.

2 COMMISSIONER BERNTHAL: They scrambled because of the  
3 moisture ingress.

4 MR. DENTON: Well, I don't --

5 MR. HEITNER: That's one of the --

6 COMMISSIONER BERNTHAL: Which was exacerbated then  
7 by the scram.

8 MR. MIRAGLIA: Yes. It's a vicious --

9 MR. DENTON: It gets back to one of their design  
10 concepts. A little off the topic, but they have steam driven  
11 circulators. And apparently the seals between the circulators  
12 and the core were prone to leakage under certain conditions,  
13 and that wasn't foreseen.

14 COMMISSIONER BERNTHAL: Fundamentally, it's not  
15 clear to me that the EQ rule notwithstanding, that other than  
16 to prove or attempt to prove that the Commission is tough, if  
17 the plant running at 35 percent simply needn't meet the EQ  
18 rule, I think you'd have a pretty hard time arguing the  
19 Commission isn't required in any circumstance to provide them  
20 a license to run at that power level.

21 COMMISSIONER ASSELSTINE: I disagree with that  
22 because, keep in mind, every one of these plants that has  
23 requested an exemption had an adequate JCO.

24 COMMISSIONER BERNTHAL: No, no. But not -- under  
25 different circumstances. I think Harold's point is that none

1 of the PWRs, and I guess BWRs, can run at a low power level  
2 where the hazards are comparable to this plant at 35 percent.  
3 Isn't that -- is that an accurate statement?

4 In other words, if one of these had come in and  
5 said, all right, we aren't going to -- well, take Brunswick.  
6 If they'd come in and say, we aren't going to meet your EQ  
7 deadline but we're going to run at a power level that -- where  
8 the EQ becomes essentially inapplicable, what would that power  
9 level have had to have been? Very low, to say the least.  
10 Much lower than this.

11 COMMISSIONER ASSELSTINE: But at the same time, in  
12 terms of safety, what's the difference between that and  
13 saying, we can run at 100 percent power, and we still provide  
14 a safe plant because we've got an alternate means. We have a  
15 justification for continued operation that assures that we can  
16 operate the plant safely at 100 percent power, which is  
17 precisely what Brunswick argued, and which the Staff agreed  
18 with.

19 COMMISSIONER BERNTHAL: Well, I guess the difference  
20 is --

21 COMMISSIONER ASSELSTINE: What the Commission said  
22 is, we've got a rule --

23 COMMISSIONER ROBERTS: I happen to agree with that  
24 also.

25 COMMISSIONER ASSELSTINE: Well, to give Tom his due,



1       that's exactly right.

2               COMMISSIONER BERNTHAL: The difference is --

3               COMMISSIONER ASSELSTINE: Tom said, it's only a  
4       safety issue and that's all we care about.

5               COMMISSIONER BERNTHAL: The difference is that in  
6       one case there is a -- if there is a failure of a system that  
7       they say will work, that justifies operation, then they're in  
8       the soup. In this case, they're operating below the threshold  
9       where systems are required, I guess, assuming you don't have a  
10      747 plowing into the plant or something. That's the  
11      difference.

12              MR. DENTON: We can explain our logic, and I think  
13      we're learning how to interpret your guidance on this one.  
14      And this is the last one.

15              CHAIRMAN PALLADINO: In case you're trying to  
16      interpret guidance, I'm not sure that I would not entertain  
17      your proposal. Well, to make it more positive, given what I  
18      know now, I would entertain a proposal such as you're  
19      discussing with us today.

20              Maybe when you come with more detail I might have  
21      more questions. But I wouldn't say that the guidance is  
22      necessarily all negative. I don't know how others would feel.

23              COMMISSIONER BERNTHAL: Well, I'm -- as I say, I'm  
24      not convinced that -- let me state it the other way. I think  
25      we'd be hard-pressed to dispute the course of action that the



1     Staff is proposing here, and I suggest we come in with  
2     something that approximates that. For the reasons that we've  
3     gone through.

4             Now there may be differences in philosophy here, but  
5     I don't think it's been shown that -- the argument that this  
6     is a different circumstance doesn't hold water.

7             CHAIRMAN PALLADINO: I would say that in your  
8     submittals you should address this question of the interaction  
9     of Staff and licensee, insofar as it applies to the fact that  
10    the licensee didn't control all the circumstances.

11            COMMISSIONER ASSELSTINE: I had one other question  
12    for the Staff on the previous Staff reviews. I understand  
13    that in this case -- or at least the sense I had was that in  
14    this case, up until early this year Staff did not really do  
15    much of a review of the argument that the licensee made all  
16    the way along, that for their plant they didn't need to do  
17    anything, or essentially anything more to qualify the  
18    equipment; is that right, for this one?

19            MR. BUTCHER: That's correct. I believe it was  
20    probably July before we seriously challenged their position on  
21    the qualification of the equipment.

22            COMMISSIONER ASSELSTINE: Okay. How does that  
23    compare with instances in which LWRs have asserted that  
24    equipment does not have to be qualified? That equipment -- or  
25    that equipment is already adequately qualified for the plant

1 -- in terms of amount of review, level of review, quality of  
2 review that has been done of those assertions up until now?

3 MR. BUTCHER: I would have to say that we put a lot  
4 more effort on the light water reactors and the feedback came  
5 much earlier.

6 COMMISSIONER ASSELSTINE: Okay. Is that also true  
7 of the JCOs that you'd received from the LWRs in previous  
8 instances going back over time?

9 MR. MIRAGLIA: Yes, I think if you go back in EQ  
10 time when the deadlines were much earlier, the Staff did some  
11 preliminary evaluations and requested JCOs for everything that  
12 we said wasn't qualified.

13 COMMISSIONER ASSELSTINE: That's right.

14 MR. MIRAGLIA: And so we've been in the JCO review  
15 process with LWRs very, very early in the game.

16 COMMISSIONER ASSELSTINE: So this one just fell  
17 through the cracks?

18 MR. MIRAGLIA: And after we had, you know, the  
19 Franklin TERS and we reiterated that several times.

20 MR. DENTON: I wouldn't say it fell through the  
21 cracks, but we gave it lower priority in that we are an audit  
22 organization. And we push our effort toward Indian Point,  
23 Zion. And I don't think we should, you know, push back and  
24 say, I wish I had put the effort that I did in '83 and '84 on  
25 this plant versus Indian Point, because I think Indian Point

1 represents the more substantial question.

2 So I think we tried to allocate from a safety  
3 standpoint. If we'd had another gas cooled plan coming by  
4 for an OL review this might have turned out differently  
5 because then it would have gotten caught up in modern, sort  
6 of, level reviews. And it was only the Commission's deadline  
7 that kind of pushed us to be sure we got every plant covered  
8 by November 30th.

9 COMMISSIONER ASSELSTINE: Did Franklin ever look at  
10 this plant?

11 MR. MIRAGLIA: No, sir.

12 MR. DENTON: In fact, this is one we had regionalized  
13 for awhile.

14 COMMISSIONER ASSELSTINE: Okay. So this was --  
15 that's true, this all occurred when it was shifted out to the  
16 region.

17 MR. MIRAGLIA: But the review -- the EQ review would  
18 have been done --

19 COMMISSIONER ASSELSTINE: Still would have been done  
20 at NRR.

21 MR. MIRAGLIA: Right, yes.

22 CHAIRMAN PALLADINO: Other questions of the Staff?

23 COMMISSIONER ZECH: I just have a comment. It seems  
24 to me that this is a very special case, and you've, of course,  
25 emphasized that.

1           But also we're planning the EQ provisions to this  
2 plant. And it seems like we're, you know, doing it, applying  
3 it, or trying to apply it in a very similar manner that we've  
4 applied at all the other plants. And I think it is important  
5 to recognize there are great differences in this plant. But  
6 also, I think the circumstances, the exceptional circumstances  
7 that we've applied, and the provision that we've looked at for  
8 other plants is important here.

9           And it strikes me as, although exceptional  
10 circumstances can be interpreted different ways, you could in  
11 a sense put this whole plant in a category of a special  
12 circumstance. And it seems to me that what the Staff is  
13 telling us is that perhaps you have considered them separately  
14 from all the other plants.

15           You know, we've asked other plants, have they really  
16 made their best effort to meet the EQ qualification. Even  
17 asking that question of this plant, I think, has to be a  
18 little different. Apparently, they've felt all along, or told  
19 you all along until very recently, that they really have felt  
20 they've met the qualifications and you have not, as far as I  
21 can tell, challenged them until very recently.

22           So those are all things I think we've got to think  
23 about. But I guess the special plant itself, and the proposal  
24 that you've brought forth with the licensee to remain below 35  
25 percent completely -- you know, it's the only one like that.

1 All the rest of the plants are, BWRs, LWRs are completely  
2 different circumstances.

3 So I just do think we have to try to apply -- if  
4 we're going to apply the EQ provisions to this plant we really  
5 have to recognize it's different.

6 On the other hand, I can't help but feel, I don't  
7 know if what the licensee responsibility or the Staff  
8 responsibility, that we might have attempted, in hindsight at  
9 least, to get this thing resolved at an earlier date than we  
10 have.

11 So I'm going to have to think about it a little more  
12 myself. But it does seem to think -- it does seem to me that  
13 if the provisions for equipment qualification are applicable  
14 to this plant, then we must do something about it.

15 For example, is it going to operate at 35 percent  
16 forever? I know you've told me 31 May '86 to be in full  
17 compliance. But what if they decide that they don't ever want  
18 to operate above 30 percent, then what would we do? Is the 31  
19 May date a commitment that they're going to have the equipment  
20 qualified by that date? Or is it just a date that we're  
21 shooting for?

22 MR. DENTON: Well, I think one other point that  
23 bears on the questions that have been raised. A few years ago  
24 the continued operation of this plant was not even certain,  
25 going to your --

1 COMMISSIONER ZECH: Right.

2 MR. DENTON: It was a -- it was being -- or questions  
3 being raised as to --

4 COMMISSIONER ZECH: Another reason is --

5 MR. DENTON: -- what it's actual useful life was.  
6 And that sort of thing factored in.

7 COMMISSIONER ZECH: Right.

8 MR. DENTON: And I think that's still a question you  
9 might like to explore with the utility.

10 CHAIRMAN PALLADINO: Yes, I was going to suggest  
11 that's a good question to discuss with Public Service.

12 COMMISSIONER ZECH: All I'm saying is it's a very  
13 different plant and it's hard to apply the EQ provisions to  
14 this plant.

15 On the other hand, if we're going to apply them,  
16 then we ought to, I think, have some degree of confidence that  
17 they're meaningful and they're purposeful. If they're not,  
18 then probably we ought to exempt the whole Fort St. Vrain from  
19 the provisions. But if we're going to apply it, it seems to  
20 me that we've got to really consider it as a separate plant.

21 And I think that's what you're trying to do. And I  
22 guess they have too. But it's unfortunate, I think, that we  
23 haven't brought this to a head before now.

24 COMMISSIONER ASSELSTINE: Yes, I agree with that,  
25 Lando. And I also agree with the notion that because of the

1 different nature of this plant we ought to take a hard look at  
2 what requirements ought to apply to it. And where those  
3 requirements don't make sense, how they ought to be modified  
4 as they fit this particular plant.

5 In fact, going back a couple of years ago, I remember  
6 that that's one of the things that was supposed to come out of  
7 the regionalization of this plant. Everybody was going to give  
8 it more attention. We were going to focus on just those kinds  
9 of questions. We were going to get closer to the licensee.  
10 And we were going to get all those questions answered. It  
11 doesn't appear that that's the way the process worked.

12 Where I have a difficulty though is in saying --  
13 when we have a regulation on the books -- in saying that  
14 perhaps because of the differences we're prepared to tolerate  
15 a laxer attitude, less of a commitment to doing things right  
16 by this licensee than light water reactor licensees. And  
17 quite frankly, I think that's where this particular plant has  
18 gotten in trouble in the past.

19 I think we ought to be fair about what's required of  
20 it. But then we ought to insist that this plant be run on a  
21 professional, business-like basis, and insure that that's the  
22 way it goes from now on.

23 COMMISSIONER ZECH: And I realize that.

24 CHAIRMAN PALLADINO: And I have no exception -- I  
25 mean, I don't take any exception with that.

1           COMMISSIONER ZECH: But perhaps we should have, you  
2 know, provided more guidance too.

3           COMMISSIONER ASSELSTINE: No doubt about it. I  
4 think that's exactly right. But my biggest concern now is  
5 that we don't undercut the message that I think Harold is  
6 trying to give this licensee that from now on we expect a  
7 professional, business-like operation from this plant, and  
8 we're not prepared to tolerate anything less than that. I  
9 think that message has to be reinforced.

10          CHAIRMAN PALLADINO: Any other questions or comments?

11          COMMISSIONER ZECH: No.

12          CHAIRMAN PALLADINO: Let me see what questions we  
13 have for the licensee, and I don't know if he wants to make a  
14 statement or not. Can we have them --

15               I do want to come back then to the question of  
16 guidance to the Staff relative to their proposal. But I  
17 thought it might be helpful to get some of the questions  
18 answered.

19               Jim, you had --

20          MR. WALKER: Let me introduce myself. Nice to see  
21 you again, Dr. Palladino.

22          CHAIRMAN PALLADINO: Nice to see you.

23          MR. WALKER: I'm Dick Walker. I'm chairman of the  
24 board and president and chief executive officer of the Public  
25 Service Company of Colorado. And I certainly have a direct



1 interest in the Fort St. Vrain plant, having followed it  
2 through many of my engineering days with the company.

3 I would say at the outset, we certainly recognize  
4 the Staff's position and I agree wholeheartedly with it. And  
5 I think the attention they're giving us in the last six to  
6 eight months has been helpful for all of us.

7 And it's true we did, over the years, feel because  
8 of the difference we could operate at 100 percent. We now  
9 don't feel that way anymore. We feel that we do need to meet  
10 the environmental qualifications which we intend to do. And  
11 we're relying on this leak detection system, which we probably  
12 should have thought up two or three years ago. But we believe  
13 that will certainly cut the time, to cut it down to a minute  
14 or so before you can cut the thing on.

15 So in talking with the Staff and with Harold, I'm  
16 perfectly comfortable with the 35 percent and the May 31  
17 date. And we'll certainly resubmit whatever we have to do  
18 legally, and application for that, and withdraw the other  
19 ones. So the 100 percent one is no longer on the table as far  
20 as I'm concerned. And I'm in a position to say that as the  
21 CEO of the company.

22 CHAIRMAN PALLADINO: You had a question, Jim?

23 COMMISSIONER ASSELSTINE: My question was the  
24 operating history during -- since the EQ rule was adopted.  
25 What level the plant had operated at in that period of time.

1 MR. WALKER: You have to go back in '79 when we went  
2 commercial. And to refresh your memories on that, there were  
3 -- we did accept the plant from our vendor at 70 percent of  
4 its capacity, the 200 megawatts. And that's what we count on  
5 it in our system capability.

6 Our license -- we were limited to 70 for awhile in  
7 the early years, and then were allowed to go --

8 CHAIRMAN PALLADINO: 70 what?

9 MR. WALKER: 70 percent of power. We were allowed  
10 to go to higher levels. And my operating people -- and we did  
11 have one period where -- 60 hours -- where we ran it at near  
12 full load. And that's the only time.

13 CHAIRMAN PALLADINO: And that was when? '79?

14 MR. WALKER: I think it was probably -- no, it was  
15 probably '82, '83, I think somewhere in that realm.

16 As you know, we were down for refueling in -- well,  
17 maybe you don't -- in '84. And when we came back from  
18 refueling and started the reactor back up, that's when we had  
19 the problem with the control rods, as I recall. That was June  
20 of '84, where we had the moisture on the control rod  
21 mechanisms, and we had the stress corrosion with the cables.  
22 And we shut down, and obviously had to because six of the rod  
23 didn't insert automatically. They had to be put in manually.

24 When we looked at those control rods and then  
25 finally made the determination that there was stress corrosion

1     cracking there was only one thing we could do, was to replace  
2     all 37 control rods. Which, we entered into a year program,  
3     very extensive program -- these are radioactive pieces of  
4     equipment -- and did replace all of the cables, refurbish the  
5     shim motors. The cables are now Inconel. We finished up that  
6     work in -- it was about June of this year, Oscar?

7             MR. LEE: Yes.

8             MR. WALKER: Around June of this year, ready to come  
9     back --

10            COMMISSIONER BERNTHAL: What was the -- a matter of  
11     curiosity. I'm still intrigued by what might have been with  
12     the Fort St. Vrain facility. What was the cost of replacing  
13     all the cabling there?

14            MR. WALKER: About 10 million, I believe, roughly.  
15     Don't pin me down to the figure exactly, but it was  
16     approximately \$10 million, which has been charged off as an  
17     operating expense to the company.

18            COMMISSIONER BERNTHAL: Another hardware question,  
19     if I might. As I understand it, this moisture ingress is a  
20     consequence of the seals that you have in the pumps; is that  
21     right?

22            MR. WALKER: Well, you see our circulators are steam  
23     driven and they have water bearings. Rather than oil bearings  
24     they have water bearings.

25            COMMISSIONER BERNTHAL: I've forgotten --

1           MR. WALKER: That was an early design decision on --  
2           and the fear at the time that decision was made, with oil in  
3           the bearings and you got oil into the core, and you get oil in  
4           the insulation, you cannot get oil out of the insulation  
5           that's there. So the decision was made to go to water  
6           bearings.

7           COMMISSIONER BERNTHAL: Well, now today though, with  
8           today's knowledge and technology --

9           MR. WALKER: What would you do?

10          COMMISSIONER BERNTHAL: -- there are substances  
11          other than oil and water, I guess. But, is it practical, let  
12          alone economical, to make changes to that system, fundamental  
13          changes that -- or is that simply neither practical nor  
14          economical?

15          MR. WALKER: That's fairly difficult. We have,  
16          since we accepted the plant from the vendor, made some  
17          modifications in some of the auxiliary systems, split the  
18          loop and added some things to try to minimize what we call the  
19          water ingress problem.

20          If you're starting with a clean piece of paper  
21          designing your reactor today you'd look very hard at magnetic  
22          bearings. Of course, you're looking at a very large size for  
23          magnetic bearings. But if you really were convinced they'd  
24          work in this configuration, then you don't have to worry about  
25          oil, you don't have to worry about water. And you also have a

1 little -- some tolerance for difference in alignment.

2 And there is some work going on and --

3 COMMISSIONER BERNTHAL: There's been a -- that's a  
4 rather --

5 MR. WALKER: Tricky.

6 COMMISSIONER BERNTHAL: -- highly refined technology  
7 in other areas these days.

8 MR. WALKER: Right. And I would hope as the nuclear  
9 technology develops, particularly in the modular size, that  
10 that could well be with magnetic bearings, which would --

11 CHAIRMAN PALLADINO: You are shut down now?

12 MR. WALKER: Yes, when we --

13 CHAIRMAN PALLADINO: And how long have you been shut  
14 down?

15 MR. WALKER: Let me continue the chronology,  
16 Dr. Palladino. After we got the control rods done, and then  
17 we were in the throes of this environmental qualification  
18 work. And we had worked extensively with the Staff. And we  
19 did want to come back on the line so we could begin to get the  
20 moisture out of the helium. As you know, that's a function of  
21 temperature. As helium resides -- or moisture resides in the  
22 helium, just the decay heat is not adequate to dry the moisture  
23 out.

24 So in working with the Staff we came up -- they  
25 allowed us to go to 8 percent, no more than 8 percent power.

1 And that was for 45 days, wasn't it, Oscar?

2 MR. LEE: Yes.

3 MR. WALKER: And that was in October. So we came  
4 back on the line in October and ran --

5 CHAIRMAN PALLADINO: This year?

6 MR. WALKER: Yes. We ran up in increments of 2, 4,  
7 and 6 and then just below 8. And of course, as you raise the  
8 temperature, then more moisture came out. And we did that up  
9 until last Thursday, wasn't it -- I think. And we've gotten  
10 out about as much as you can get out. It finally plateaus on  
11 you when you get up -- you run at 8 for quite awhile.

12 Also, we were ready to do some of the work that  
13 needed to be done in the reactor. So we shut down last  
14 Thursday. And so, except -- we did have that run at 8  
15 percent. You don't make any electricity at 8 percent, but  
16 that's what we've been running at.

17 CHAIRMAN PALLADINO: Lando, you had a question?

18 COMMISSIONER ZECH: No.

19 CHAIRMAN PALLADINO: You're satisfied. You have a  
20 question?

21 COMMISSIONER ROBERTS: No.

22 CHAIRMAN PALLADINO: All right. Well, if there are  
23 no more questions, I would make a comment. I haven't visited  
24 Fort St. Vrain.

25 MR. WALKER: We wish you'd come out, Dr. Palladino.

1           CHAIRMAN PALLADINO: I'd like to. I'd like to see  
2 all the plants, but I don't get to see them all. But the  
3 feedback I get from the Staff is that the plant could benefit  
4 from a higher level of professionalism in its activities. And  
5 I think this is a matter that, in addition to EQ, you probably  
6 want to give it some more of your personal attention. I think  
7 management attention has already resulted in benefits to  
8 plants where there are difficulties.

9           MR. WALKER: Absolutely.

10          CHAIRMAN PALLADINO: And I'm sure Fort St. Vrain is  
11 no exception.

12          Now, are there any other comments or questions for  
13 the licensee?

14          COMMISSIONER ASSELSTINE: No, I just would agree  
15 with that comment, Joe.

16          MR. WALKER: Yes, we recognize that. We've been  
17 told that by the Staff and by INPO, and we're dedicating more  
18 resources and more time to it. It's an area we need to  
19 improve, and I'd be the first to admit it.

20          COMMISSIONER BERNTHAL: Is there any prospect that  
21 that plant is ever going to run smoothly at, let's say,  
22 comparable capacity factors to other plants? Do you envision  
23 that as a realistic --

24          MR. WALKER: Well, we're sure -- keep working on  
25 things that we believe will improve its reliability. It still

1 is somewhat of a first-of-a-kind plant. And the only  
2 experience in this type of thing comes from our plant for  
3 helium circulators and these kinds of things.

4 COMMISSIONER BERNTHAL: But this moisture problem is  
5 really the critical problem.

6 MR. WALKER: That's been a critical problem. And  
7 we've, as I say, made some changes in auxiliary systems, and  
8 from time to time look at maybe some of these more exotic  
9 things to do. But those are major changes to contemplate from  
10 an engineering standpoint. And it's not completely out of the  
11 realm of possibility, but you'd have to look very carefully  
12 at what you do to try to get those stuck into this kind of a  
13 vessel.

14 CHAIRMAN PALLADINO: Any other comments or questions  
15 for the licensee?

16 MR. WALKER: We appreciate your time, Dr. Palladino.

17 CHAIRMAN PALLADINO: Thank you.

18 COMMISSIONER BERNTHAL: Let me just make a quick,  
19 naive point here. But there's been around for a long time a  
20 group called -- what do they call themselves, HTGR Associates?

21 COMMISSIONER ASSELSTINE: Gas Cooled Reactor  
22 Associates.

23 MR. WALKER: I happen to be the chairman of it.

24 COMMISSIONER BERNTHAL: Well, they focused heavily  
25 -- Jim had asked on the side here a few minutes ago -- they



1 focused heavily on next generation and what might happen long  
2 after Fort St. Vrain. The question arises whether a similar  
3 design is still behind, at least the larger plant that they  
4 were working on until recently. And one wonders whether more  
5 attention to making Fort St. Vrain a viable plant, whether or  
6 not it takes substantial modifications to the existing plant,  
7 may not be in their interest. Just a thought.

8 CHAIRMAN PALLADINO: Okay. Well, thank you very  
9 much.

10 MR. WALKER: Thank you, Dr. Palladino.

11 CHAIRMAN PALLADINO: Now, I would like to get from  
12 the commissioners guidance for the Staff. I expressed my  
13 willingness to entertain a proposal such as the Staff has  
14 made. That doesn't mean I'm committed to voting in one  
15 particular direction when I get it, but it does imply that it  
16 sounds fairly good at the present time.

17 I wonder if -- and I think, Fred, you expressed your  
18 opinion. And I wonder if others would express their opinion.  
19 At least give guidance as to how the Staff should proceed.

20 COMMISSIONER ROBERTS: My inclination would be, by  
21 and large, to accept the Staff recommendation.

22 COMMISSIONER ZECH: I guess I'd like to see the  
23 Staff recommendation on a piece of paper. And I think that  
24 they've given a reasonable recommendation, but I would like to  
25 look at it, and think about it a little bit.

1           CHAIRMAN PALLADINO: I wasn't making a commitment to  
2 absolutely vote for it. I'd have to depend on the paper also.

3           COMMISSIONER ASSELSTINE: I think the Staff ought to  
4 present the paper, just as they've done in the other cases.  
5 Some of their recommendations I've agreed with, some of them  
6 I've disagreed with. But I think the Staff ought to give us  
7 their recommendation in writing.

8           COMMISSIONER ZECH: That's what I think too.

9           COMMISSIONER ASSELSTINE: Just as they've done in  
10 the other cases, and address the factors for this plant.

11          CHAIRMAN PALLADINO: Could I get a feel from the  
12 Staff what time frame we're working in? And let me point out  
13 that for quite some period of time, things fall apart here  
14 around 11/26 -- on the 26th. So that's perhaps the last day  
15 at which we could affirm, although I think one or two may be  
16 -- there may be enough of us here another day, but I don't  
17 think --

18          MR. DENTON: I don't think it would take us very  
19 long to put together a paper that summarizes our views. And  
20 it would be subject to these confirmatory actions coming in.  
21 But we're fairly certain it's going to turn out that way  
22 because of our interactions.

23          MR. MIRAGLIA: I think we can probably get the --

24          MR. DENTON: If you wanted to wait until we had the  
25 review finished, then I guess we're two or three weeks away.

1 But if you're willing to hear what the plans are, absent some  
2 startling new discovery, we would have that in a few days.

3 MR. MIRAGLIA: Yes, I think we can get the utility  
4 to modify his request, and then indicate when he's going to  
5 have his confirmatory analysis in. And on that basis we could  
6 prepare a paper saying that, you know, the Commission would  
7 grant the extension subject to the Staff reviewing the  
8 confirmatory analysis and approving operation at 35 percent.  
9 I think we can draft something --

10 CHAIRMAN PALLADINO: Well, how many days does all  
11 that take? Friday is the 22nd, and that only leaves --

12 COMMISSIONER ZECH: That's plenty of time for them  
13 to do that.

14 [Laughter.]

15 CHAIRMAN PALLADINO: I was suggesting cutting it  
16 down because that only leaves us --

17 COMMISSIONER BERNTHAL: How about 8:00 tonight?

18 CHAIRMAN PALLADINO: That only leaves us Monday --  
19 the weekend to evaluate and Monday, and on Tuesday we'd have  
20 to affirm, the 26th. So I'm going to urge, see if you can't  
21 get it to us no later than noon on Friday, so at least if we  
22 have some initial questions we have a chance to interact  
23 before the weekend.

24 COMMISSIONER ASSELSTINE: That's good.

25 COMMISSIONER ZECH: Sounds fine to me.

1           CHAIRMAN PALLADINO: And then we'd have to take  
2 action by November 26th, and I don't know if that means having  
3 the order approved as well. Let me ask general counsel, if we  
4 made a decision by the 26th, would we in order to comply with  
5 our own rules, would it require that an order be approved by  
6 that time?

7           MR. PLAINE: Well, I think you could approve, since  
8 you are making this a sort of special order of business. In  
9 effect, excepting it from the ordinary requirements.

10          CHAIRMAN PALLADINO: No, I'm thinking though about  
11 the mechanics of preparing an order. If we don't make a  
12 decision on whether we go with this or not until the 26th --

13          MR. PLAINE: Wouldn't this be a direction simply to  
14 the Staff?

15          COMMISSIONER ASSELSTINE: No, we've had orders in  
16 all --

17          CHAIRMAN PALLADINO: We've had orders --

18          MR. PLAINE: You've had orders in all these others  
19 All right.

20          CHAIRMAN PALLADINO: So it may be necessary for OGC  
21 -- what I'm getting at is, it may be necessary for OGC to  
22 anticipate how this might go and have some draft order ready  
23 for the 26th.

24          MR. PLAINE: All right.

25          COMMISSIONER ASSELSTINE: Staff and OGC could work

1 on the order at the same time the Staff is working on the  
2 paper.

3 MR. PLAINE: All right, we'll work on it.

4 CHAIRMAN PALLADINO: I was just trying to get  
5 attention to the mechanics so that we have a chance of meeting  
6 the 26th. Otherwise we're going to miss the 30th of November,  
7 because people will leave, including myself, leave for  
8 Thanksgiving. And there will be Thanksgiving.

9 COMMISSIONER ASSELSTINE: There will, you're right.

10 CHAIRMAN PALLADINO: Anything more to come before us  
11 this afternoon?

12 COMMISSIONER ZECH: No.

13 CHAIRMAN PALLADINO: Well, thank you very much. Oh,  
14 let me ask a question of the Commission. I'll adjourn this  
15 meeting.

16 [Whereupon, at 3:30 p.m., the commission meeting was  
17 adjourned.]

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1 CERTIFICATE OF OFFICIAL REPORTER

2  
3  
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: Discussion of Environmental Qualification  
10 Exemption Request - Fort St. Vrain (Public  
Meeting)

11 Docket No.:

12 Place: Washington, D. C.

13 Date: Tuesday, November 19, 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)

*Pamela Briggie*

Pamela Briggie

20  
21  
22  
23 Ann Riley & Associates, Ltd.  
24  
25

FORT ST. VRAIN EQ EXTENSION REQUEST

- REQUEST SUBMITTED SEPTEMBER 24, 1985
  - EXCEPTIONAL CIRCUMSTANCES
  - JUSTIFICATION FOR INTERIM OPERATION
- STAFF UNABLE TO CONCLUDE INTERIM OPERATION AT 100% JUSTIFIED
- HOWEVER, OPERATION AT 35% POWER IS JUSTIFIED BY UNIQUE HTGR DESIGN
- LICENSEE HAS COMMITTED TO COMPLETE ALL EQ BY MAY 31, 1986

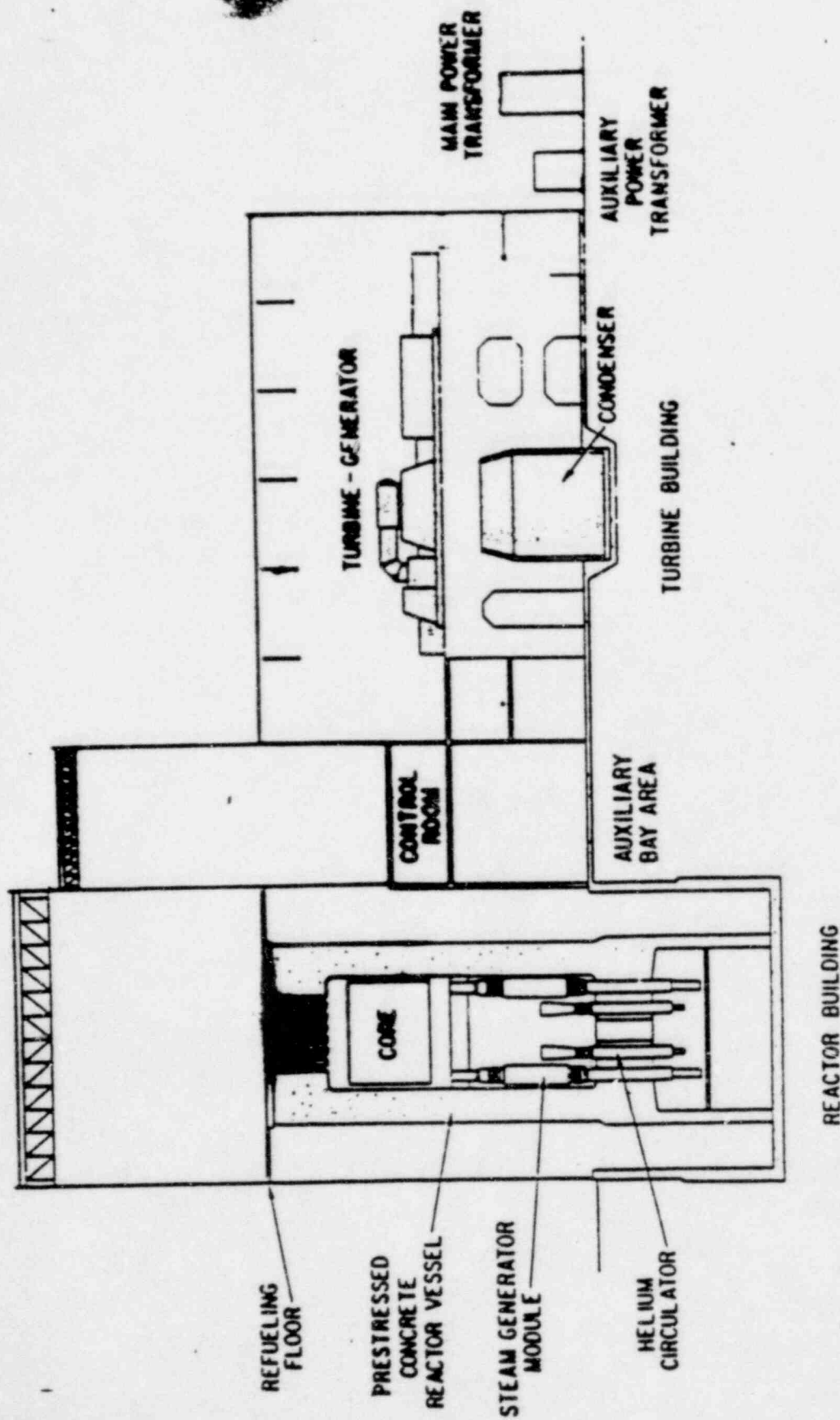
JUSTIFICATION FOR INTERIM OPERATION AT 35% POWER

- NO ELECTRICAL EQUIPMENT REQUIRED TO BE QUALIFIED
- ADEQUATE TIME AVAILABLE FOR MANUAL ACTION
- WORST CASE PEAK CORE TEMPERATURE 2900°F AT 80 HOURS
- NO SIGNIFICANT FUEL DAMAGE
- DOSES - A SMALL FRACTION OF 10 CFR 100
- INDEPENDENT STAFF CONSULTANT (ORNL) VERIFICATION



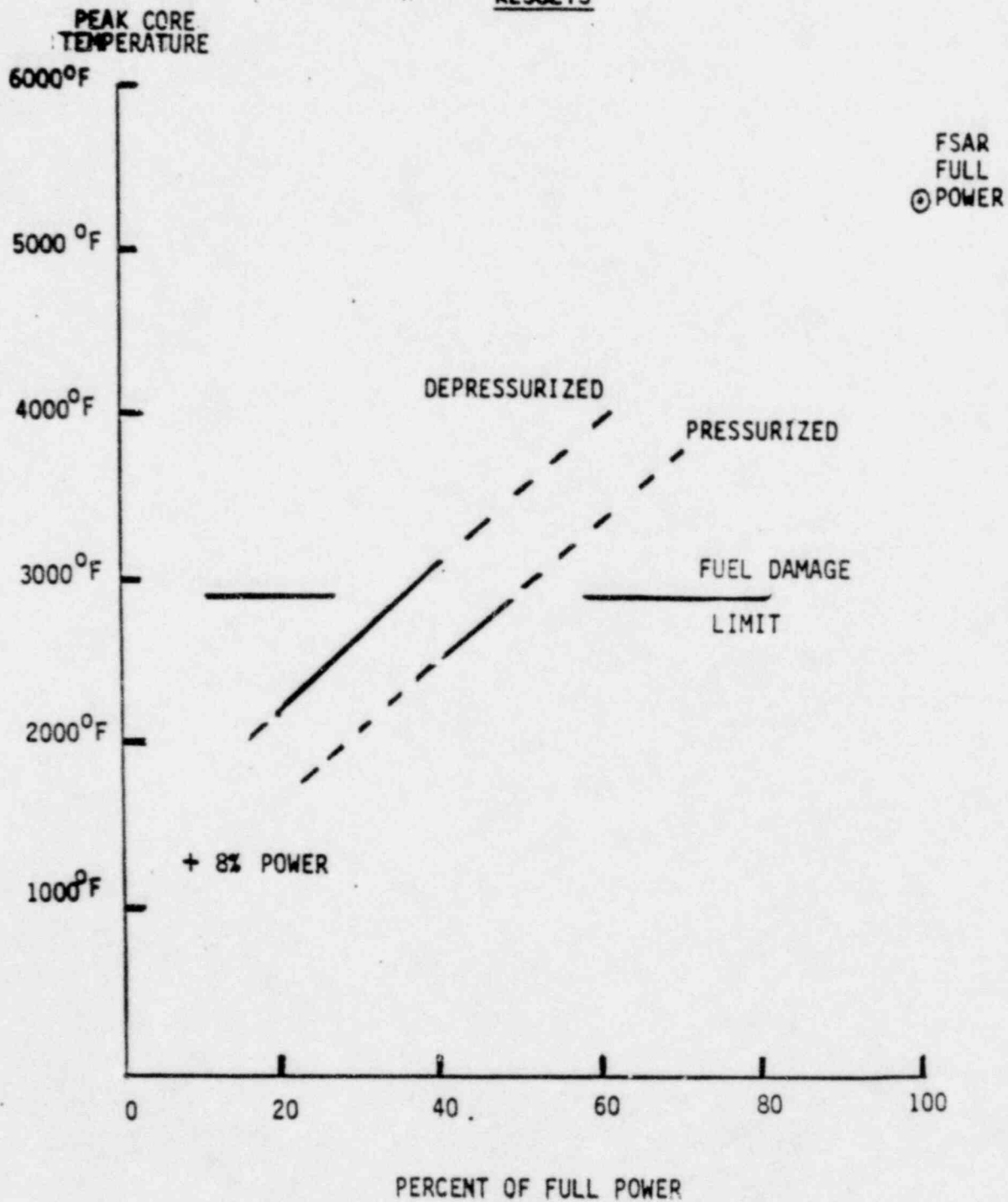
REMAINING NRC STAFF AND LICENSEE ACTIONS  
TO COMPLETE 35% POWER OPERATION REVIEW

- LICENSEE FOLLOWUP
  - COMPLETE FINAL CALCULATIONS TO CONFIRM PRELIMINARY FINDINGS
  - APPROXIMATELY 12 SEPARATE AREAS REQUIRE CONFIRMATION
  - PROVIDE THE RESULTS OF FINAL CALCULATIONS ON THE FSV DOCKET
- NRC STAFF FOLLOWUP
  - COMPLETE INDEPENDENT CONFIRMATORY CALCULATIONS (ORNL)
  - REVIEW RESULTS OF LICENSEE'S CONFIRMATORY CALCULATIONS
- SCHEDULE
  - TWO TO THREE WEEKS DEPENDING ON WHEN LICENSEE PROVIDES CONFIRMATORY INFORMATION

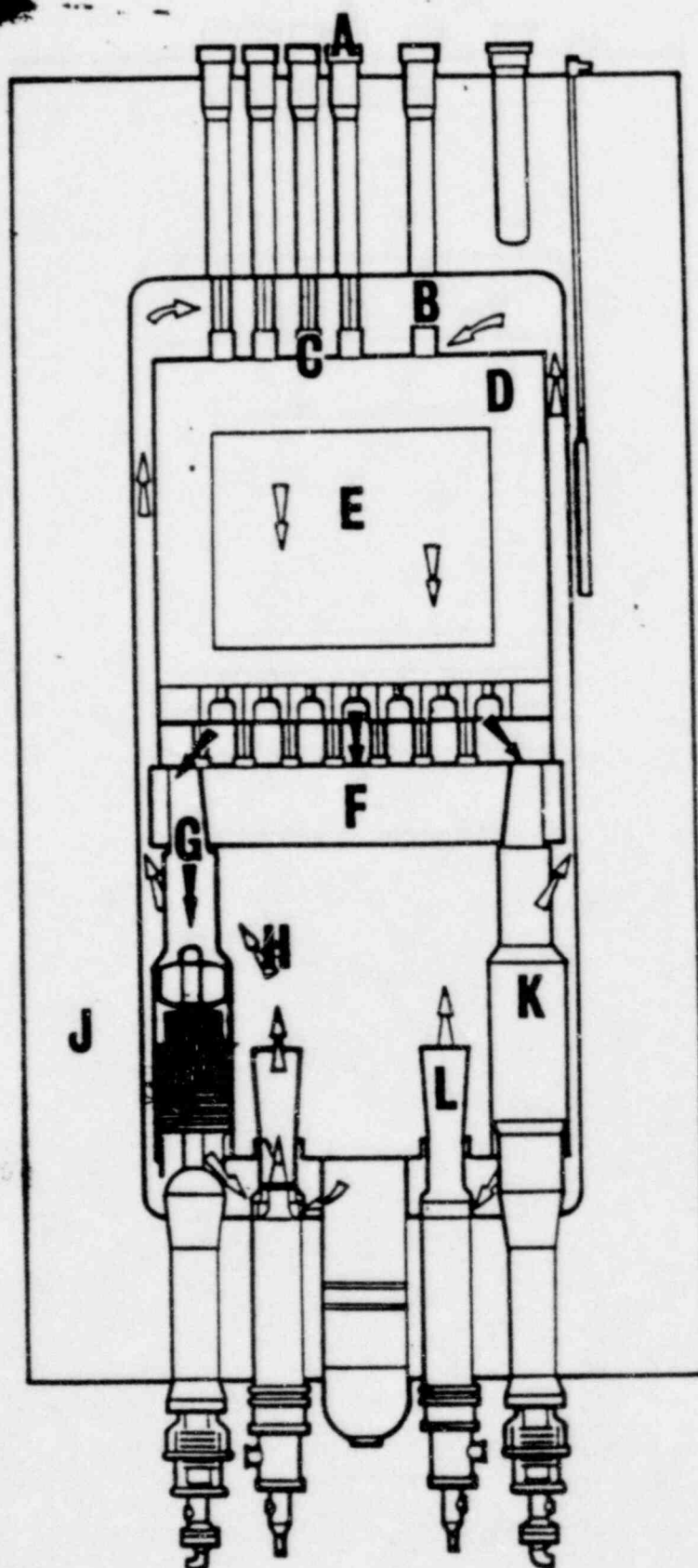


Section through reactor building and turbine building

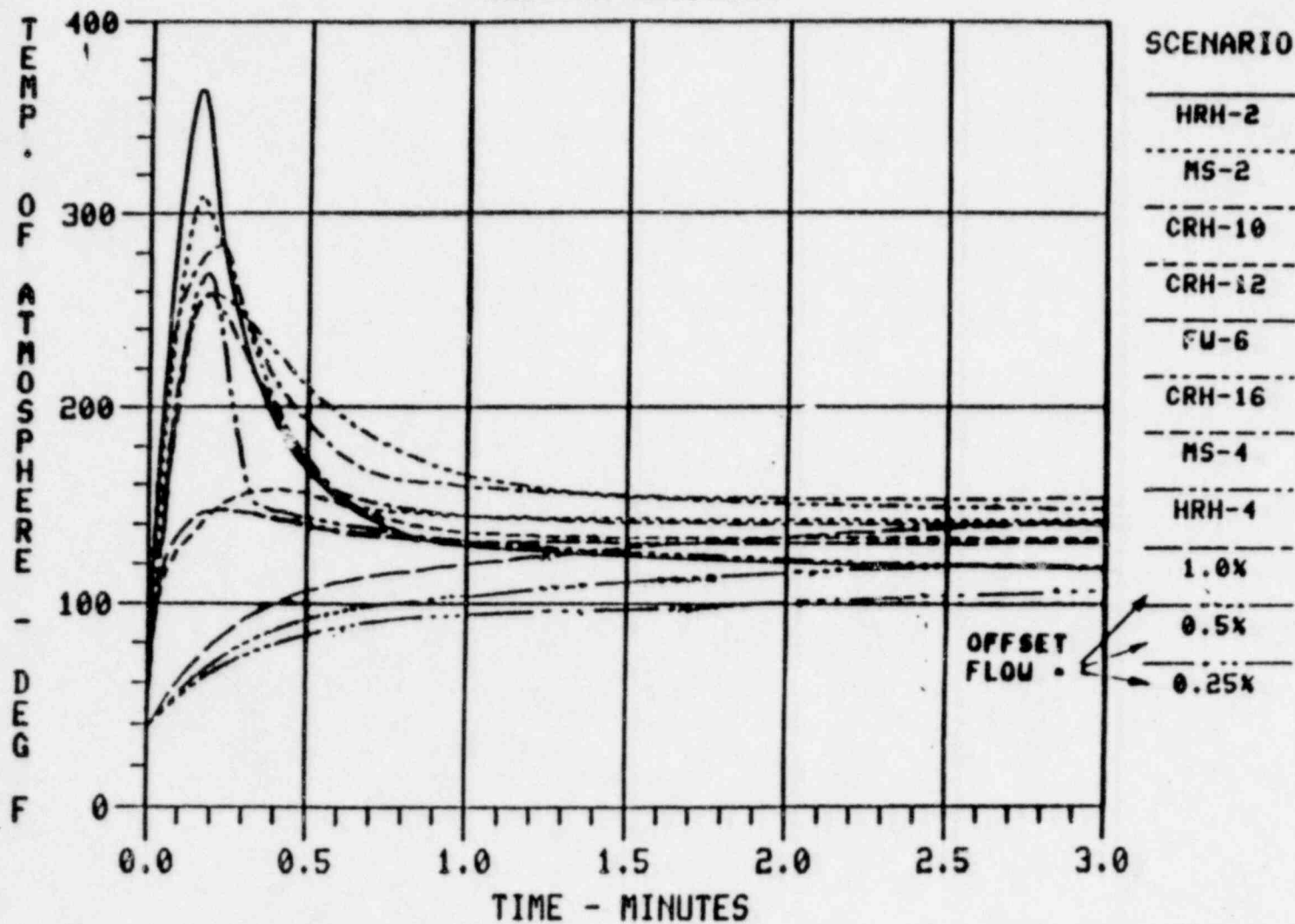
FORT ST. VRAIN  
ACCIDENT ANALYSIS  
RESULTS



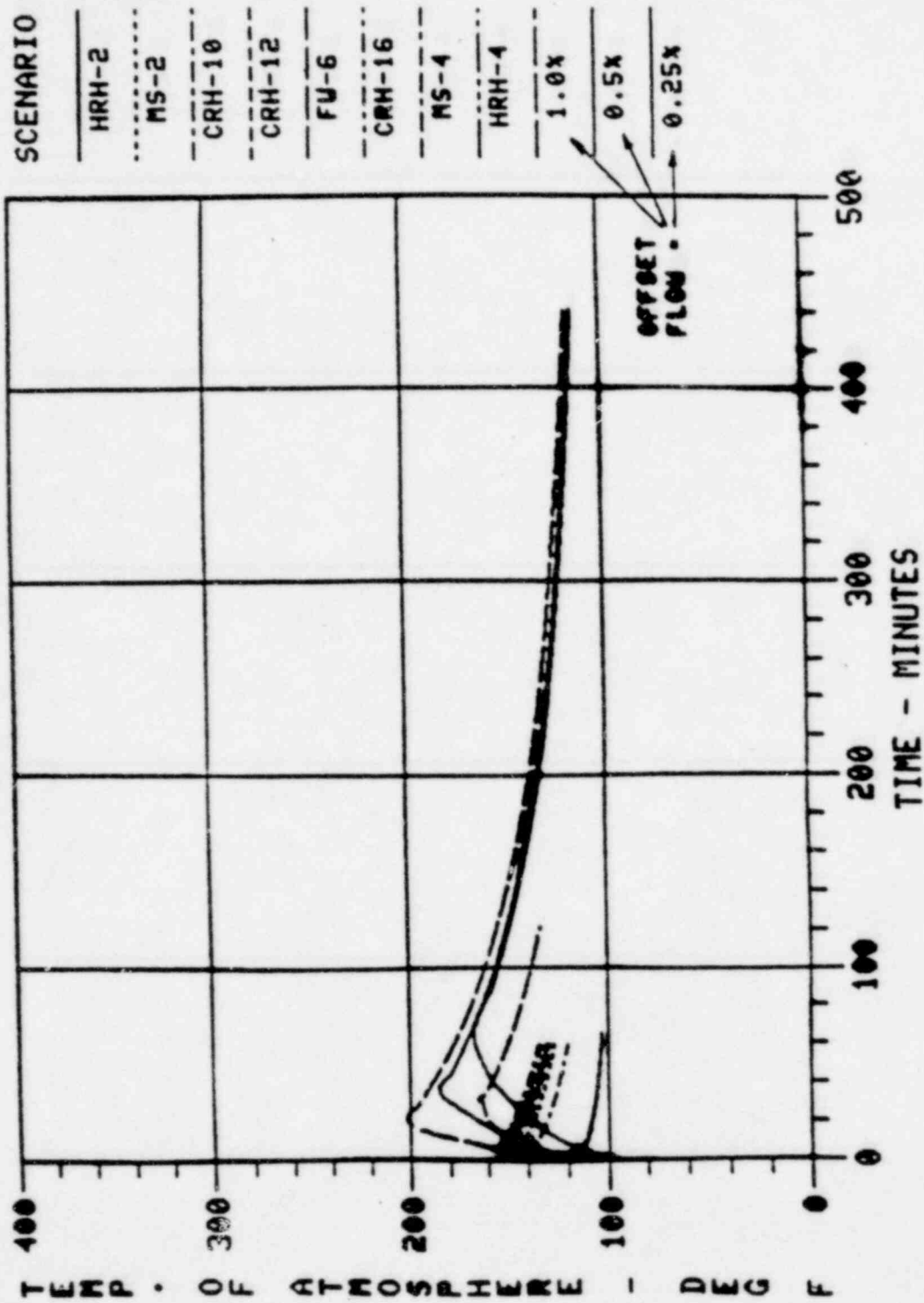
BASED ON LINER COOLING SYSTEM IN OPERATION



# COMPOSITE SUMMARY OF LARGE AND SMALL LEAKS REACTOR BUILDING



# COMPOSITE SUMMARY OF LARGE AND SMALL LEAKS REACTOR BUILDING





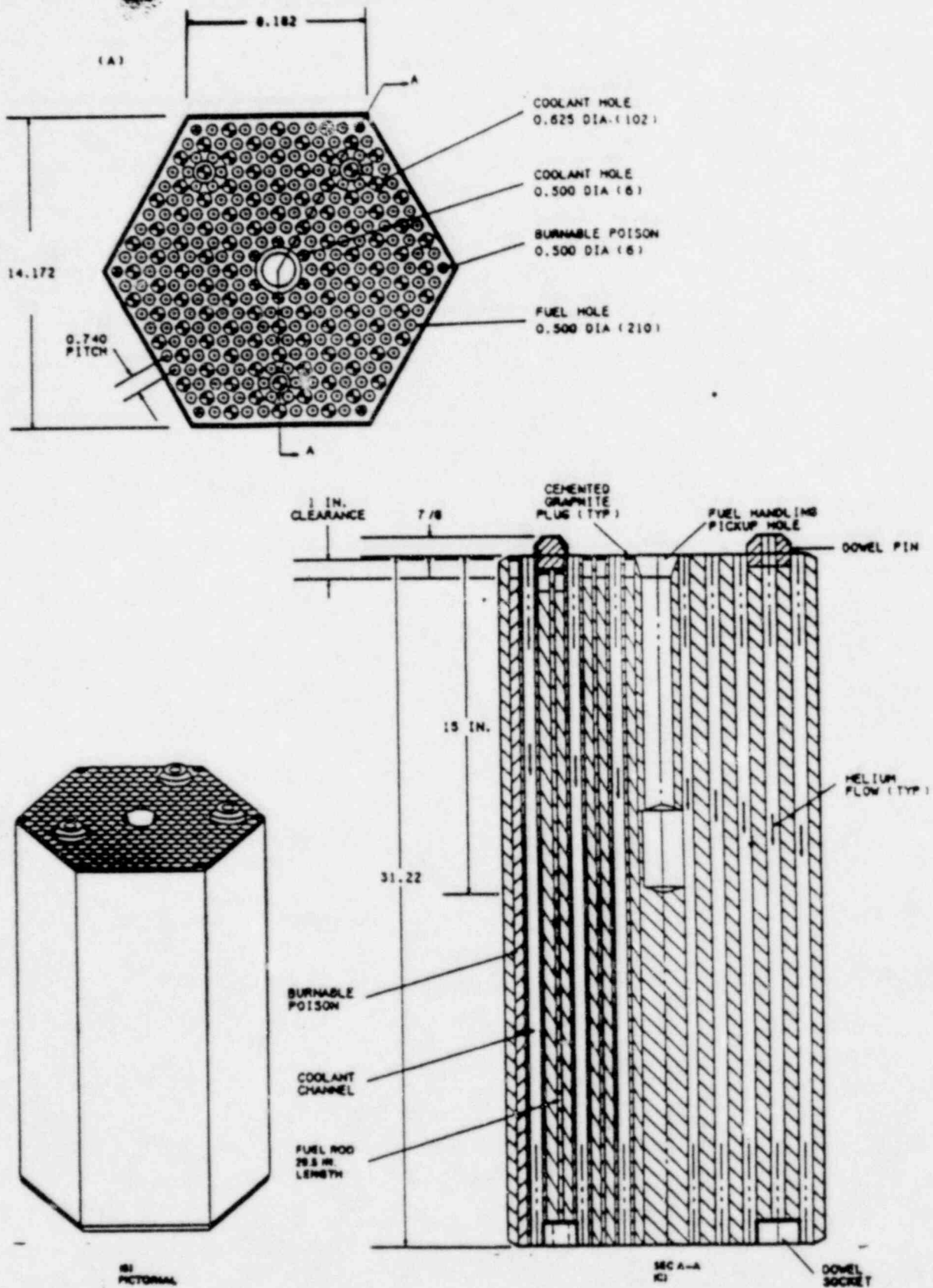


Figure 3.4-1 Fuel Element



9/35

DATE:

11/22/85

FROM:

SECY OPS BRANCH

cc: C&R  
w/attachs.  
(w/o SECY  
papers)

Meeting Title: Discussion of Environmental Qualification  
Exemption Request - Fort St. Vrain

Meeting Date: 11/19/25 Open ☒ Closed ☐

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