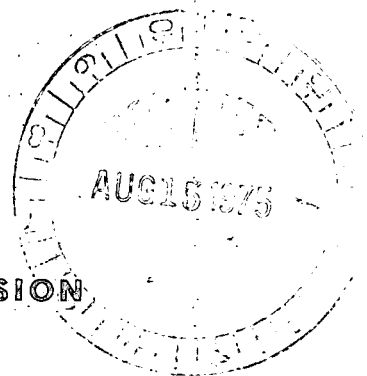


Regulatory Docket File



NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF:

CAROLINA POWER AND LIGHT COMPANY

(H. B. Robinson Unit No. 2 Plant)

Docket No. 50-261

Place - Hartsville, South Carolina

Date - Tuesday, 12 August 1975

Pages 37 - 159

Telephone:  
(Code 202) 547-6222

ACE - FEDERAL REPORTERS, INC.

*Official Reporters*

415 Second Street, N.E.  
Washington, D. C. 20002

NATIONWIDE COVERAGE

86 94

CR4997  
QTRB:jrb1

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

-----  
In the matter of:

CAROLINA POWER AND LIGHT COMPANY

(H. B. Robinson Unit No. 2 Plant)  
-----

:  
:  
:  
: Docket No. 50-261  
:  
:  
:

Music Room  
Coker College  
Hartsville, South Carolina

Tuesday, 12 August 1975

Hearing in the above-entitled matter was convened  
pursuant to notice, at 10 a.m.,

BEFORE:

JOHN F. WOLF, Esq., Chairman

DR. A. DIXON CALLIHAN, Member

DR. RICHARD F. COLE, Member

APPEARANCES:

GEORGE F. TROWBRIDGE, Esq., THOMAS BAXTER, Esq.,  
Shaw, Pittman, Potts and Trowbridge, Washington,  
D. C.; and RICHARD JONES, Esq., on behalf of  
Applicant.

L. DOW DAVIS, Esq., and JOSEPH SCINTO, Esq.,  
Office of General Counsel, Nuclear Regulatory  
Commission, on behalf of the Regulatory Staff,  
NRC.

jrb 2

1

## APPEARANCES, Cont'd

2

JOHN D. WHISENHUNT, Esq., on behalf of Intervenor,  
and Pro Se.

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

wel

C O N T E N T SWITNESS:DIRECT CROSS BOARD REDIRECT RECROSS

Donald N. Bridges

134

143

147

EXHIBITS:FOR IDENTIFICATION IN EVIDENCEStaff Exhibit 1  
(Safety Evaluation)

137

137

Staff Exhibit 2  
(Encl. 1, Supp. 1, SER)

140

140



1 wel

P R O C E E D I N G S

CHAIRMAN WOLF: Good morning, ladies and gentlemen.

I would first like to introduce the members of the Board. On my left is Dr. Callihan, a nuclear physicist; and on my right is Dr. Cole, an environmentalist. My name is John Wolf, and I'm an attorney admitted to practice in the District of Columbia.

This joint hearing in the matter of Carolina Power and Light Company, H. B. Robinson Unit Number 2, is being held pursuant to the notices of hearings that were published on October 3, 1973, July 31, 1974 and the Commission's Consolidating Order of September 9, 1974.

The hearing will consider:

a. Whether or not Robinson's Unit 2 license should be continued, modified, conditioned or terminated in order to protect environmental values; and,

b. Whether or not the licensee should be permitted to increase the steady-state power levels up to a maximum of 2300 megawatts thermal.

The public is invited to all of the hearings which we will hold here, and in due course an opportunity will be made to permit those who have made limited appearances to either submit their position on a paper or to speak orally to questions.

In addition to deciding matters in controversy

1 between the parties, the Board will, in accordance with  
2 Section A-11 of Appendix D to 10 CFR Part 50:

3 a. Determine whether the requirements of Section  
4 102 2(c) and (d) of the National Environmental Policy Act of  
5 1969 and Appendix D to 10 CFR Part 50 of the Commission's  
6 Regulations, have been complied with in this proceeding;

7 b. Independently consider the final balance  
8 among the conflicting factors contained in the record of the  
9 proceedings with a view toward determining the appropriate  
10 action to be taken, and;

11 c. Determine, after weighing the environmental,  
12 economical, technical and other benefits against environmental  
13 costs, considering available alternatives, whether operating  
14 license number DPR-23 should be continued, modified, terminated  
15 or appropriately conditioned to protect environmental values.

16 The agenda which was announced in the notice of  
17 hearing will be followed. It consists:

18 (1) of the disposition of preliminary matters  
19 raised by the parties or by the Atomic Safety and Licensing  
20 Board;

21 (2) opening statements of the parties;

22 (3) a statement by persons permitted to make  
23 limited appearances;

24 (4) disposition of preliminary motions of the  
25 parties and related matters, and;

1 (5) introduction of testimony and questioning of  
2 witnesses by the parties and by members of the Licensing  
3 Board.

4 At this time I would like to ask the attorneys for  
5 the parties to note their appearances in the record, beginning  
6 with Mr. Trowbridge.

7 MR. TROWBRIDGE: My name is George F. Trowbridge.  
8 I'm a member of the Washington, D. C. law firm of Shaw, Pittman  
9 Potts & Trowbridge. On my left is Mr. Richard E. Jones,  
10 Associate General Counsel of Carolina Power & Light. On my  
11 right is Mr. Thomas Baxter of my office.

12 CHAIRMAN WOLF: Mr. Davis?

13 MR. DAVIS: Good morning, Mr. Chairman. My name  
14 is L. Dow Davis, Assistant Hearing Counsel for the United  
15 States Nuclear Regulatory Commission. I'm licensed to  
16 practice in the District of Columbia.

17 With me today are Dr. Bridges, licensing project  
18 manager, and Singh Bajwa, who is the environmental project  
19 manager.

20 I'll be joined later on today by Joseph Scinto, who  
21 is also with the Office of Executive Legal Director of the  
22 U. S. Nuclear Regulatory Commission. Mr. Scinto and I will be  
23 the two attorneys making an appearance in this proceeding.

24 CHAIRMAN WOLF: Mr. Whisenhunt?

25 MR. WHISENHUNT: I'm John D. Whisenhunt, Florence,

1 South Carolina, a member of the firm of Bridges and Whisenhunt,  
2 appearing for myself. I'm admitted to all the courts of the  
3 State of South Carolina, and also admitted to the United  
4 States District Court and the Court of Appeals.

5 CHAIRMAN WOLF: Thank you.

6 The first preliminary matter I'd like to turn to  
7 is those questions which were raised by the Applicant's  
8 letter of August 5, 1975, and I will ask Mr. Trowbridge if  
9 he wishes to discuss orally the position which he set forth  
10 in that letter regarding the matters that he referred to.

11 MR. TROWBRIDGE: Mr. Chairman, I'd be glad to state  
12 briefly our position, but it appears that the Board has  
13 already ruled on the -- I might ask whether the Board --

14 CHAIRMAN WOLF: Whether the Board has already  
15 ruled --

16 MR. TROWBRIDGE: Whether the Board has already  
17 ruled on the first question.

18 CHAIRMAN WOLF: In the sense of my opening state-  
19 ment?

20 MR. TROWBRIDGE: Yes, sir.

21 CHAIRMAN WOLF: No, we have not.

22 MR. TROWBRIDGE: In that case, I would like to  
23 explain very briefly our understanding of the scope of the  
24 proceedings under the Commission's Regulations.

25 As we see it, this Board has been convened to make

1 findings of fact and conclusions of law on matters in contro-  
2 versy, and, in addition, that it may explore and eventually  
3 determine whether there are other serious safety or environ-  
4 mental issues which add to the scope of the Board's decision.

5 I view the Board's function, however, at that  
6 point as that it stops with findings of fact --I think that's  
7 all we're talking about here in this proceeding -- on the  
8 matters in controversy, plus such other issues as the Board  
9 may determine are --

10 CHAIRMAN WOLF: Pardon me. I couldn't hear the  
11 last --

12 MR. TROWBRIDGE: I think it is the Board's function  
13 in this proceeding only to make findings of fact on the  
14 matters in controversy, issues in controversy, plus any other  
15 issues which the Board determines to be serious safety or  
16 environmental issues.

17 As we view the Commission's Regulations, going  
18 largely by the restructured Rules of Practice, there has been  
19 over the course of time -- as stated in my communication of  
20 August 8, or August 5, to the Board -- there has been a change  
21 in the function of the Board.

22 At one time, prior to the restructured Rules of  
23 Practice, in an operating license proceeding if there were  
24 intervention, an issue raised, the Board then was asked to  
25 examine all of the issues and make the ultimate determinations.

1 under the Atomic Energy Act and under NEPA.

2 With the restructured Rules of Practice, the  
3 Commission amended its Rules of Practice, and at the same time  
4 combined paragraph A-11 of Appendix D to Part 50, to redefine  
5 the functions of the Board.

6 Consistent with the findings that an operating  
7 license issued in this proceeding here, there would have been  
8 no hearing at all except for an intervention. The Commission  
9 restructured its Rules of Practice to say that in operating  
10 license hearings, that is, hearings involving operating  
11 licenses under Appendix D, that the Board would limit its  
12 functions to making findings of fact and conclusions of law  
13 on matters in controversy. That's how the Regulations read  
14 at the time of their restructuring, and explanations that  
15 went with these made it clear what the Commission meant by  
16 that was to report findings on the issues in controversy, and  
17 the Director of Regulation -- now the Director of Nuclear  
18 Reactor Regulation -- would make all other necessary findings  
19 on matters not in controversy, and the ultimate determinations  
20 under the Atomic Energy Act, under NEPA.

21 Now, there has been one change in the Regulations  
22 as the result of the Indian Point decision clarifying the  
23 authority of the Board to inquire into serious issues on its  
24 own initiative. And the Commission, in the Indian Point  
25 decision, said that its decision would be covered by these

1 Regulations, which it subsequently was by rewriting Section  
2 2.760(a), making it clear the Board could make findings of  
3 facts on matters in controversy, plus the issues, if any,  
4 the Board had in sua sponte to the proceedings. But it  
5 retained the provision that said all other determinations  
6 will be made by the Director of Regulation.

7 We think that the Board at some point in this  
8 proceeding -- I think for an orderly proceeding, certainly  
9 by the time it comes to write up the proposed findings of  
10 fact -- we need to know how the Board views its function.  
11 I would remind the Board that you are dealing with an important  
12 question which is not unique to this proceeding, even though  
13 there are not many Appendix D proceedings of this variety.  
14 In all operating license cases in the future the rules of  
15 the Commission again provide that there will be hearings only  
16 if there are interventions at the operating license stage.  
17 And, again, the Board's function will be only to decide the  
18 issues in controversy, plus the additional serious issues  
19 identified by the Board. So that we are dealing here with  
20 the question that is going to be germane to a great many  
21 proceedings in the future, and is germane to some that are  
22 now going on.

23 In light of these regulations, what we are  
24 suggesting to the Board is that the statement of the Board's  
25 role in this proceeding should parallel closely the wording

1 of Section 2.760(a), and that the Board would make findings  
2 of fact and conclusions of law on those matters in controversy  
3 and on other issues which may be identified by the Board, and  
4 that the ultimate determination and any remaining findings  
5 would be made by the Director of Regulation. And we have  
6 asked the Board to reconsider that aspect of the Notice of  
7 Hearing which appears to state a broader function.

8 CHAIRMAN WOLF: All right. Do you want to respond  
9 to that, Mr. Davis?

10 MR. DAVIS: Yes, Mr. Chairman.

11 Basically I think the legal issues are clear-cut,  
12 and the case law under the Indian Point decision says that  
13 you must decide those issues in controversy, and that you  
14 should decide only those serious environmental and safety  
15 issues which you see fit.

16 Now, the Scaff position is that along with the  
17 right to decide serious environmental and safety issues, you  
18 have the inherent power that's reasonably ancillary to that  
19 power to decide those issues to make some sort of preliminary  
20 inquiry to see if, in fact, a major environmental or safety  
21 issue does exist.

22 And, so while we agree with the legal interpretation  
23 of the Licensee, we think -- we visualize a little bit broader.

24 Now, in terms of -- we think issues as presented  
25 by Mr. Whisenhunt, the Intervenor in this proceeding, are



thermal in nature, and that in order to decide those issues you should make a factual determination. And inherent in those issues that he's presented is the argument that there is a possibility of upsetting a cost-benefit analysis. And so we feel that you should make a factual determination, and make an ultimate conclusion as to the effect of the thermal contentions on the cost-benefit analysis.

That's how we visualize the scope of this proceeding.

DR. COLE: So that you're saying, then, that the Board would have to undertake a cost-benefit balance?

MR. DAVIS: Well, yes, we think that that's implicit in the issues presented by the Intervenor, that there has been thermal detriment to the waters of Lake Robinson, and what is the logical conclusion of that: Does it or does it not affect it?

DR. COLE: What do you think of the Licensee's arguments regarding the function of EPA?

MR. DAVIS: As the Board is aware, there's a 316(a) exemption now pending before the Environmental Protection Agency, and basically it is this exemption that would grant the licensee exemption from whatever State standards happened to be applied, and also the requirement -- possible requirement of offstream cooling.

It's our position that under the Federal Water

1 Pollution Control Act exclusive jurisdiction to determine this  
2 issue has been given to the Environmental Protection Agency.  
3 They required a two-year study of the licensee, and that  
4 study will become due in June of 1976. After that, there  
5 will be a hearing by EPA and that question will be resolved.

6 We plan to present our views, and have been  
7 in contact with the Environmental Protection Agency to present  
8 the views of the Staff to them. So there will be Nuclear  
9 Regulatory Commission input to the EPA proceedings.

Burns fls 10

11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

TAKE 2  
bJRB1

1 DR. COLE: What kind of input are you talking about?

2 MR. DAVIS: Well, there have been preliminary  
3 discussions about the thermal effects, chemicals, and various  
4 other issues that we have seen coming up. We may present  
5 some testimony as to what we think the thermal conditions of  
6 the lake are, what we think should happen in terms of possible  
7 restrictions or no restrictions, or whatever; but it does seem  
8 clear to us that we have been largely preempted by the Federal  
9 Water Pollution Control Act of 1972, because of the pendency  
10 of this 316(a) thermal exemption request.

11 DR. COLE: By "preempted" what do you mean,  
12 Mr. Davis?

13 MR. DAVIS: Well, that the exclusive jurisdiction  
14 lies with the Environmental Protection Agency as far as thermal  
15 and chemical effluent guidelines, and also, the decision on  
16 whether or not an offstream cooling system is required.

17 DR. COLE: With respect to setting standards on  
18 discharge --

19 MR. DAVIS: Yes, sir.

20 DR. COLE: So that we would not be able to apply  
21 a standard that would be more stringent than that required by  
22 the Federal Water Pollution Control Act Amendments of '72?

23 MR. DAVIS: That is true.

24 DR. COLE: We would have to make an assessment of  
25 what the effect of that particular discharge would be.

jrb 2

1 MR. DAVIS: That is correct.

2 Once the Environmental Protection Agency or the  
3 State has spoken in a water quality or effluent situation, then  
4 that is binding on us. As an effect of that, it has an effect  
5 on the overall cost-benefit analysis which must still be taken  
6 into account by the Board; for instance, EPA may say thermally  
7 the lake is okay, but it is the Board's prerogative to look at  
8 the lake in view of the types of requirements that are laid  
9 down by EPA, and it may affect the cost-benefit analysis.

10 DR. COLE: But as of now do we know what requirements  
11 will be laid down by EPA?

12 MR. DAVIS: No, we do not.

13 And I think we should resist the temptation to  
14 try to second-guess the State authorities. I think we should  
15 look only at the evidence presented here.

16 DR. COLE: When you say "second-guess the State  
17 authorities," what do you mean? We were talking about the  
18 federal and then the state came in; would you explain that?

19 MR. DAVIS: In terms of compliance with, let us say,  
20 for instance, the 401 certification; 401 certification for  
21 Federal Water Pollution Control Act is binding on us. If they  
22 say they are in compliance we have to accept that. But we  
23 might look at the actual conditions of the lake.

24 CHAIRMAN WOLF: Pardon me just a moment.

25 (Pause.)

jrb 3

1 CHAIRMAN WOLF: Thank you. Go ahead, please.

2 MR. DAVIS: I guess that was my point.

3 DR. COLE: I expect we will come back to talk in  
4 more detail about the 401-402 business.

5 CHAIRMAN WOLF: Yes.

6 Mr. Whisenhunt, do you have any comments to make?

7 MR. WHISENHUNT: Yes, sir.

8 I want to address myself first to the first proposi-  
9 tion which I understood from reading Mr. Trowbridge's motion  
10 of May the 12th brought up the same point which he brought up  
11 now: it was responded to by the Staff on June 2nd, and from  
12 reading your Honor's -- or the order of the Board -- dated  
13 July 22, I thought the first proposition had already been  
14 ruled on, that you would consider anything that dealt with  
15 the safety and environmental, but you were not limited solely  
16 to what I have raised.

17 I had argued when I -- when we had the prehearing  
18 in November of '73 -- that the Intervenor seldom has the  
19 knowledge, energy, or money to raise all the points. I raised  
20 only the points that I personally could present something on  
21 because of living on the lake and knowing the conditions.

22 Now, I do not think that the Board should be  
23 limited by the mere fact that one individual comes up and raises  
24 an issue, that they know any other pertinent evidence or  
25 testimony or the effects thereon; I think this Board should

jrb 4

1 consider and rule on those.

2 Now, if I understand -- and I didn't understand  
3 Mr. Trowbridge yet to argue on his second point -- but if I  
4 understand what Mr. Davis is saying, we, in effect, are going  
5 to be wasting a lot of time to even take any testimony relative  
6 to the thermal effects on this lake -- and from what he says,  
7 this Board can't rule, and can't change; we have got to wait  
8 on EPA to make its decision. And then the only thing you all  
9 can consider is what that effect is, but you can't change it.

10 Now, if your Honor please, this matter, this Atomic  
11 Energy Commission, or now the Nuclear Regulatory Commission,  
12 has allegedly been supervising Carolina Power and Light in  
13 the construction of this plant, and in its development as it  
14 went from the initial stages on to become productive, has  
15 repeatedly asked for information on the effects on the fish,  
16 the wildlife and the heat on the water, and been seeking it  
17 in this plant -- I don't know when it was commenced. But it  
18 went into the initial stage of operation in November, I believe,  
19 of 1970.

20 In 1973 there had been -- I don't know how many --  
21 complaints of the thermal effects, not only on persons, but  
22 on the animal life, wildlife, fishes, and so forth. We had a  
23 hearing here in November of '73; the Board members raised a  
24 number of pertinent questions as to the thermal effects on  
25 this lake. This is in November of '73, when the Board or the

jrb5 1 Atomic Energy Commission -- not this particular Board -- had  
2 been seeking this information on environment for some three  
3 or better years, and originally should have had it in a short  
4 report.

5 What does Carolina Power and Light do? It comes  
6 along in about February of 1974 and asks this Board, or the  
7 Atomic Energy Commission to let them increase to 2300 instead  
8 of 2200, and increase the heat to the lake to affect further  
9 the people and all that's been complaining ever since the  
10 new plant got into full operation.

11 Then what did it do when I intervened in that, and  
12 the Board ruled I could intervene; we had a stay until we had  
13 the hearing into the effects of the thermal. They go to the  
14 EPA and when they went I am not sure; when I got notice it  
15 was sometime down in about November of 1974. I wrote to them  
16 and asked them for the information to intervene in that.

17 And as soon as I got the information I intervened  
18 in that. They issued a permit that gives no limitation whatso-  
19 ever. You look through the license, the permit, as they call  
20 it, which was issued by the federal -- they said it was  
21 December 31st; I don't know what the date of it may be. Maybe  
22 it's December 31st; January 3rd is the letter of transmittal,  
23 of '75; it says the state went along with it. Well, the state,  
24 all it did was rubberstamp it; and it did it before they even  
25 issued it. That was December 20th, 1974.

jrb6

1 It puts no limitation on it through June of 1976.  
2 This data that this Board or Atomic Energy Commission has been  
3 seeking has been spasmodic, some of it inadequate. The Staff  
4 has even requested some of the details about part of it. The  
5 Board raised a number of questions as to why with both plants  
6 operating the water heat level reported is the same as  
7 nonoperating. There are any number of fallacies.

8 In the first thought of monitoring this thing, back  
9 in March, when they put in continuous monitors -- why didn't  
10 they do something in 1973 to present this information? If  
11 we wait on the EPA to come along on June the 30th, 1976 to  
12 get the information, how long is the EPA going to consider  
13 the information they get on June 30th, 1976? When will we ever  
14 know what the EPA is going to do?

15 We submit the EPA has not established a limitation  
16 on the thermal input into this lake, and in the absence of  
17 them having established one, this Board ought to establish one.  
18 And if the Board cannot grant us any relief -- and this  
19 apparently, if I understood his argument right -- the Board  
20 can't grant me any relief, then I feel sort of hopeless and  
21 helpless.

22 And I would like for the Board before I bring my  
23 witnesses in here off of their jobs and all, to tell me if I  
24 am just wasting my time, that there is no relief for me and  
25 for the other people on this lake.



jrb 7

1 If your Honor please I would like for the Board  
2 to consider this point, and make a ruling thereon.

3 CHAIRMAN WOLF: We will consider the point and make  
4 a ruling, Mr. Whisenhunt, just as quickly as we can.

5 DR. COLE: We understand your point.

6 MR. WHISENHUNT: Yes. What I am trying to seek,  
7 if your Honor please, of course under the rules of procedure  
8 laid down, Carolina Power and Light is to go first, and I  
9 assume, following the usual rules, the cross-examination would  
10 follow so that Mr. Davis would cross-examine; and then Mr. Davis  
11 is going to present his witnesses.

12 Is there any possibility of the Board advising me  
13 whether they can grant me any relief before I pull these  
14 witnesses off the job and bring them in?

15 CHAIRMAN WOLF: I think we can come to some  
16 conclusion that will be helpful to you in that regard before  
17 you are required to bring witnesses here.

18 MR. WHISENHUNT: Thank you, sir.

19 CHAIRMAN WOLF: Mr. Trowbridge?

20 MR. TROWBRIDGE: With respect to Mr. Davis, I am  
21 not sure of his point. And I say this for Mr. Whisenhunt's  
22 benefit again: I said the Board has the authority to ask  
23 questions in order to determine that there is not an important  
24 safety or environmental issue to address.

25 Now, Mr. Davis suggested that in the thermal area

jrb8 1 the Board might make an ultimate determination, cost-benefit  
2 determination in response to Dr. Cole's question. I have some  
3 difficulty with that.

4 As I see it, it is up to the Board to quantify  
5 to the extent it can with some measure and some judgment as  
6 to significance of environmental -- thermal -- impact in this  
7 case; quantify the extent possible. And if that quantification  
8 differs significantly from the Director's conclusions as  
9 reflected in the Final Environmental Statement, the Board would  
10 say so. And the Director would be obliged to make a final  
11 cost-benefit determination taking into account the Board's  
12 assessment of the environmental impacts.

13 For the Board to make, however, the ultimate deter-  
14 mination is a little perplexing to me. Let me assume for a  
15 moment, for example, that the Board has not considered the  
16 normal effluent, radioactive effluent releases from this plant  
17 to be a serious environmental or safety issue, and makes no  
18 determinations in this respect. The person who, in the  
19 Commission as a whole, would pull this together would be the  
20 Director of Nuclear Regulations; he does that. He may consider  
21 them as not very important, but he has to take them into account  
22 as well as any other environmental element which has not been  
23 considered by this Board.

24 Therefore, I think the ultimate determination on the  
25 cost-benefit must be made by someone taking into account all of

jrb 9

1 the environmental impacts; and this Board should not make such  
2 final determination.

3 Going over for a moment to the other matter, I won't  
4 discuss at length the second portion of my communication to you  
5 unless you wish me to do so; but I would point out one thing  
6 though, that we do in fact have a 402 permit. We don't have  
7 just a -- from the EPA -- a notice that EPA isn't going to do  
8 anything until after a 316 proceeding. We have a permit from  
9 the EPA which specifically authorizes the operation of this  
10 plant with once-through cooling until such time as the 316  
11 proceeding is completed.

12 We do now have a determination by EPA that this plant  
13 might operate.

14 CHAIRMAN WOLF: We have some difficulty with that  
15 permit, and I think Dr. Cole, later, after you complete your  
16 statement, will address himself to that.

17 MR. TROWBRIDGE: Very well.

18 CHAIRMAN WOLF: You may go ahead.

19 MR. TROWBRIDGE: I think that is all I need to say  
20 at the moment, Mr. Chairman.

21 (The Board conferring.)

22 DR. COLE: With reference to the 402 permit,  
23 Mr. Trowbridge, is not that 402 permit issued to CP&L on the  
24 basis that they will meet the water quality requirements of the  
25 State of South Carolina, and that if you choose not to meet

jrb10 1 those requirements that are supposedly contained in the 402  
2 permit -- and it is not clear that all of them are contained  
3 in there -- that you may apply for an exemption to that? So  
4 the permit is a permit that permits you to discharge in  
5 accordance with the requirements, requirements which you  
6 presently do not meet? And you may apply for an exemption to  
7 that?

8 MR. TROWBRIDGE: This is not as we view this.  
9 You have two documents here: one is a water quality certificate  
10 by the State of South Carolina which we think plainly reads  
11 that if we comply with the provisions of our permit, which  
12 a South Carolina agency has been discussing for some time with  
13 EPA, that if we comply with this, that we will be in compliance  
14 with state water quality standards, and this is a determination  
15 by the state, and it is a determination that, pending the  
16 outcome of the 316 proceeding, the water quality standards of  
17 South Carolina would not be applied or suspended as to this  
18 point.

19 DR. COLE: Could we look at that 401 certificate,  
20 Mr. Trowbridge? I believe it is attached to the testimony of  
21 Mr. Sell? Maybe we are getting ahead of ourselves here,  
22 but since you bring that up, this is a document from the South  
23 Carolina Department of Health and Environmental Control dated  
24 December 20, 1974. Do you have that?

25 MR. TROWBRIDGE: Yes.

jrb 11

1 DR. COLE: I see no reference at all to Carolina  
2 Power and Light on this document.

3 MR. TROWBRIDGE: There are two attachments.

4 DR. COLE: I have no attachments.

5 MR. TROWBRIDGE: I'm sorry.

6 The attachment refers to the Robinson plant and to  
7 one other plant. This certificate was issued with respect to  
8 two plants, which are named in the attachments; one of them  
9 is Robinson, and one of them is a Duke plant.

10 DR. COLE: This is the 401 certificate?

11 MR. TROWBRIDGE: This is a 401 certificate.

12 DR. COLE: I thought the certificate was supposed  
13 to contain a statement that the company meets the state water  
14 quality requirements and the state so certifies that that is  
15 true.

16 MR. TROWBRIDGE: In essence that is how we read  
17 this statement.

18 DR. COLE: This has not hit me. If says, if the  
19 Applicants comply with the conditions developed for the NPDS  
20 permits, the Applicants' discharge will comply with the  
21 applicable provisions, Section 301 of the Act, and appropriate  
22 requirements of state law.

23 That "if" is very important in there, and I would  
24 like you to defend that.

25 MR. TROWBRIDGE: I recognize a way of reading this,

jrb 12 1 in my view -- and I am going to supplement this in a moment --  
2 in my view, South Carolina and EPA got together to decide  
3 what should now be done. The South Carolina agency had in  
4 front of them a draft of the permit to which you have referred,  
5 and this was a draft which was a proposed permit, one published  
6 publicly as well as privately; the permit which it had before  
7 it provided for a period of operation of once-through cooling  
8 and thereafter in accordance with EPA determination -- whatever  
9 it might be; and the South Carolina agency was aware of that,  
10 that the plant would be operating under that permit, and that  
11 for a period of time it would be operating with once-through  
12 cooling, and certified that this would not be in noncompliance  
13 with South Carolina water quality standards.

14 DR. COLE: That last statement I didn't hear.

15 MR. TROWBRIDGE: This is a determination, in my  
16 view, that for the period of once-through cooling operations  
17 authorized by NPDS permit, that this would not be in noncompliance  
18 with South Carolina water quality standards.

19 DR. COLE: Would "not be in noncompliance"?

20 MR. TROWBRIDGE: Would be in compliance with  
21 South Carolina water quality standards. With that document  
22 South Carolina decided until review in this 316 proceeding they  
23 would suspend as a matter of operation of law or policy the  
24 application of their water quality standards.

25 Let me refer in this connection, because it is

jrb13

1 important, South Carolina's agency and the EPA were working  
2 together. We also have the NPDES permit. Let me refer to that.

3 DR. CALLIHAN: Before we leave the 401,  
4 Mr. Trowbridge, please, do you propose to supply to the Board  
5 and other parties copies of the alleged attachment to the  
6 December 20, 1974 letter from the State? It seems to be the  
7 most important document that we have to discuss at this  
8 moment?

9 MR. TROWBRIDGE: Yes, we will certainly supply  
10 copies. I hope we have them here, and I am not sure. But  
11 believe me, it is a very simple page. It just names two  
12 plants, one, Robinson; and the other a Duke plant.

13 DR. CALLIHAN: Do you look at the moment at the 402  
14 and the 401, for that matter, as documents of interim  
15 effectiveness until the 316 matter is concluded?

16 MR. TROWBRIDGE: Yes. They will be superseded  
17 by the 316. The 316 determination will, presumably, keep  
18 in effect the present NPDES permit or have some substituted  
19 limitations. Whatever the 316 comes out to be, that will be  
20 controlling on the state because, under Section 303(d) of  
21 the Federal Water Pollution Control Act, state water quality  
22 standards may not be inconsistent with 316.

23 DR. CALLIHAN: Does the Applicant plan to support  
24 these permits and so forth by statements from witnesses of  
25 EPA and the state during the course of this hearing?

jrb 14

1 MR. TROWBRIDGE: No.

2 DR. CALLIHAN: Does the Staff expect to call  
3 witnesses from the EPA and the state to support these permits  
4 during the course of this hearing?

5 MR. DAVIS: No, Dr. Callihan, we do not. We  
6 envision the 401 as being legally sufficient as a certification  
7 of compliance. Our theory of the case is that the 401 and 402  
8 are necessary as legal documents, but beyond that, we have  
9 substantial evidence to present that will give the Board  
10 an actual view of the situation that presents itself thermally  
11 in Lake Robinson. And if the Board actually is not going to  
12 get mired down in the question of whether there is state  
13 compliance, compliance with state water quality standards or  
14 not, the Board is going to have, I think, a full range of  
15 evidence in front of it to tell it what the exact situation is  
16 in Lake Robinson.

17 And on the basis of that evidence and also on the  
18 basis of safety evidence we are going to present to you, you  
19 will be able to tell whether the plant is safe and whether  
20 it is -- the benefits to be derived from the plant are not  
21 offset by whatever environmental harm it might cause.

22 So, we do not plan to go into 401 and 402 except  
23 for acknowledging that they do exist. We feel you are not  
24 going to need that. We are going to have the raw data there,  
25 and whether the State of South Carolina says 90, 100, whatever,



jrb 15 1 200 degrees is its limitations, it is going to be irrelevant  
2 to what you have to perform.

3 DR. COLE: Mr. Davis, I think the Board would be  
4 interested in hearing what the State of South Carolina has to  
5 say about what their water quality requirements are, and will  
6 be in Lake Robinson.

7 MR. DAVIS: We have been in contact with them. I  
8 don't know whether it would be possible to get them to come  
9 down or not; we might explore that during the recess.

10 DR. COLE: What is the relationship between the  
11 401 certificate and the 402 permit, Mr. Davis?

12 MR. DAVIS: Well, as you mention, the 401 does  
13 incorporate the 402 by reference, and I believe --

14 DR. COLE: 402 incorporates 401 by reference?

15 MR. DAVIS: 401 refers to NPDS.

16 DR. COLE: Does one come before the other?

17 MR. DAVIS: Well, it is circular. The 401 says  
18 that there will be compliance with state water quality standards  
19 if the 402 NPDS is met, and I think -- but I am not sure --  
20 that the 402 somehow refers back generally to the state water  
21 quality standards. But I am not an expert.

22 DR. COLE: Maybe I should have asked my question  
23 more directly: Can a 402 permit issue if a 401 certificate  
24 is not issued?

25 MR. DAVIS: I would think not, but I do not have

jrb 16 1 the --

2 MR. TROWBRIDGE: We would disagree with that.  
3 EPA must maintain a certificate before it issues a discharge  
4 permit for NRC.

5 DR. COLE: So in the case of Robinson No. 2,  
6 there is some agreement between the State of South Carolina  
7 and the EPA?

8 MR. TROWBRIDGE: This is what I have been trying to  
9 get to you, Dr. Cole.

10 May I refer you again to the permit and the  
11 covering letter dated January 3, 1975? The first sentence  
12 reflects what happens between -- the discussion they had --  
13 and a determination by EPA after thorough consideration that  
14 the permit for H. B. Robinson based on the water quality stan-  
15 dards of the State of South Carolina -- now, that reflects  
16 discussion between EPA and South Carolina. It is a determination  
17 by EPA, and under both the provisions of the Federal Water  
18 Pollution Control Act and the Commission's Interim Policy  
19 Statement, that determination of compliance is binding on the  
20 NRC.

21 DR. COLE: But the particular water quality standards  
22 of the state that he is talking about there are different than  
23 the ones which the discharge is now meeting; is that correct?  
24 In other words, discharges presently are not meeting the water  
25 quality standards of the State of Carolina that he is talking

jrb17

1 about here?

2 MR. TROWBRIDGE: This reflects a determination  
3 by the State that its water quality standards are not going to  
4 be applied for the period of the 316 consideration; and in that  
5 sense, having made that determination, the State is certifying  
6 as to compliance.

7 DR. COLE: Where does it say the state made that  
8 determination, Mr. Trowbridge?

9 MR. TROWBRIDGE: The only sense that I can make out  
10 of the two combined letters here, the 401 certification and  
11 the determination by EPA, is that they have issued the permit  
12 based on state water quality standards.

13 DR. COLE: That is written in any of the documents  
14 we have in front of us.

15 MR. TROWBRIDGE: Beyond the references we have given  
16 you, it is not.

17 DR. CALLIHAN: Does the missing attachment to the  
18 letter dated September 20 shed any light on this point?

19 MR. TROWBRIDGE: No. Oh, December 20?

20 DR. CALLIHAN: December 20, 1974?

21 MR. TROWBRIDGE: The water quality certificate? No.  
22 Have we come up with the attachments for the members of the  
23 Board?

24 (The Board conferring.)

25 CHAIRMAN WOLF: Mr. Davis, during the recess do you

jrb18 1 intend to contact the State of South Carolina?

2 MR. DAVIS: Mr. Chairman, if the Board wishes I  
3 would be happy to.

4 CHAIRMAN WOLF: Yes, we do wish; and also EPA.

5 MR. TROWBRIDGE: Excuse me, I didn't hear that  
6 last exchange?

7 CHAIRMAN WOLF: I was asking -- earlier Dr. Cole  
8 had said that the Board was interested in hearing from the  
9 State.

10 MR. TROWBRIDGE: Right.

11 CHAIRMAN WOLF: And I was checking to see if Mr. Davis  
12 understood we would appreciate it if during the recess he  
13 contacted whoever he has contact with to determine whether or  
14 not a witness could be brought here from the State; and he  
15 assured me he would make that contact.

16 I also have asked him regarding contacting EPA,  
17 the people who have dealt with this problem in EPA, to deter-  
18 mine whether or not we could hear from them during the course  
19 of this week.

20 MR. DAVIS: We did contact them and invite them to  
21 join us. They indicated possibly they might, that is, the  
22 people from EPA. And we will recontact them and invite them  
23 here.

24 CHAIRMAN WOLF: Thank you.

END TAKE 24

1

25

1 MR. TROWBRIDGE: Would you like us to supply  
2 copies of that attachment?

3 CHAIRMAN WOLF: Yes, just to complete the record  
4 on that, please.

5 The Board is going to take a short break at this  
6 time to discuss the discussion that the parties have had.

7 MR. WHISENHUNT: Excuse me. Mr. Chairman, before  
8 you recess, may I add to this point about the EPA and the  
9 State? Unless there are witnesses here from the EPA and the  
10 State, I'm going to object to the introduction of this  
11 evidence on the grounds that it's hearsay, being put in by  
12 a witness who has no actual knowledge of it. And I want, in  
13 connection therewith, to say that any statement or recap of  
14 his proposed testimony -- Mr. Sells says that even though I  
15 have been admitted as an intervening party in the matter  
16 before the EPA -- and he was correct, because he gave the  
17 date -- that EPA and Carolina Power & Light personnel had a  
18 meeting in June to talk over some issues and what they're  
19 going to do about it, and I never have been notified of it.  
20 The first notice that they were going to consider a permit,  
21 the EPA and the State jointly, was published in a newspaper  
22 sometime in November. Immediately thereafter I wrote to them  
23 for the necessary information to intervene, and when I had  
24 gotten it I moved to intervene. That was filed in January.  
25 It was April before they ruled that they were going to permit

1 me. And then they're having hearings or discussions and  
2 conferences in June, to which I'm not invited. And yet Mr.  
3 Trowbridge in his response when I moved for additional time,  
4 raised a question that an ex parte communication -- because  
5 I wrote to Your Honor and asked for information as to whether  
6 I could get subpoenas, where from, and could I get them in  
7 blank.

8 And yet they're holding meetings and hearings in  
9 which I'm a party without me being present. And they're  
10 attempting to put in here some rulings or decisions with no  
11 basis whatsoever to cloud up this record. And I object to  
12 it, unless they produce the witnesses.

13 CHAIRMAN WOLF: Your objection is noted, and we  
14 hope to have the necessary witnesses here.

15 MR. WHISENHUNT: Thank you.

16 CHAIRMAN WOLF: Before we take the break, the  
17 television station has asked permission to take a few pictures.  
18 If everyone will remain seated for a minute or two, he can  
19 perform his job.

20 MR. DAVIS: Mr. Chairman, I would like to point out  
21 that we have copies of our Final Environmental Statement  
22 prepared by the Staff, and also copies of our testimony, that's  
23 available for the public in the back of the auditorium. So  
24 if anyone is interested in reading what we've done, they are  
25 perfectly welcome to go back and pick up copies and take them

1 home, if they desire.

2 CHAIRMAN WOLF: Very well.

3 During the course of this break, Mr. Watson, the  
4 Clerk for the Board, will take the names of any limited  
5 appearances people who wish to state their position to the  
6 Board, and he will also receive any written statements, if  
7 there are such.

8 Mr. Watson, would you stand up so that everyone  
9 will recognize you?

10 (Mr. Watson standing.)

11 CHAIRMAN WOLF: Thank you.

12 (Recess.)

13 CHAIRMAN WOLF: Mr. Davis, do you have any report  
14 to make?

15 MR. DAVIS: Yes, Mr. Chairman.

16 Mr. Bajwa was successful in contacting the  
17 Environmental Protection Agency regional office in Atlanta.  
18 After talking with them, they are going to try to secure the  
19 services of their attorney, Mr. Wilcox, who is familiar with  
20 this case. He is presently on military leave, and there will  
21 be some difficulty in contacting him.

22 However, they are going to try to get either him  
23 or furnish someone in his place.

24 Concerning the State --

25 CHAIRMAN WOLF: Well, wait. At what time --

1 MR. DAVIS: We told them that the State witness  
2 was going to be here on Wednesday at around two o'clock. We  
3 asked that they try to meet that deadline if possible. The  
4 possibility does exist, because of the uncertainty of contacting  
5 Mr. Wilcox, who is on active duty with the military right  
6 now, and sort of springing him from that situation -- there is  
7 some uncertainty as to when he will be able to arrive, and it  
8 may be Thursday before an EPA representative might be able to  
9 get here, perhaps Thursday morning.

10 We will be in contact with EPA and will keep you  
11 advised of the continuing saga of witness production.

12 The Licensee did talk to the State.

13 MR. TROWBRIDGE: A representative of the State will  
14 be here at 2:30 tomorrow afternoon.

15 CHAIRMAN WOLF: Thank you.

16 Dr. Callihan has some questions.

17 DR. CALLIHAN: I'd like to address this inquiry  
18 to Staff Counsel, and obviously invite participation by any  
19 others in the discussion.

20 The question also concerns the Environmental  
21 Protection Agency, and it might be appropriate to withhold  
22 conclusion of the discussion until a representative of EPA  
23 appears, if and when he does appear.

24 There's been a considerable number of remarks, even  
25 this morning, about EPA versus NRC with respect to this



proceeding, and I would like to have -- really for clarification -- a rather concise summary of the jurisdictional division between EPA and NRC on matters which I will define generally as non-radiological emissions, and in particular on matters of water temperature, and so forth, in Lake Robinson.

Who has the authority, who has the responsibility, to make these decisions, finally? It's a very simple question, I think, and for a summary to appear at one spot on the record I think would be helpful.

MR. DAVIS: I think we have to divide the question into two areas. What is the basis of our jurisdiction? Is it NEPA or is it something that falls under the Federal Water Pollution Control Act? If it falls under NEPA, we have the duty to assess the environmental impact of the operation of this plant, both its continued operation under Section B of Part D, and also the stretch application. As to whether or not, as to the jurisdiction over the thermal conditions, effluents, chemicals and the like, I refer you to Section 511 of the Federal Water Pollution Control Act, and we had been discussing Section 401 certification; paragraph (a) of that Act says that the NEPA, the National Environmental Policy Act of 1969 shall not be deemed to authorize any federal agency to review the adequacy of any certification under Section 401 of this Act. And I understand that the thrust

1 of your questions were: Was this an actual 401 certification?  
2 And perhaps the State can shed some light on that.

3 Our position is that a 401 certification is binding  
4 in that we look at the certificate not so much for the truth  
5 of the matters contained therein -- which Mr. Whisenhunt  
6 objected to in his introduction because it's hearsay -- I  
7 don't think we're interested here today in the truth of  
8 the matters asserted therein; we're interested in, I believe,  
9 the fact that a 401 certificate has been issued. And if it  
10 appears to be a 401 certificate, it is our position that  
11 Section 511 does not allow us to inquire behind the document.  
12 Perhaps we'd like to, but the Congressional intent seems  
13 clear to us to prohibit that.

14 Section B of that section says that nothing in  
15 the Environmental Policy Act of 1969 shall authorize any  
16 such agency to impose as a condition precedent to the issuance  
17 of any licensing permit any effluent limitations other than  
18 any such limitations that are pursuant to this Act. And that  
19 section, we believe, stands for the proposition that we  
20 should not set different limitations from those imposed by  
21 the EPA.

22 All of these doctrines are set out in the Interim  
23 Policy Statement in implementation of the Federal Water  
24 Pollution Control Act amendments of 1972. So, basically, the  
25 thrust of the Federal Water Pollution Control Act, we believe,

1 severely limits our jurisdiction over thermal effluents when  
2 the Environmental Protection Agency and the State have made  
3 these various certifications, and have either decided to  
4 set thermal limitations, chemical limitations, or in the  
5 absence of setting those limitations, have declined to do  
6 so; in other words, have looked the situation over and  
7 decided for various reasons, perhaps a 316(a) exemption,  
8 perhaps for technological reasons, have looked the situation  
9 over, assessed it, and decided not to put a limitation on it.

10 That is basically our position.

11 DR. CALLIHAN: Perhaps you can address this  
12 general question: Does this Board have the authority, in  
13 your opinion, under the existing statutes, to determine that  
14 the thermal discharges from the Robinson plant are within the  
15 bounds established by the Federal Government -- just to make  
16 it as broad as possible -- or does that authority rest  
17 with others?

18 MR. DAVIS: I believe that that authority, especially  
19 under 401, as far as State certification, as to compliance  
20 with State water quality standards, is left to the State and  
21 EPA. And I think that that type of approach is fraught with  
22 disaster.

23 For instance there may be a certain thermal  
24 limitation, and that thermal limitation will have a numerical  
25 value. But the question arises: Where do you measure the

1 water temperature? You can measure the discharge over the  
2 dam, up the creek -- a thousand different ways, a thousand  
3 different interpretations, of this limitation. So I think  
4 it will be practically inadvisable, and I think legally it's  
5 not within the purview of this proceeding to determine  
6 compliance or non-compliance. We should determine, I believe,  
7 only that 401 has been issued, and that a 402 is issued as  
8 a condition precedent to licensing. That is, that the  
9 necessary permits have been obtained to discharge pollutants.

10 So I think we ought not to inquire into that. And  
11 as I said before, I don't believe we need to. I think we're  
12 going to have all the facts we need to make this determination  
13 of cost-benefit analysis under NEPA. You're going to have  
14 the raw data there. You're not going to need someone else's  
15 interpretation of compliance or non-compliance.

16 I think perhaps it's even a thermal -- I hate to  
17 characterize someone else's testimony -- but I think perhaps  
18 there won't be any great deal of disagreement as to the  
19 actual thermal conditions of the lake. So legally I don't  
20 think it's permissible, and practically, I don't think it's  
21 necessary.

22 DR. CALLIHAN: There are obviously at least two  
23 aspects to the question which I raised. One is establishment  
24 of limits -- standards, if you wish; and second, establishing  
25 whether the utility complies with those standards.

1           Now, have we understood you to say that both the  
2 establishment of maximum discharge temperatures -- limits, if  
3 you please -- and the establishment of compliance with those  
4 limits are within the province of EPA?

5           MR. DAVIS: Yes, sir.

6           DR. CALLIHAN: And if there was evidence that a  
7 whole variety of permits has been issued, that that's the  
8 position that this Board should follow? Do we understand  
9 that to be your statement?

10          MR. DAVIS: Yes. That we let the documents  
11 realize their legal significance, and that -- and turn to  
12 the actual data, rather than try to assess whether or not  
13 there is compliance, and leave to EPA, who is given the  
14 jurisdiction, to set effluent standards -- thermal standards --  
15 leave that to them, in another forum.

16          DR. COLE: Mr. Davis, you mentioned an Interim  
17 Policy Statement earlier. To what statement were you  
18 referring?

19          MR. DAVIS: This is the Interim Policy Statement  
20 which was worked out between the Environmental Protection  
21 Agency and the then Atomic Energy Commission, and this is --  
22 it may not be too clear in spots, but this is the definitive  
23 word on the dividing of jurisdiction, and further refinement  
24 of duties since the passage of the Federal Water Pollution  
25 Control Act.

1 DR. COLE: What was the date of that?

2 MR. DAVIS: January 29, 1973.

3 DR. COLE: Is there a modification of that being  
4 proposed?

5 MR. DAVIS: Yes, there is.

6 DR. COLE: What is the status of that?

7 MR. DAVIS: There is a modification being proposed,  
8 and I don't know the exact status of it, when it will be  
9 promulgated.

10 DR. COLE: I'm referring to the proposed second  
11 amendment of certain EPA responsibilities, dated the first day  
12 of November, 1974 -- I guess that's the date.

13 MR. DAVIS: It's still in the process of being  
14 worked out. It hasn't been promulgated. I think we could  
15 state that.

16 DR. COLE: Are any of the policies that are  
17 proposed in that operational?

18 MR. DAVIS: No, they are not; not at this time.  
19 To the best of my knowledge, it's not going to affect what  
20 I've said here today.

21 DR. COLE: Thank you.

22 DR. CALLIHAN: Thank you very much. Mr. Trowbridge,  
23 would you like to address the point?

24 MR. TROWBRIDGE: I think we would, in general,  
25 agree with all of Mr. Davis' statements. I did, in my letter

1 of August 5 to the Board, put in a section on the authority  
2 over water quality, and it deals primarily with the first  
3 half of your question, if you like; the setting of standards  
4 and authority to consider for alternate limitations; in this  
5 case, the cooling system. However, it does have in it the  
6 citations, both to 511 of the Federal Water Pollution Control  
7 Act and to the Interim Policy Statement, that bear on the  
8 second half of your question -- the determination of  
9 compliance, who determines. And I think both 511 (c) 2, and  
10 the section cited in my letter of the Interim Policy Statement,  
11 both clearly set out that the matter of compliance is  
12 determined by other agencies, either the State or EPA or  
13 both, and that determination is conclusive and binding on  
14 NRC.

15 I would just like to agree in that respect with  
16 Mr. Davis. If I may assume my January 5 letter finds its  
17 way to the record of this proceeding, I don't care to  
18 elaborate further in answer to your question.

19 CHAIRMAN WOLF: Are you referring to your August  
20 5 letter?

21 MR. TROWBRIDGE: Yes, August 5 letter.

22 DR. CALLIHAN: Thank you very much.

23 CHAIRMAN WOLF: Do you want to make an offer of  
24 that letter?

25 MR. TROWBRIDGE: If I may, I would assume, like

1 most pleadings, it's distributed to all parties and would  
2 be normally a part of the record. But let me ask for  
3 confirmation of that.

4 CHAIRMAN WOLF: We're still in the prehearing  
5 conference stage, more or less. We'll bring it up when we  
6 open the hearing, and we'll list it and accept it if there's  
7 no objection.

8 Mr. Whisenhunt?

9 MR. WHISENHUNT: Yes. Dr. Callihan, I took your  
10 look to say, "Do I have any questions," and frankly, I do,  
11 in that if I understand Mr. Davis' statement correctly, he  
12 is saying as long as there is a permit that has been joined  
13 in by the EPA and the State, that any evidence and information  
14 on thermal is of no significance to this Board. But then  
15 he goes on to say that we turn to the raw material, and as a  
16 result we can get the cost-benefit analysis.

17 I don't know what raw material we're talking about.  
18 The primary issues that have been joined here, or have been  
19 until this question of jurisdiction arose, is the thermal  
20 effects on the waters of Lake Robinson and Black Creek as it  
21 affects human beings and wildlife. And if we're going to  
22 dispense with what the thermal effects are, and say that this  
23 Board has no jurisdiction whatsoever concerning the thermal  
24 effects, I don't know what raw materials we're going to deal  
25 with, in that everything that I've seen that was submitted to



1 me as proposed testimony by either Carolina Power & Light  
2 Company or by the Staff has dealt with thermal effects and  
3 the effects on the aquatic life, including some animals and  
4 all. And there's only one testimony that was ever submitted  
5 to me that I recall -- and that came from the Staff -- as to  
6 the radiological -- and of course I have no knowledge or  
7 concern in that. I attempted to read what the gentleman  
8 said, but what I'm saying is I don't know what raw material  
9 is going to help a cost analysis if it's not the question of  
10 thermal, if we determine whether it's a cooling tower or  
11 some means to be suggested, utilized or compared.

12 MR. DAVIS: That was the data to which I referred;  
13 when I said we would turn to the raw data, I meant we would  
14 turn to our witnesses who would be able to testify and shed  
15 some light as to the actual conditions, thermal conditions,  
16 and recreational value, and other aspects that the operation of  
17 Robinson 2 plant would have on Lake Robinson. So that's  
18 what I meant by data.

19 I think we'll have adequate witnesses here. Mr.  
20 Whisenhunt has indicated that he has concerned citizens who  
21 are going to testify. We have Dr. Marmer who will testify,  
22 Staff evidence on thermal computations. We also have evidence  
23 in the thermal area from the Licensee.

24 So I think that there should be adequate information  
25 for the edification of the Board as to the thermal effects

1 on Lake Robinson.

2 CHAIRMAN WOLF: Well, assume that the Board had  
3 that evidence before it. Then, on the basis of your conception  
4 as to the jurisdiction of EPA, and this Board, what can the  
5 Board do with it? That's Mr. Whisenhunt's question, I think.

6 MR. DAVIS: Yes, sir. I think that what the  
7 Board can do is to make a cost-benefit analysis under NEPA,  
8 and that's where the Board's jurisdiction lies, as to whether  
9 or not this plant should be continued -- should continue to  
10 operate, should be a Section B NEPA determination.

11 A second determination would be the determination  
12 of whether or not the environmental impact of operation of  
13 the plant under the stretch power level, 2300 megawatts  
14 thermal, is environmentally sound.

15 CHAIRMAN WOLF: Well, assuming we had this cost-  
16 benefit analysis, upon whom is it binding?

17 MR. DAVIS: Well, it's binding on the Director of  
18 Nuclear Regulation, and it would not have any collateral  
19 effect on EPA's determination, I believe, of thermal  
20 effluents and the possible need for exemption from State  
21 water quality standards or the requirement of offstream  
22 cooling.

23 DR. COLE: So, you're saying we can take away  
24 their license or modify their license, or not give them a  
25 license; but we can't change the thermal discharge standards?

1 MR. DAVIS: I'm afraid that's it.

2 CHAIRMAN WOLF: What is your position, Mr.  
3 Trowbridge?

4 MR. TROWBRIDGE: That is our position. The  
5 Federal Water Pollution Control Act was enacted for the very  
6 purpose of putting in one agency, EPA, the federal control  
7 over effluent limitations. And this, as cited again in  
8 my August 8 letter, makes it very clear that it was the  
9 intention of Congress to avoid duplication between two  
10 agencies in this area. Once there was a period of time,  
11 after the enactment of the Federal Water Pollution Control  
12 Act and until the issuance of the NPDES permit, where the  
13 Federal Water Pollution Control Act was not functioning  
14 because it hadn't been implemented by a permit. But once it  
15 was implemented by a permit, by permits, that settles it.

16 I agree with Mr. Davis, that this Board's role  
17 at this point is to take the effluent limitation on once-  
18 through cooling in accordance with the discharge permit that  
19 we have from EPA, and now decide what the environmental  
20 impact of that plant, operating in accordance with the NPDES  
21 permit, is. It should judge, it should measure that impact,  
22 quantify it to the extent possible, and this quantification  
23 would then be controlling on the Director of Nuclear  
24 Regulation in making any further determination.

25 CHAIRMAN WOLF: Do you have something to add?

1 MR. SCINTO: Excuse me. I have some background  
2 that may be helpful to the Board on how this developed.

3 My name is Joseph Scinto, with the Regulatory  
4 Staff. I'd like to put in my appearance at this point, if  
5 I may.

6 CHAIRMAN WOLF: It's already been done, I think,  
7 by your associate.

8 MR. SCINTO: Thank you.

9 I think a little background may be helpful with  
10 respect to what the Board's status is, the Commission's  
11 status, with respect to the interrelationship --

12 CHAIRMAN WOLF: Do you mind speaking up? The  
13 air conditioning noise is --

14 MR. SCINTO: Sorry. I think a little background  
15 may be helpful to determine the Board's and the Commission's  
16 status with respect to the interrelationship between the  
17 NEPA requirements and those of the FWPCA.

18 After the Calvert Cliffs decision came out and  
19 the Commission started its NEPA review process it was rather  
20 clear that we had responsibility -- the Commission and the  
21 Federal licensing agencies had the responsibility to  
22 determine the environmental impact associated with a permit,  
23 and to look for such alternatives as would reduce adverse  
24 environmental impacts and were warranted on the basis of  
25 cost-benefit considerations. And that we did.

1                   And we were enjoined by the Calvert Cliffs  
2 decision to give due regard for State requirements, such as  
3 water quality standards.

4                   And that was the status under NEPA, and I believe  
5 that's the proper status under NEPA before it was affected  
6 by the FWPCA. This agency had the overall responsibility  
7 to determine from the basis of environmental considerations  
8 associated with a particular project, various alternatives  
9 that could be employed, and the overall question of whether  
10 the proposed action, the action which is before the Board,  
11 the action which is before the Commission, under that  
12 proposed action, was warranted.

13                   In the case of a construction permit proceeding,  
14 the action before the Board is whether the issuance of a  
15 construction permit is warranted. In the case of an  
16 operating license proceeding, the issue before the Commission  
17 as a whole is whether the issuance of an operating license  
18 is warranted, and if so under what conditions.

19                   The FWPCA was promulgated and there was some  
20 concern about the overlapping jurisdiction of agencies with  
21 respect to considerations associated with respect to water  
22 impacts -- impacts on the water requirements. Section 511(c)  
23 was promulgated, and I believe that probably the soundest  
24 analysis of the proper application of 511(c) is in fact the  
25 Commission's Interim Policy Statement.

1           The Commission's Interim Policy Statement requires  
2   that:

3           (1) there be a determination of compliance with  
4   the applicable requirements in accordance with the FWPCA.  
5   The FWPCA 511(c) prohibits us from authorizing the discharge  
6   which is different from -- which the statute I believe says  
7   "other than" -- a limitation established under the FWPCA.

8           The Interim Policy Statement provides that we will  
9   determine whether the discharges associated with the facility,  
10   whether there is compliance with the limitations associated  
11   with the facility.

12           Now, that determination is not an independent  
13   determination in the event that it has been authoritatively  
14   determined under the FWPCA. That is Section 5(c) of the  
15   Interim Policy Statement.

16           If there has not been an authoritative determination  
17   under the FWPCA, then it is this Commission's responsibility  
18   to ensure that there is compliance with the applicable  
19   standard, because no determination has been made under the  
20   FWPCA and we're still enjoined not to authorize limitations  
21   different than those established under the FWPCA.

22           For a period of time prior to the promulgation  
23   of effluent limitations by the Environmental Protection  
24   Administration under Section 301 of the Act, there was no  
25   authoritative determinations of compliance with State

1 standards. Traditional State certification was a negative --  
2 so-called negative certification. That was a certification  
3 under Section 401 of the Act, which indicated that there were  
4 no applicable standards.

5 The FWPCA itself provides that such a certification,  
6 certification in such language, is not a certification for  
7 the purposes of 501(c). It is not an authoritative determin-  
8 ation of compliance with applicable standards.

9 Under those circumstances, when those are the  
10 types of certifications we will get, it was the Commission's  
11 responsibility to determine whether or not the facility  
12 would comply with the applicable standard. And that  
13 required determination of what the applicable standard was,  
14 and determination of whether it would comply.

15 And the Commission's Interim Policy Statement  
16 indicates that if there was an interpretation that it would  
17 not comply, not to license it in the absence of appropriate  
18 limitations. A basis assessment has always been, since the  
19 promulgation of the FWPCA, has been compliance with the  
20 requirements of the FWPCA, with standards established under  
21 the FWPCA.

22 Since the FWPCA was promulgated, we have not --  
23 we have been enjoined from establishing our own limitations  
24 on thermal discharge. There have been various cases in  
25 which, when we went through the standards, we found that

1 there wasn't an applicable standard. In the event that there  
2 wasn't an applicable standard, then we were not -- we lost  
3 no NEPA jurisdiction, if there was not an applicable standard.

4 DR. COLE: Would you say that again?

5 MR. SCINTO: No NEPA, no jurisdiction under NEPA.  
6 We used the FWPCA limitation on our jurisdiction. It's a  
7 limitation on jurisdiction. We shall not be deemed authorized  
8 to establish -- if there was no limitation, then that was no  
9 limitation under our NEPA jurisdiction. So, even after the  
10 FWPCA was passed, there may have been cases in which we had  
11 determined that there was no applicable standard. There  
12 just wasn't one. So we continued with our NEPA jurisdiction  
13 to impose such limits as were appropriate to provide adequate  
14 protection to the environment.

15 But in those cases in which there was an applicable  
16 standard, the FWPCA enjoins us from establishing a different  
17 one. We must take that standard. They are authorized to  
18 discharge in accordance with those standards.

19 We did have, as I said, in a case where prior to  
20 the effluent limitation established under 301 -- mostly in  
21 those cases there was no authoritative determination of  
22 compliance, so we did the determination of compliance.

23 Now, the EPA program is into pretty well full  
24 swing. They have established limitations under Section 301  
25 of the FWPCA. They have commenced their NPDES permit program.



1 The limitations so established under Section 301, the  
2 limitations established in the NPDES permits, are now all --  
3 both -- limitations established under the FWPCA, and I  
4 believe that you will find that they are so defined in  
5 Section 2 of the Commission's Interim Policy Statement. Those  
6 now are the limitations established under the FWPCA to which  
7 we may not differ. Those now establish the limits which are  
8 applicable to this plant. We may not impose different  
9 limits.

10 The question of compliance, now, who determines  
11 whether they comply, whether the proposed plant would comply  
12 with the proposed limit, is now also governed by the Interim  
13 Policy Statement, which indicates that when there has been  
14 an authoritative determination of compliance under the FWPCA  
15 we will not independently so determine. And I believe that  
16 that is Section 5(c). And both Section 401 and 402 are  
17 listed as such authoritative determinations of compliance.

18 The only event of Section 401 which is not  
19 an authoritative determination of compliance is in fact a  
20 negative certification, a certification in the form of  
21 "there are no standards." I don't know how one could get  
22 such a determination anymore, in view of the fact of the  
23 national promulgation. They once could get it if a State  
24 waived certification under 401, and there were no NPDES permit,  
25 then a determination of compliance would be ours. But that

1 has not occurred.

2 We have a document which appears to be a 401  
3 certification, a document which appears to be a 402 certifica-  
4 tion, which Mr. Whisenhunt contested the authenticity of,  
5 which is, of course, the purpose of this proceeding. If his  
6 assertion is that they are not in fact such documents, that's  
7 a legal issue for this Board to determine.

8 But if those are 401 determinations, we may not --  
9 in the words of the statute -- we may not review . . .

10 "...nothing in the NEPA shall be deemed to  
11 authorize any Federal agency to review...the adequacy  
12 of any certification under Section 401 of this Act."

13 So we may not go behind the certificate if it is  
14 in fact a 401 certificate. If it is an authentic 401 certif-  
15 icate we may not go behind it.

16 This facility is authorized to discharge at certain  
17 levels. We may not inquire into that. But those discharges,  
18 at those levels, may have or will have an impact on the  
19 receiving body of water. It will have an environmental impact,  
20 beneficial, adverse. That's a factual question which will  
21 have to be determined on the record from the facts.

22 If the determination is that the impact -- well,  
23 no matter what the impact -- but if the determination, for  
24 example, is that the impact were adverse, then it is for this  
25 agency to determine whether that adverse impact is so severe

1 that the proposed action is not warranted, we should not  
2 authorize the operation of this facility. And it may be the  
3 evidence will demonstrate they are that severe. We don't  
4 believe so, but it may be that the evidence demonstrates they  
5 are so severe that you should not authorize the operation of  
6 the facility, and that will be that.

7 Another area of inquiry is that the impacts may  
8 not be that severe, but they may be severe enough to warrant  
9 an alternative treatment, in this case at least with respect  
10 to the contested issue; that is, impact of thermal discharges  
11 on the recreational characteristics of the lake, or the  
12 biological characteristics of the lake.

13 The alternatives -- we see no alternative which  
14 is different than -- or a stricter alternative. The only  
15 alternatives will be alternatives in terms of a lower thermal  
16 discharge limit, or physical alternatives which are for the  
17 purpose of lowering the discharge limits.

18 But those are alternatives, those are effluent  
19 limitations, for the purpose of establishing an effluent  
20 discharge limitation different than a limitation established  
21 under the FWPCA, and we have no such jurisdiction. We have  
22 no jurisdiction to impose an alternative which is a different  
23 effluent limitation, or is in effect the same effluent  
24 limitation for the purpose. We have no such authority.

25 We do have the authority to determine that a

1 license should not be issued.

2 DR. COLE: What about 316(a) exemptions, Mr.  
3 Scinto?

4 MR. SCINTO: 316(a) exemptions are a vital element.  
5 They are a mechanism for getting a different standard.  
6 However, until they are acted upon they are not operative.  
7 They're operative with respect to certain EPA procedural  
8 steps with respect to 401 certifications, but until the  
9 316 application is acted upon, the applicable limitations are  
10 those -- well, in this case they are those set forth in the  
11 NPDES permit, and the underlying State water quality standards.

12 DR. COLE: Okay. So that the environmental impact  
13 of the discharge that we are to evaluate in this hearing  
14 would be the impact associated with those discharges that  
15 would be in accordance with the present State standards?

16 MR. SCINTO: I think so.

17 DR. COLE: Do we have --

18 MR. SCINTO: And permit. There are two sets of  
19 applicable limitations. The permit is somewhat limited in  
20 its application, but it is an operative permit.

21 DR. COLE: Yes. If at some later time those  
22 standards are changed to permit a different discharge, 316(a)  
23 exemption is granted, for example, they are then permitted  
24 to discharge something different than what the previous  
25 State standards were, that would be a different kind of

1 environmental evaluation, wouldn't it?

2 MR. SCINTO: I believe so. And it would probably  
3 entail a modification or amendment to the license, or to  
4 some of the limitations set forth in the license, and an  
5 assessment by the applicant of the impact. And if the impact  
6 were significant or severe, a further environmental review  
7 by the Staff.

8 DR. COLE: Maybe I'm getting ahead of myself, but  
9 all the information that has been presented in proposed  
10 testimony and in the environmental statements that I have  
11 seen are descriptive of the environmental impact of the  
12 discharge as it presently exists, which is going to be  
13 different -- it's below the State's standard, and they're  
14 going to apply for a 316(a) exemption.

15 Now, which are we to evaluate? Are we to evaluate  
16 it on the basis of the present State standard, and estimate  
17 the impact of that discharge? Or are we to evaluate it on  
18 the basis of what the present discharges are for which an  
19 exemption has been applied for?

20 MR. SCINTO: It may be that my understanding or  
21 recollection is somewhat different than yours. I believe that  
22 the appropriate review is for the application which is  
23 presently pending before us; that is, for a plant designed as  
24 it has been designed. The environmental impact analysis, I  
25 hope, has been at the level of the standards, I think, that is

1 the requirement for our review. I think the fact is that it's  
2 at the level of the standards. I don't think that it is  
3 substantially below the level of the standards.

4 DR. COLE: Well, then, why would an exemption be  
5 required, a 316(a) exemption be required?

6 MR. SCINTO: I'm not quite sure. I think the  
7 applicant might wish to respond to exactly what the nature  
8 of his request has been. It may be a request for that, or it  
9 may be a request for a variance from the offstream cooling  
10 requirement, which would be applicable to this plant in 1981 --  
11 I believe it would be applicable in 1981. I'm not sure. But  
12 perhaps the applicant could respond to that.

13 Perhaps, indeed, there is a deviation from the  
14 State's standards, and the applicant -- perhaps the status of  
15 the present NPDES permit is to authorize this deviation from  
16 those standards for a period of time as a scheduled compliance.  
17 That would then be a scheduled compliance.

18 There's also a limitation established pursuant to  
19 the FWPCA. It's also an applicable limitation.

20 I think it's necessary to establish that structure.  
21 And I think it would be appropriate to find out exactly what  
22 the nature of the request for variance has been, what  
23 standard does the applicant not feel that he meets.

TAKE 4  
JRB:jrb1

1 DR. COLE: The reason why I asked the question  
2 earlier about the proposed second amendment, I thought it  
3 contained in it some inference or reference to modus operandi  
4 for handling the 316(a) exemption?

5 MR. SCINTO: I don't recall specifically. I  
6 believe there is some discussion. I do think that in the  
7 circumstances of the case that the Board in fact has an  
8 application for a plant -- nobody else has superseding authority  
9 to determine whether this plant should be authorized.  
10 There are modifications that may very well be coming along;  
11 maybe it is necessary; maybe it is appropriate for the Board  
12 to identify specifically the basis on which its determination  
13 is made so that in the future if any change of a representation  
14 which the Board finds would be a critical element in its  
15 assessment, an environmental impact associated with a change,  
16 would clearly be triggered as requiring further modification  
17 by the Applicant, or an amendment of the license.

18 Perhaps it is appropriate to find a limitation in  
19 specification of some sort which reflects critical components  
20 of the Board's determination, that authorization of this plant  
21 is warranted -- if the Board so determines. If the Board  
22 determines authorization of the plant is not warranted, maybe  
23 that is some indication of what circumstances came out from  
24 someone else's jurisdiction.

25 I do not think the record at the end of this

jrb 2

1 proceeding will warrant any other types of concerns. I think  
2 the record in this proceeding will be fairly straightforward,  
3 and the Board will find that the record that will be established  
4 will clearly indicate that the adverse impacts, if any,  
5 are substantially outweighed by the benefits to be derived from  
6 the facility.

7 And I do not think there will be any evidence that  
8 will indicate a potential range of modifications which would  
9 in any way affect that judgment.

10 CHAIRMAN WOLF: Mr. Whisenhunt, do you have any  
11 comments at this time?

12 MR. WHISENHUNT: Yes, sir, I have this comment:

13 I listened to my friend say if there is an  
14 authoritative determination, and if this permit is a valid  
15 one, then no one can look behind it.

16 And we look at this permit -- or at least what I  
17 have seen of it -- there is not a single limitation in there.  
18 Everywhere where it deals with any temperature limitation  
19 whatsoever, they got the "N/A", which I take to mean  
20 "not applicable".

21 And where has there been any authoritative determina-  
22 tion of any limitations on the use of that plant and what it  
23 can dump in there? And they don't need to apply to you, I  
24 assume, any further for a 2300-license, because I assume they  
25 can heat that lake or that impoundment until it isn't fit



jrb 3

1 for anything, until after June the 30th, 1976, in that they  
2 have got an open license to do what they please under what he  
3 calls a 401 permit, or a 402 permit, neither one of them which  
4 mean a whole lot to me, particularly when there is no limitation  
5 whatsoever.

6 And this agency is given the right to operate for  
7 another 18 months from when they made application, although  
8 supposedly they should have given this information to the  
9 Atomic Energy Commission before they even started the construc-  
10 tion. And it should have been supplemented since they put the  
11 plant in operation.

12 We submit if this is a permit granted by EPA or  
13 granted or joined in by the State of South Carolina, that the  
14 personnel of both agencies have not done their job; and there  
15 is no evidence of any testimony taken, nor evidence of  
16 what they were dealing with, no evidence of what the effects  
17 were or had already been when they give them an open license  
18 to do what the please, and put no limitation whatsoever on  
19 that.

20 And if I understand my friend further, the only  
21 relief I can get afrom this Board is to either ask you to shut  
22 the plant down -- well, I didn't start into this matter with  
23 any intention of trying to shut down any plant. All I was  
24 asking was to restore the heat in the lake to such an extent  
25 that people could partially enjoy it. They had enjoyed it

jrb 4 1 for a period of years: Carolina Power and Light Company  
2 sold lots up there at great profit to itself advising everybody,  
3 "Why we are going to give you access to the lake for swimming,  
4 fishing, and all this," and then they come along and they  
5 admit now 108-1/2 degrees coming out of that discharge canal;  
6 and they want to stretch it and raise it to 2300 MWT's, --  
7 and I don't know the technical language of this -- and they  
8 come along and say, "That's not going to raise it but one  
9 degree, and the human body can't tell the temperature of  
10 one degree".

11 Well, I submit, Mr. Chairman, and members of this  
12 Board: human bodies have already told the difference in the  
13 degrees; and when it gets to the heat that it is already at,  
14 before they stretch it, it is not fit for the human body to  
15 get into. You get in and you are uncomfortable, and you got to  
16 go take a shower to cool off; and you can't stand the water.  
17 The perspiration, as you are out in the water, is pouring out  
18 of that portion of the body that is above water. And they say  
19 that this is an authoritative determination!

20 I move as the Intervenor, that nobody has ever  
21 consulted with me. They consulted among themselves, and they  
22 set some kind of standards, and then they come in here and  
23 say, "Oh, but you have had this thing -- your Board was  
24 appointed back in 1973. You raised all these questions, but  
25 now we have circumvented you, because we got an open license

jrb 5

1 to do what we please with that lake; and you have no right to  
2 do anything unless you come along and say, "Close it down."

3 And they know at this period of time, the energy  
4 shortage and all, it would certainly take some terrific  
5 adverse effects before this Board or any reasonable body would  
6 recommend closing down something that Carolina Power and Light  
7 says produces 16 percent of our power.

8 The mere fact that they have driven the fish out  
9 of there, and the humans out of there, and all -- and they  
10 now can come along -- I submit that if this Board does not have  
11 the authority to grant some relief there is not too much  
12 percentage in me sitting here and devoting my time and pulling  
13 my witnesses up here; and this is why I asked the Board, and  
14 I would ask that you recess and consider if you do have some  
15 authority. Then I would like to go forward.

16 But like I say, I don't have the time to sit up  
17 here and just waste my breath and your time, gentlemen, and  
18 presumably, I am going to have to do the same thing with  
19 EPA, although I don't think it's going to do much good where  
20 they're holding secret hearings already.

21 But this is my position. And I would appreciate  
22 the Board considering recessing now for lunch and telling me  
23 after lunch whether there is any need for me to take up any  
24 more of your time, my time, and the time of these witnesses.

25 CHAIRMAN WOLF: We appreciate your position, and

jrb 6

1 we will come to a conclusion and explain it on the record  
2 as soon as we can -- if not right after lunch, at least by  
3 tomorrow morning.

4 Mr. Scinto, did you have a comment? I would like  
5 you to comment on the question Mr. Whisenhunt has raised  
6 regarding an "open license". We look at the 402 certificate  
7 and we see as he mentioned the restrictions that might be  
8 imposed are followed by a "not applicable" indication.

9 What does that mean to you?

10 MR. SCINTO: That means it appears to me to mean  
11 that the 402 permit itself has not established a particular  
12 limitation with respect to those things that have an "N/A" on  
13 them.

14 On the other hand I do not see anything in the 402  
15 permit which in any way relieves -- that I have seen -- which  
16 relieved the application of the state water quality standards  
17 which I believe is 90 degrees. I believe that that is an  
18 applicable standard at this time. That is one of the reasons  
19 that I have a gentleman's agreement with Dr. Cole's observations,  
20 it might be good to find out what it is we are getting the  
21 variance from. But those standards are still currently  
22 applicable limitations.

23 If, indeed, they were not, Mr. Chairman, if indeed  
24 we had a situation in which there were absolutely no limitations  
25 on what the Applicant might discharge, and no limitations on

jrb 7 1 what the Applicant represented to the Board that it would  
2 discharge at, I don't see how this Board has any record upon  
3 which it could make its judgment with respect to the overall  
4 environmental impact.

5 For example, if there were free and clear, a limita-  
6 tion, for example, on something that was so toxic that  
7 unless there was something established, one might wipe out all  
8 of the -- let's propose something that would wipe out all of  
9 the biota from this point down to the rest of the State of  
10 South Carolina and everything it flows into, and that would  
11 be such a severe impact that the Board could not determine,  
12 it could not say an unauthorized and unlimited amount of dis-  
13 charge would be warranted. Unless there was some limitation,  
14 some representation by the Applicant as to exactly the scope  
15 of the operation characteristics of the plant.

16 We might very well be in a situation where if  
17 we didn't have such imbalances I am quite sure that our  
18 Environmental Impact Statement is not based on a totally  
19 unrestricted open season for the Applicant; we based it on  
20 the representations in Applicant's Environmental Report and  
21 what we understood to be characteristics to be, you know, of  
22 the applicable quantities, if indeed there were no applicable  
23 requirements then the entire analysis on which the record  
24 is based is inadequate. Then the Board would be restricted  
25 to sending us all back home again to do you an environmental

jrb 8

1 impact statement on the basis of the requirements of the  
2 regulation.

3 Now, I believe that they are all done. I believe  
4 there are limitations. I believe the evidence demonstrates  
5 that the Applicant will comply with them. I believe the  
6 assessment is not made at any level substantially below those  
7 active levels of compliance; so that you can reach a conclusion.  
8 But if not, then you don't have a record, Mr. Chairman, on  
9 which to reach your judgments.

10 CHAIRMAN WOLF: Do you think there is enough for  
11 a cost-benefit analysis that we have to make?

12 MR. SCINTO: Yes.

13 CHAIRMAN WOLF: Mr. Trowbridge, do you want to  
14 comment?

15 MR. TROWBRIDGE: I would like to point out -- I am  
16 looking at the NPDP permit; I would like to point out there  
17 are limitations in that permit when you get to the thermal  
18 question, it isn't just not applicable. It authorizes  
19 discharge on the basis of once-through cooling; thereafter  
20 it says "not applicable" on temperature rise limits. But this  
21 is a positive authorization to discharge the basic once-  
22 through cooling requirement.

23 The page number is page 3.

24 DR. COLE: Mr. Trowbridge, you are talking about  
25 page 3?

jrb9

1 MR. TROWBRIDGE: NPDF Permit.

2 DR. COLE: At the top of that page it says during  
3 the period beginning on effective date and lasting through  
4 -- there's nothing there -- it says approved by the Regional  
5 Administrator after a final determination under 316(a).

6 MR. TROWBRIDGE: That is the period we are talking  
7 about, the period of time until that 316 determination is  
8 made. And if it requires some modification, whatever  
9 compliance schedule is determined; but the period is until the  
10 resolution of the limitation, if there need be any, of the  
11 316 proceeding.

12 DR. COLE: What do they mean when they say  
13 "effective date"? -- top of page 3?

14 MR. TROWBRIDGE: Right. On the cover page, page 1,  
15 "this permit shall become effective February 18, '75."

16 DR. COLE: At the top of page 2, it talks about  
17 effluent limitations, that says, during the period beginning  
18 July 1st, 1977 for low volume waste sources?

19 MR. TROWBRIDGE: That is part of the compliance  
20 schedule. You recall under the Federal Water Pollution  
21 Control Act there are three target dates, and sometimes EPA  
22 approves some of those dates, and it sets a compliance date.

23 DR. COLE: Then what requirements would apply  
24 between now and 1977?

25 MR. TROWBRIDGE: Well, -- monitoring considerations.  
Strike that, please.

jrbl0 1

2 DR. COLE: I got the impression there weren't  
any until '77; is that correct?

3 MR. TROWBRIDGE: That is correct. We were debating  
4 a little side issue, when some of the requirements might be  
5 effective; but as far as the limitations are concerned, there  
6 are none -- these particular limitations on low volume waste  
7 sources are not in effect until '77.

8 MR. WHISENHUNT: Mr. Chairman, may I note an objection  
9 to striking a portion of his answer? I understood him to say  
10 "monetary considerations"?

11 CHAIRMAN WOLF: It was "monitoring".

12 MR. WHISENHUNT: Excuse me.

13 I would like to be heard a little further, if it  
14 is my turn?

15 CHAIRMAN WOLF: Yes, certainly.

16 MR. WHISENHUNT: Mr. Chairman, and members of the  
17 Board, Mr. Scinto has argued that the draft report as they have  
18 got it will give you substantial evidence, and there is  
19 evidence in the environmental reports of the Carolina Power and  
20 Light Company; if your Honors please, the bulk of the -- and  
21 I haven't studied it page-by-page -- but the bulk of the  
22 Draft Environmental Report and the Final Environmental Report  
23 is really no more than what CP&L submitted as its environmental  
24 report. You can follow it almost word-for-word in a large measure  
25 and degree. There are only about three areas where I have seen



jrb 11 1 the Staff disagree with what Carolina Power and Light  
2 submitted as their environmental report. And there have been  
3 a number of questions asked by the Board in all that raise  
4 questions as to the validity of some of this information that  
5 was submitted.

6 In fact, in response to some of the questions the  
7 Staff disavowed one particular table, said it was based upon  
8 what Carolina Power and Light said, and they would accept no  
9 responsibility for it.

10 The one place where they primarily disagreed with  
11 this environmental report of Carolina Power and Light Company  
12 is the heat to which the water is raised before it goes over  
13 the dam back into Black Creek, and CP&L says it never has  
14 been above 5 degrees, never been above the 90 degrees, the  
15 5 degree difference. And the Staff experts have determined --  
16 and I think it is based on calculation and not actual readings  
17 -- that at times the water is 12-1/2 degrees higher; so they  
18 are violating any standards set up by the State, and this is  
19 the only limitation I have seen that was set: it was not to  
20 be over 5 degrees difference, and not over 90 degrees.

21 So admittedly the Staff itself says they are  
22 violating these, and as has been pointed out in the questioning  
23 between Dr. Cole and Mr. Trowbridge, there is no limitation  
24 whatsoever placed on them. And according to the arguments of  
25 the Staff counsel, this Board cannot put any limitation on

jrb 12

1 them. I don't care how high they raise it; and how long after  
2 the monitoring period for any hearings that will be held, and  
3 any relief is going to be granted is -- I would say that this  
4 has not been an authoritative determination. There has been  
5 nothing done to take this away from the Board, and that this  
6 Board ought to rule that it has the power to determine whether  
7 they should reduce the thermal input into this lake, and so  
8 rule.

9 But, as I say, if the Board has been convinced by  
10 argument from Staff counsel that it does not have this authority,  
11 I want to repeat again: I did not come into this matter trying  
12 to shut down this plant. I think relief can be granted. I  
13 think relief can be granted and should have been granted long  
14 ago when CP&L started getting complaints as early, I know, as  
15 1972, in answer to interrogatories. It did not go on the full  
16 scale until '71, and even then didn't really get up to  
17 maximum until '72; and from the time they got to the maximum  
18 the complaints started. And it has been going, and Carolina  
19 Power and Light Company not only has not granted any relief  
20 or attempted to grant any relief, they have made additional  
21 attempts to reach the stretch power by one degree; they have  
22 gone -- when they couldn't succeed before this Board without  
23 a hearing, then they go to the EPA, and with no evidence  
24 whatsoever they get a blanket license.

25 And they have been required -- I don't know where --

jrb 13 1 at other plants to put in cooling towers; so this is no stranger  
2 to them that they have a problem. But they are attempting  
3 to circumvent the people that they sold lots to and they are  
4 doing it at every step, every step they turn around. When they  
5 could not come to you and get the 2300 without a hearing, then  
6 they moved to EPA to get this blanket license.

7 Now they want to say to you after you have had  
8 jurisdiction for 18 months or better -- whenever you did  
9 set up, well, it's two years now -- that you have no authority  
10 to hear the only issues which they are willing to admit that  
11 you ever had a right to hear in the first place. And that is  
12 the thermal impact. And now they say you have no jurisdiction,  
13 after 18 months.

14 And we submit that this Board -- and I mean in  
15 good conscience -- should rule. There has been no authority  
16 for determining; there has been no limitation placed on it.  
17 And I ask that you would hear this testimony and evidence and  
18 based upon what the testimony and evidence shows -- and it isn't  
19 going to be any great argument because their engineer says  
20 it heats it up to about 110 degrees in the summer; and the two  
21 experts say the upper end of that lake is going to be hot. I  
22 can tell you, it is hot.

23 But to say two years later that you gentlemen have  
24 no jurisdiction to award relief, we submit that if you don't  
25 have, this is a travesty of justice.

jrb 14 1

(The Board conferring.)

2

CHAIRMAN WOLF: Yes, Mr. Scinto?

3

4

5

6

7

8

9

10

11

12

13

CHAIRMAN WOLF: Do you want to comment now?

14

15

16

17

18

19

20

21

22

23

24

25

I think I have already spoken to the thermal issue. There is a preliminary matter which I don't care to raise before lunch, but I do want to raise it before we get into testimony.

jrb15

1 I would inquire of the Board whether they received  
2 a further document dated August 8, entitled Motion on  
3 Intervenor's Notice to Produce Document Request, filed long  
4 after the stipulated period for discovery, and outside the  
5 date set by the Board. I think the Board at least ought to  
6 obtain a copy of this, although they are on service; so they  
7 can know what we are talking about later. I have my copy which  
8 I would be glad to lend the Board.

9 DR. COLE: What is the title of this document,  
10 Mr. Trowbridge?

11 MR. TROWBRIDGE: Intervenor's Notice to --

12 CHAIRMAN WOLF: Let me interrupt to say Dr. Callihan  
13 has received a copy; we will look at it at lunchtime.

14 (The Board conferring.)

15 CHAIRMAN WOLF: Dr. Cole has one question before  
16 we adjourn for lunch.

17 We want to put it to you at this time to think about  
18 during lunch, and you may state your position when you return.  
19 By the way, we will take until 2 o'clock for lunch.

20 DR. COLE: The question is really quite simple:  
21 In view of the fact that the Board has an obligation to conduct  
22 an environmental review, and that environmental review would  
23 necessarily be on the basis of discharges that we know something  
24 about, and -- why should this proceeding be suspended until such  
25 time as we know what the water quality discharge requirements

jrb 16 1 are going to be?

2 In other words, after the 316(a) exemption has  
3 been acted upon, and we know what discharges we are dealing  
4 with, so that we might properly evaluate the impact of that?

5 I would like to have you think about that over  
6 lunch.

7 CHAIRMAN WOLF: Let's do it after lunch.

8 (Whereupon, at 12:27 p.m., Tuesday, 12 August  
9 1975, the hearing was recessed to reconvene at  
10 2 p.m., this same day at the same place.)

END TAKE

4

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

TAKE 6  
JRB:jrb1

## AFTERNOON SESSION

(2:00 p.m.)

CHAIRMAN WOLF: Just before adjourning the Board asked consideration be given of Dr. Cole's question. Does anyone wish to make a response at this time?

Mr. Trowbridge?

MR. TROWBRIDGE: As to Dr. Cole's question, whether the proceedings should be recessed awaiting the 316 information, I wish to respond on practical and then legal grounds.

First the practical considerations are that the plant is indeed operating. Intervenor has gotten environmental impact from this plant in its present operation in the immediate area of the plant. And I think he is entitled from this Board a determination as to the extent of that impact, to the extent that it may be in NRC's authority.

CHAIRMAN WOLF: We would like you to explain what action you think NRC can take.

MR. TROWBRIDGE: I think earlier this morning I said NRC has a continuing operation like this, and I think NRC has authority to deny the continued operation of the plant.

CHAIRMAN WOLF: We are limited to that?

MR. TROWBRIDGE: You are limited.

CHAIRMAN WOLF: In your view.

MR. TROWBRIDGE: I would also point out on the practical side, Applicant has application for a 30 megawatt

jrb 2 1 increase in power. That increase in power level represents  
2 about \$300,000 or \$400,000 per month in fuel cost savings to  
3 the consumers of Carolina Power and Light, and an equivalent  
4 saving in the consumption of fossil fuels; therefore, we think  
5 this application is quite old now. It should be acted upon.

6 We also would point out that the Directorate, in  
7 our view, the record of this hearing is going to support a  
8 determination by the Directorate that there are not sufficient  
9 environmental impacts as a result of the operation of this plant,  
10 and such a determination, if made by the Board, would not  
11 invalidate the results of a 316 proceeding. A 316 proceeding  
12 would result in continued operation of the plant as it is,  
13 or in some thermal limitations on the plant.

14 The Board in considering the present environmental  
15 impacts will consider the maximum environmental impact that is  
16 going to come out of this whole governmental process. It will  
17 not be faced with a situation of making a determination with  
18 any likelihood that more severe thermal impact will result  
19 from the 316.

20 On the legal side, as I mentioned, I think the  
21 question of the environmental impact is more than ripe for  
22 decision; we have a notice of hearing about two years old. And  
23 it's over a year old on the stretch side. I think the Board  
24 should proceed to determine the environmental impact on the  
25 basis of the application, water quality certificates and NPDS



jrb3

1 permits as they now exist. With respect to thermal impact, we  
2 now have a discharge permit authorizing operation. We also  
3 have determinations by the State and EPA that operation with  
4 those permits would be in compliance with the state water  
5 quality requirements.

6 I would like again to refer to the EPA letter  
7 that accompanied the discharge permit. I would like to give  
8 a little bit of explanation of that first sentence.

9 DR. CALLIHAN: Excuse me, is the letter dated  
10 January 3, 1975?

11 MR. TROWBRIDGE: Correct.

12 DR. CALLIHAN: From EPA to the licensee?

13 MR. TROWBRIDGE: Right.

14 DR. CALLIHAN: Thank you.

15 MR. TROWBRIDGE: The background of this letter is  
16 that when EPA finally adopted regulations on the thermal  
17 effects it exempted from those regulations certain plants;  
18 just as a matter of information, Unit 1, an old coal plant,  
19 was exempted as an old plant. Robinson #2 was exempted from  
20 the EPA's own cooling tower requirements by virtue of its  
21 being on its own lake.

22 This left open only the question of compliance with  
23 state water quality standards in Section 301(b)(1)(c), which  
24 includes water quality standards of the state among the  
25 limitations that go with the entire Section 301.

jrb 4

1           The State and EPA sat down and worked out between  
2   them what amounts to a schedule of compliance, that means  
3   the plant should be permitted to operate as it now operates  
4   pending the outcome of the 316. This is an obviously sensible  
5   resolution of the problem. Under the Act, when the 316 deter-  
6   mination is made, it is going to be in total.

7           As I mentioned earlier this morning under Section  
8   302(g) of the Federal Pollution Act, states may not adopt  
9   water quality standards inconsistent with the 316 determination.  
10   The sensible course of action which I think is reflected in  
11   this -- both the water quality certificate and the discharge  
12   permit and its transmittal letter -- was to hold in abeyance  
13   or to put a compliance schedule on the state water quality  
14   standards; and this means specifically the standards as they  
15   relate to the increase in temperature as water is introduced  
16   over the dam.

17           There is no question in that this plant at some point  
18   in the winter discharges water over the dam which introduces  
19   water to Black Creek that is more than 5 degrees above natural  
20   temperature. The fact is the state action and EPA action  
21   has been to put a schedule of compliance on that, and make  
22   compliance conditional on the outcome of the 316 proceeding.

23           Now, I may not have fully understood your question.

24           CHAIRMAN WOLF: Well, you have not addressed yourself  
25   to the problem, namely: what relief is present here in view

jrb5

1 of the contentions that have been issues in this case, that  
2 were raised by Mr. Whisenhunt. What can he gain from proceeding?

3 MR. TROWBRIDGE: Well, in my viewpoint on the  
4 merits -- on the merits, nothing. If he succeeds in establish-  
5 ing that the thermal impact on this lake is far more severe  
6 than characterized by NRC Staff in the Final Environmental  
7 Statement, and the Board is convinced of that, and says so in  
8 its decision in this proceeding, then the Director of Regulations  
9 has to go back and redo his homework and decide whether or  
10 not this plant should be allowed to continue to operate in the  
11 light of the Board's findings.

12 This is the limit on this hearing. It is a result,  
13 I should add, of deliberate Congressional intent to remove  
14 this question from here to EPA where there is a proceeding  
15 to which Mr. Whisenhunt is a party.

16 CHAIRMAN WOLF: Mr. Davis?

17 MR. DAVIS: Yes, Mr. Chairman.

18 As to the remedies for Mr. Whisenhunt I would agree  
19 that Mr. Whisenhunt, if he is seeking a limitation or some sort  
20 of reduction in heat aside from complete cessation of operation  
21 of Robinson #2 plant because of the Federal Water Pollution  
22 Control Act it has to be relegated to the 316 proceeding.  
23 That is why we are pursuing things with EPA, in talking to  
24 them.

25 I took the thrust of Dr. Cole's question about

jrb6

1 the 316(a) proceeding to be an inquiry as to, if the 316(a)  
2 exemption is granted, what happens to the Staff analysis?

3 Our position on that is that if the 316(a)  
4 thermal exemption is granted, it is not going to change our  
5 analysis here; and therefore, the Board should proceed with  
6 considering that analysis as a cost-benefit analysis. We have  
7 looked at the plant in the last year to a year and a half  
8 and utilized the actual figures on thermal pollution in Lake  
9 Robinson. This is what might be characterized as a worst-case  
10 method of analysis.

11 We can see nothing that, with continued operation  
12 of the plant, except for the stretch application, that would  
13 create more harmful effects. In other words, the plant as  
14 we see it, would continue to operate in much the same fashion  
15 that it has already, if the 316(a) is granted.

16 If the 316(a) is not granted, we think that a  
17 license amendment will probably be called for, perhaps to  
18 accommodate new equipment to be added to the plant, and  
19 perhaps even a reanalysis of the environmental impact of a  
20 denial of the thermal exemption.

21 DR. COLE: Well, I am still somewhat confused;  
22 maybe I won't after I hear from Mr. Whisenhunt.

23 MR. WHISENHUNT: I hate to hear you admit you're  
24 confused, because I am very definitely confused.

25 I don't remember which member of the Board, or maybe

jrb7 1 it was counsel who had asked what was the exemption requested  
2 by Carolina Power and Light. And I have never heard the  
3 answer from Mr. Trowbridge, or anyone connected with Carolina  
4 Power and Light.

5 They are now operating without any limitation  
6 whatsoever under their alleged permit. They admit in argument  
7 for the first time I've seen it -- written or oral -- that  
8 during one month they are exceeding the water standards of  
9 the state permit. And then they come along and say the  
10 Federal Government under the Environmental Protection Agency  
11 says "We're going to give you a period of time that you can  
12 operate in violation of the state law" -- and apparently the  
13 state says, "Even though you're violating the law and have  
14 been for years, we're going to stand by and wait".

15 Now, as I understood Mr. Trowbridge, he says they  
16 got all kinds of exemption from EPA for this plant because it  
17 was already in operation or something; and another plant because  
18 it was an old plant. I don't know what exemption they are  
19 looking for because it looks to me like the EPA has given  
20 them carte blanc to do anything they want to; that the state  
21 has bowed down and not done anything.

22 And I thought the purpose of these laws was to  
23 prevent pollution. They admit they polluted. They admit they've  
24 been doing it for years -- in his oral argument just now  
25 -- and he says the purpose of the EPA permit was to authorize

jrb8

1 that violation. Then they say we ought to sit here and go  
2 into all of the thermal, and hopefully this Board will let them  
3 raise the stretch, because they got nothing to control them  
4 on the EPA; and if this Board will let them stretch it, and  
5 instead of their figures -- and the figures change almost  
6 every time they make a prediction as to what the maximum  
7 temperature is going to be -- if they go to stretch and it  
8 runs to 150 degrees, there is not a thing to control it.

9 There is nothing factual which has been presented.  
10 Dr. Cole raised a question before: if this Board cannot grant  
11 the relief, why don't we suspend it, and see what 316 or  
12 somebody determines if this Board has got any right to give  
13 anybody relief.

14 This Board has been in effect, as I say, for  
15 roughly two years. It was not until August the 5th that my  
16 friend raises his question of jurisdiction, or the right  
17 to render the relief which this Intervenor has been seeking  
18 since August of 1973. So roughly, two years later for the first  
19 time he raises the question.

20 Now, my friends are more versed in this law than  
21 I am because I don't deal with it. If these cases they cite  
22 take the power away, and long ago, why didn't the Nuclear  
23 Regulatory Staff or Carolina Power and Light Company raise  
24 these questions of jurisdiction -- unless they've considered  
25 and thrashed out jurisdiction long before they put me to work?

jrb 9

1 I get ready to come here to the hearing and only a few days  
2 earlier they put in the mail something to raise the question  
3 of jurisdiction.

4 We submit that if there is no relief, or if this  
5 Board has got any doubt that it can grant relief, it ought to  
6 be suspended until we either determine what the powers of the  
7 Board are, or we go through EPA and see what limits they put on,  
8 and then come back to this Board and see if this Board can  
9 do anything.

10 They are applying for an exemption to an unlimited  
11 license already granted; and I don't understand. I am thoroughly  
12 confused as to what is going on.

13 MR. TROWBRIDGE: Mr. Chairman, let me respond  
14 very quickly to that.

15 First, his statement there are no limitations  
16 in heating the lake to 150 degrees, this is not correct.  
17 In view of the fact that the question has been raised, however,  
18 we will present testimony both on the physical limitations  
19 of the plant, and Regulatory limitations. We will cover that.  
20 But I do not want to leave it now in the record that there  
21 are no limitations of what we do to the lake.

22 Secondly, the question of why didn't we argue  
23 questions of jurisdiction earlier? I believe that Mr.  
24 Whisenhunt knows that the question of jurisdiction came out of  
25 the Federal Water Pollution Control Act; they were not effective

jrb10

1 until the permanent issue; and Mr. Whisenhunt was not as  
2 uninformed on the subject as he suggests.

3 I remind him of a letter from Staff counsel  
4 to him on February 12th, copies of which were sent to the  
5 parties, as to Section 511(c)(2), Federal Water Pollution  
6 Control Act, and the limitations it placed on the Commission's  
7 authority.

8 CHAIRMAN WOLF: Mr. Davis?

9 MR. DAVIS: I think we are getting the shoe on the  
10 wrong foot or the cart before the horse.

11 We are already discussing remedies before we have  
12 dealt with the merits.

13 CHAIRMAN WOLF: We are discussing jurisdiction

14 MR. DAVIS: Yes, sir, jurisdiction can be raised  
15 at any time.

16 I think it is appropriate to discuss it now as to  
17 what jurisdiction the Board has to effect a remedy. Usually  
18 in a court of law, you would proceed with the case, and then,  
19 after making a finding, then certain remedies would be selected.  
20 As we view it the remedy today would be a continuation or  
21 noncontinuation of the licensing or non-licensing of the  
22 original operating license and the stretch application.

23 Either way, until EPA acts, it is going to be  
24 a continued operation of the plant unless the Board decides  
25 to issue a stay. So, in effect, the Board is going to have to



jrbll 1 get into the merits of this anyway.

2 Well, if it issues a stay on the operating license,  
3 it would have to go into the merits of the cost-benefit  
4 analysis; and the Board would have to say whether the Board  
5 would continue the plant or not continue it. If it did not  
6 continue it, it would have to be on the basis that the cost-  
7 benefit analysis has proved that the environmental impact  
8 is of such great detriment it should not continue until the  
9 316(a) is decided.

10 DR. COLE: But a lot of the alternatives for  
11 cooling systems are not included in that cost-benefit analysis,  
12 and they are not precluded from consideration.

13 MR. DAVIS: Well, the Board may address the cost  
14 and feasibility of these cooling systems; but as I said before  
15 if there is going to be a denial of the 316(a) exemption,  
16 and EPA decides to require some sort of additional cooling  
17 system of them, then that is going to call for a license  
18 amendment; and perhaps a reanalysis of the impact of that  
19 particular mode of cooling that is selected.

20 But I think that we need not concern ourselves  
21 or have to guess as to what is going to happen in the future.  
22 We are concerned here today with the plant as it exists now,  
23 and as it will continue to operate for the next, I'd say  
24 18 months. I don't know exactly how long EPA would take to  
25 make their decision. I think that is what we are concerned

jrb12 1 with now; if it should happen that a 316(a) exemption is  
2 granted and it changes the operation of the plant by the  
3 issue of cooling towers, then we think that it would be  
4 reasonable for the applicant to come in and inform the  
5 Commission of what EPA's decision is and give us an analysis  
6 of how operations would be changed and we would do our own  
7 analysis of that situation.

8 So I think our analysis today should be confined  
9 to the plant as it now exists and in the future we will call  
10 for additional information.

11 (The Board conferring.)

12 CHAIRMAN WOLF: Mr. Whisenhunt?

13 MR. WHISENHUNT: Mr. Chairman, as Mr. Trowbridge  
14 says, I got a letter dated February 12. I am not in a position  
15 now to say I did or I didn't. I have got brims of materials.  
16 I have got three boxes sent to me by various people and what  
17 I have attempted to gather.

18 Now, Mr. Davis says we got the cart before the  
19 horse. We are trying to determine what remedies. Well, any  
20 litigation -- and this is litigation, advocacy -- is entitled  
21 to know what relief if any he can get to determine whether  
22 he wants to litigate.

23 Now, when this thing started out it was a question  
24 of whether I could get some thermal relief. And that was the  
25 issue raised by me; the Board admitted me without any objection

jrb 13 1 from Carolina Power and Light. The only time they started  
2 to object is when they tried to go to the stretch, and I moved  
3 to intervene then. Then they wanted to object.

4 But originally, they had no objection to me raising  
5 these issues.

6 This Board was constituted to hear these issues  
7 and determine what, if any, relief was available to me. On  
8 this basis I proceeded for roughly two years, and it is only  
9 now that they say this Board cannot grant me any relief other  
10 than shutting down the plant, which this litigant did not set  
11 out to do, and had no intentions of doing. We are not trying  
12 to create an energy shortage, or deprive CP&L and its  
13 customers of the benefits of electricity. As he says, there's  
14 16 percent of their output there.

15 But we do feel that instead of trying to stretch  
16 it they ought to be trying to reduce the heat in that lake,  
17 particularly when it took the lots, subdivided them, and sold  
18 them at a terrific profit to itself, leading people to believe  
19 that they could go into that lake and enjoy it. And then two  
20 years later come in here and say, "You got no right to grant  
21 the relief being sought."

22 The issues were joined, and they were joined --  
23 Mr. Trowbridge wasn't present, but CP&L people were present;  
24 counsel has changed for the government, but the government  
25 counsel was there. The issues were discussed here in the hearing

jrb14 1 in November of '73, put out in an order by this Board as to  
2 what issues we were going to accept, and what issues and  
3 contentions raised by me that this Board was going to consider.  
4 And today in a letter sent one week before, they say, you  
5 can't grant me any relief except and unless I want to come in  
6 here and ask you to shut down the plant.

7 And that has not been an issue in this thing from  
8 the beginning. I submit they have come down and are trying to  
9 narrow the issues, and, frankly I do not think -- now they  
10 talk about the water pollution act; I understood them to say  
11 it was passed in '72. Well, if that took over, why didn't they  
12 in '73, say you didn't have any authority to hear any of this  
13 or decide any of it?

14 Instead they came back to you and asked you to  
15 let them increase the stretch to 2300. Then when you didn't  
16 do it until they provide evidence and go to a hearing, they  
17 go and get this permit, and have had it since December the  
18 31st, or January the 3rd, or whenever they got it; and -- they  
19 say the Staff wrote me a letter? I say I don't deny I may have  
20 gotten it and I may not have; I don't think that is the issue.

21 If they had that permit in January why didn't  
22 they raise the issue and go ahead and have a preconference  
23 or prehearing and thresh this out when it had been limited at  
24 that time solely to the question of what jurisdiction and  
25 what remedies could be granted? And we would have threshed

jrb15 1 that out before the appropriate court instead of coming down  
2 here all scheduled for hearings, with notices in newspapers,  
3 witnesses on the alert for all sides, and some of the witnesses  
4 present, and then, for the first time come up and say, "Well,  
5 you can't grant him any relief unless you shut down the plant."

6 And under these circumstances we submit Dr. Cole's  
7 suggestion is the only logical one: If this Board -- that  
8 we go to the appropriate tribunal and find out what authority  
9 we've got. And if you cannot grant any relief under these  
10 circumstances, that we just wait and let the EPA rule, and  
11 then see if you can grant any relief based thereon.

12 And they talk about the stretch, well, I don't think  
13 they are entitled to come here and say "We are the only ones  
14 who can get any relief." And that is what they are now saying.  
15 "You can help us, but you can't help that fellow over there.  
16 "You either shut us down or you let us do what we please."

17 And he says there's limitations, and he talks about  
18 the physical limitations of the plant; I don't know anything  
19 about the physical limitations. But I can read, and there is  
20 no limitation in these papers which I have been furnished.  
21 And in fact they admit the State of Carolina has violated its  
22 own laws -- under whose authority I know not -- but it  
23 has violated its own laws and permitted CP&L to violate it.  
24 And as I say, this is the first time they admit orally in  
25 the argument they have been violating it: at some point in the

jrbl6

1 winter they do violate it.

2 So, in all due respect I ask this Board to give  
3 serious consideration to the suggestion of Dr. Cole.

4 (The Board conferring.)

5 CHAIRMAN WOLF: The Board is of the view that  
6 we should hear from the State and EPA, which we understand  
7 will be represented here tomorrow, before we proceed with the  
8 taking of evidence. After listening to them we would conclude  
9 whether or not this proceeding should be held in abeyance  
10 until EPA has an opportunity to treat it in a 316(a) hearing.

11 Does anyone wish to comment on that position?

12 Mr. Scinto?

13 MR. SCINTO: With respect to the first, hearing  
14 from the EPA and the State, I heartily concur we ought to hear  
15 from EPA and the State, at least in preliminary matters if not  
16 in more than preliminary matters.

17 With respect to the second part, I just wanted to  
18 comment that I thought we ought to give consideration to other  
19 methods of proceeding, for example, we ought to think seriously  
20 about whether it might be more fruitful if the Board is  
21 concerned, to go ahead and accumulate a record on the basis  
22 of evidence to be presented by the Staff and Mr. Whisenhunt.  
23 But whatever position the Board feels more comfortable with --  
24 accumulate the record, and parties who disagree with that  
25 can catch it on appeal. The Appeal Board can decide on the basis

jrb 17 1 of a complete record rather than on the basis of legal argument  
2 without a record, and leaving the parties with a choice of  
3 an interlocutory appeal to the Appeal Board, or a decree with  
4 no remedy.

5 I just think we ought to consider those additional  
6 possible alternatives.

7 CHAIRMAN WOLF: Thank you.

END TAKE

6

8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

7/wel 1

1 MR. TROWBRIDGE: Mr. Chairman, I don't really  
2 understand the reasons for your suggesting that we now adjourn  
3 the hearing for at least 24 hours, or until such time as we  
4 hear from EPA and the State.

5 We are here, we are prepared, we have a large  
6 number of people who have come down for this occasion, who  
7 have had to take time away from other affairs to come here.

8 I would suggest -- strongly suggest -- that we  
9 proceed with the evidentiary portion of the hearing, at least  
10 for Applicant's and Staff's testimony.

11 It seems to me that we ought not to waste these  
12 next 24 hours, and should put on Applicant's case, Staff's  
13 case, and such cross-examination questioning as the parties  
14 and the Board may wish to do.

15 I strongly urge that with this much preparation,  
16 this many people, that we at least go on with the proceeding.

17 CHAIRMAN WOLF: I assume that you're prepared to  
18 go ahead on your full case, is that right?

19 MR. TROWBRIDGE: I am. We still have Mr.  
20 Whisenhunt's late motion to produce, but I am immediately  
21 prepared.

22 CHAIRMAN WOLF: I don't see what that has to do  
23 with your being prepared to go ahead, but --

24 MR. TROWBRIDGE: No, no, I'm prepared to go ahead.  
25 There were other preliminary matters I thought we should get



1 out of the way, but I'm prepared.

2 CHAIRMAN WOLF: Well, we'll take care of the  
3 motion.

4 MR. WHISENHUNT: Mr. Chairman, it's my understanding  
5 that the Board had ruled that they would wait for EPA and all  
6 to decide whether they had any jurisdiction to go forward.  
7 Now he talks about the witnesses he brought. He can't put on  
8 any witnesses' testimony in here except the ones he submitted.  
9 They're all on the payroll of Carolina Power & Light.

10 The Government's witnesses are on the payroll of  
11 the Government. And why should -- until the jurisdictional  
12 question is decided, that they, Carolina Power & Light Company  
13 has raised, and the Nuclear Regulatory Commission Staff has  
14 gone along with them word for word, and they said they've  
15 been knowing it since back in January and February -- why  
16 didn't they argue this instead of coming down here and saying  
17 we want to put up these personnel that are on our payroll  
18 today, and keep Mr. Whisenhunt down here doing something that  
19 may not amount to a row of pins, until the court can hear  
20 the witnesses? And they're the ones that should have been  
21 prepared to establish this permit and the validity of it, and  
22 what effect this has, and then ask that we stay here and  
23 maybe do something that amounts to nothing.

24 And then Mr. Scinto says, "Build a record." Well,  
25 if this Board has no jurisdiction, why am I interested in

1 building a record or appealing anything up there, and having  
2 spent all this time to build a record?

3 I submit that the Board's ruling should be wait  
4 and hear whatever evidence and testimony that EPA and all  
5 puts in, and then decide if they've got jurisdiction. That's  
6 the only logical way. They're the ones that raised the  
7 question of jurisdiction.

8 Now, even though they're saying you have no  
9 jurisdiction, they want to hold a hearing. We submit that  
10 the only logical conclusion would be to wait until tomorrow.  
11 They say they're going to have their witnesses here. I'll  
12 be here. And I'll participate in that. And after the  
13 Board has decided, then I will feel free to decide whether  
14 I should stay here or not.

15 CHAIRMAN WOLF: Thank you.

16 Let me ask you this, Mr. Trowbridge: Assume for  
17 a moment that Mr. Whisenhunt withdraws from the case. Do you  
18 think a hearing is necessary?

19 MR. TROWBRIDGE: No, I would not. I think we would  
20 get into a somewhat difficult area of whether the Board --  
21 and it happens to be a novel question -- as to whether the  
22 Board on its own decided to stay in business if he would  
23 withdraw. In other cases where there have been withdrawals  
24 in proceedings that were not mandatory the proceeding is  
25 ended, in my experience. Whether the Indian Point decision

wel 4

1 principles extend to the Board's decision to continue on its  
2 own, I do not know.

3 CHAIRMAN WOLF: Mr. Davis?

4 MR. DAVIS: It's the Staff's position that the  
5 nature of Mr. Whisenhunt's -- assuming that he might withdraw,  
6 that he might not participate, and decide to appeal so that  
7 there still might be some participation, we have EPA -- well,  
8 EPA might not come tomorrow. We can't be assured of that.  
9 We're assured only that the State is going to be here.

10 It seems to me that if the Board decides that it  
11 does have jurisdiction, and is going to hear the case -- and  
12 it's probably going to hear the case anyway, unless Mr.  
13 Whisenhunt would give up all claims to the case whatsoever.  
14 So it would seem to me that we're going to have to proceed  
15 anyway, and it might make sense to hear some testimony as  
16 long as we're going to be here. It would at least give the  
17 Board, and perhaps Mr. Whisenhunt and all of us, a better  
18 picture by getting all of the evidence together and hearing  
19 what's going on. It might make the EPA's testimony or the  
20 State's testimony more meaningful to us.

21 CHAIRMAN WOLF: Is there testimony that does not  
22 relate to thermal discharges?

23 MR. TROWBRIDGE: Not except for the answers to the  
24 Board's questions. And we will put in evidence, both in the  
25 stretch application and the environmental report. And that's

1 a background type application, or presentation.

2 CHAIRMAN WOLF: Well, we understand Mr. Whisenhunt's  
3 position. We also understand your reluctance to just sit  
4 for 24 hours. However, it's impossible for you to put on  
5 testimony going to the questions that the Board has on other  
6 than thermal matters today?

7 MR. TROWBRIDGE: You have all the answers. It  
8 would be simply a matter of sponsoring the answers that were  
9 given. I don't think that would be very productive.

10 MR. DAVIS: If you would care to take testimony  
11 out of order, we had planned as part of our presentation in  
12 relation to the stretch application and continued operation  
13 of this plant, we had planned to offer Dr. Don Bridges to  
14 introduce the SER and the SER Supplement Number 1, to show  
15 the Board that there are no serious or significant safety  
16 considerations left unanswered, and to satisfy the Board's  
17 perhaps curiosity as to whether or not there are any large  
18 safety matters that might be considered under the Indian  
19 Point decision.

20 So we would be prepared at this time to go forward  
21 with that. You might be interested in inquiring of Dr. Bridges  
22 as to the safety status of the plant.

23 CHAIRMAN WOLF: Is there any objection to this?

24 MR. TROWBRIDGE: I have no objection to their  
25 going out of turn. I think it's going to get very fragmented,

wel 6

1 and I would urge that we proceed with the agenda as established.

2 CHAIRMAN WOLF: Well, we can't hope to run it as  
3 smoothly as planned.

4 MR. WHISENHUNT: Mr. Chairman, I received a blue  
5 book over the weekend that had "safety" on it, and I frankly  
6 have not read it. I assume that this is going to deal  
7 strictly with safety, and not with any thermal?

8 CHAIRMAN WOLF: That's the point, yes. If we  
9 have the testimony it will deal with safety only.

10 MR. WHISENHUNT: All right. I have no objection  
11 under those circumstances.

12 CHAIRMAN WOLF: All right. Then we'll take your  
13 offer to put the witness on out of turn at this time.

14 MR. SCINTO: Mr. Chairman, we believe it's  
15 particularly appropriate to do that. It's, in a sense, not  
16 really out of turn. We think that what we're dealing with  
17 right now is the Board's authority to look into matters which --  
18 where the Board determines there is serious safety and  
19 environmental issues concerned. We view this in the nature  
20 of a preliminary inquiry by the Board, and we're providing  
21 that sort of information to the Board so that the Board can  
22 make a determination that there are no such issues.

23 If, indeed, the Board should find from the  
24 preliminary information we give now that they do nonetheless  
25 maintain some concern, then we would, of course, ask for the

wel 7

1 opportunity to seek the opportunity under the rules to present  
2 specific further evidence on that point in a subsequent  
3 session.

4 We don't think that the Board will have any such  
5 issue, or will find that there are such issues.

6 CHAIRMAN WOLF: All right. We'll proceed with  
7 this preliminary matter, and determine what the position is  
8 later.

9 MR. DAVIS: May we have the Board's indulgence for  
10 a minute here while we get copies to Mr. Whisenhunt?

11 CHAIRMAN WOLF: Let's go off the record.

12 (Discussion off the record.)

13 CHAIRMAN WOLF: Back on the record.

14 In regard to the question of limited appearances,  
15 the only record we have in that regard is a letter by Ray  
16 M. Clanton, C-l-a-n-t-o-n.

17 If Mr. Clanton is present we would like to  
18 express our willingness to hear him, or to receive a statement  
19 from him.

20 Do you know him, Mr. Whisenhunt?

21 MR. WHISENHUNT: Yes, sir. I submitted a brief  
22 statement from him that he was going to testify for us, and  
23 this is probably the reason why he didn't appear for the  
24 limited appearance, because I had notified these witnesses  
25 I would notify them approximately when I needed them, and I

1 assume that's the reason he didn't show up, that he expected  
2 to testify, sir.

3 CHAIRMAN WOLF: Thank you.

4 MR. WISENHUNT: Thank you, sir.

5 CHAIRMAN WOLF: I think that covers, then, the  
6 question of the limited appearances.

7 Will the witness be sworn?

8 Whereupon,

9 DONALD N. BRIDGES

10 was called as a witness on behalf of the NRC Regulatory Staff,  
11 and, having been first duly sworn, was examined and testified  
12 as follows:

13 DIRECT EXAMINATION

14 BY MR. DAVIS:

15 Q In a loud and clear voice, would you state your  
16 name and occupation?

17 A I'm Donald N. Bridges. I'm the project manager  
18 for Robinson 2. I work in the Office of Nuclear Regulatory,  
19 Regulation for the Nuclear Regulatory Commission.

20 Q And what is your business address?

21 A It's Norfolk Avenue, Bethesda, Maryland.

22 Q And are you the licensing project manager in this  
23 case?

24 A I am.

25 Q Dr. Bridges, I hand you a copy of a document

wel. 9 1 entitled, "United States Atomic Energy Commission Safety  
2 Evaluation," and ask you if you can identify it.

3 A Yes, sir. This was issued in May, 1974.

4 Q And was that issued under the direction of your  
5 office?

6 A Yes, sir.

7 Q And do you have any additions or corrections to  
8 that document?

9 A None to this document.

10 Q And is the information contained therein true and  
11 accurate to the best of your knowledge?

12 A It is.

13 MR. DAVIS: I would ask that that safety evaluation  
14 report be labeled as Staff Exhibit Number 1, and unless  
15 there's objection from counsel would ask that it be included  
16 and bound in the record as if read.

17 CHAIRMAN WOLF: Have you served copies of this  
18 on all the parties?

19 MR. DAVIS: Copies have been served on all the  
20 parties and the Board should have received its copies.

21 CHAIRMAN WOLF: Any objections, Mr. Whisenhunt?

22 MR. WHISENHUNT: Your Honor, my only objection --  
23 and, as I say, I got this over the weekend, but I didn't even  
24 bring my copy with me. I thought I'd have time to read it.  
25 But they furnished me with one, but I haven't had time to



1 read it, but I see something in here about temperatures. And  
2 my only objection would be to anything relating to temperatures  
3 at this time.

4 CHAIRMAN WOLF: Well, do you want to reserve the  
5 right to cross-examine on temperatures later, if we continue  
6 with this full hearing?

7 MR. WHISENHUNT: Yes. Also I'd like to note an  
8 objection at this time, and reserve any right to cross-examine  
9 at a later time.

10 CHAIRMAN WOLF: Mr. Davis, is that agreeable to  
11 you?

12 MR. DAVIS: Yes, sir, that's agreeable.

13 CHAIRMAN WOLF: All right. Do you have any  
14 additional copies of this?

15 MR. DAVIS: Yes. Does the Board have their copies  
16 in front of them?

17 CHAIRMAN WOLF: We didn't bring ours.

18 (Documents distributed.)

19 CHAIRMAN WOLF: Let the record show that Staff  
20 Exhibit Number 1, entitled "United States Atomic Energy  
21 Commission Safety Evaluation by the Directorate of Licensing,  
22 Docket Number 50-261, Carolina Power and Light Company,  
23 H. B. Robinson Steam Electric Plant Unit Number 2 Power  
24 Increase, dated May 20, 1974," is admitted in evidence,  
25 and will be incorporated.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25

(The document referred to was  
marked for identification as  
Staff Exhibit 1 and was received  
in evidence.)

(The document follows:)

INSERT

UNITED STATES ATOMIC ENERGY COMMISSION

SAFETY EVALUATION BY THE DIRECTORATE OF LICENSING

DOCKET NO. 50-261

CAROLINA POWER & LIGHT COMPANY

H. B. ROBINSON STEAM ELECTRIC PLANT UNIT NO. 2

POWER INCREASE

Date: MAY 20 1974

## TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION AND SUMMARY	1.1
2.0 REACTOR DESIGN AND PERFORMANCE	2.1
2.1 Thermal and Hydraulic Analysis	2.1
2.2 Fuel Performance	2.1
3.0 CONTAINMENT AND ENGINEERED SAFETY FEATURES	3.1
3.1 Containment Tests	3.1
3.2 Emergency Core Cooling System	3.1
4.0 ACCIDENT ANALYSES	4.1
4.1 Loss-Of-Coolant Accident	4.1
4.2 Steam Line and Steam Generator Tube Rupture Accidents	4.1
4.3 Control Rod Ejection Accident	4.1
5.0 CONDUCT OF OPERATIONS	5.1
5.1 Plant Operation	5.1
5.2 2300 MWt Power Test Program	5.1
5.3 Technical Competence	5.1
6.0 TECHNICAL SPECIFICATIONS	6.1
7.0 REVIEW BY THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS	7.1
7.1 Operation at 2200 MWt	7.1
7.2 Proposed Operation at 2300 MWt	7.3
8.0 CONCLUSION	8.1

### TABLE

1. THERMAL AND HYDRAULIC DESIGN PARAMETERS	2.2
--	-----

### FIGURE

1. $F_Q$ VERSUS AXIAL OFFSET	2.5
------------------------------	-----

## 1.0 INTRODUCTION AND SUMMARY

On July 31, 1970, the Atomic Energy Commission issued Facility Operating License No. DPR-23 to Carolina Power & Light Company (CP&L) authorizing operation of Unit No. 2 at the H. B. Robinson Steam Electric Plant at steady state power levels not in excess of 2200 MWt. By application dated February 1, 1974, and petition notarized February 4, 1974, CP&L requested amendment of License No. DPR-23 to permit operation at steady state power levels not in excess of 2300 MWt.

Robinson-2 was initially designed for operation at 2300 MWt. For our safety evaluation supporting issuance of License No. DPR-23, we reviewed the capability of the plant engineered safety features and the radiological consequences of various postulated accidents at both 2200 MWt and 2300 MWt. We limited operation of Robinson-2 to power levels not in excess of 2200 MWt to limit the fuel cladding temperatures obtained from analysis to values that would preclude the likelihood of autocatalytic reaction of fuel cladding and coolant water in the unlikely event that a loss-of-coolant accident (LOCA) occurs.

Initial criticality of Robinson-2 was achieved on September 20, 1970, and licensed full power was reached on February 23, 1971. The initial low power and full power testing was completed satisfactorily. The observed thermal, hydraulic and nuclear performance of the facility met applicable acceptance criteria. Commercial operation started on March 14, 1971.

We have evaluated Robinson-2 for operation at power levels not in excess of 2300 MWt with the core loading proposed for Fuel Cycle 3. This evaluation is based on review of: (a) WCAP-8243, "H. B. Robinson Unit 2 Justification Of Operation at 2300 MWt," which was incorporated in the petition by reference; (b) proposed changes to the Final Safety Analysis Report which were submitted with the petition; (c) additional information dated March 12, April 12 and 29, 1974, which supports the petition; (d) operation at power levels up to 2200 MWt; and (e) the startup test program results.

Examinations of data from startup testing and power operation by Licensing and Regulatory Operations have shown that the data confirmed design predictions in most areas initially and in the remaining areas after modifications and that the data support operation of Robinson-2 at 2300 MWt. Facility operation during Fuel Cycles 1 and 2 has progressed without significant leakage of fuel cladding. Because of fuel densification and collapse of some sections of fuel cladding in Fuel Cycle 1, operation during Fuel Cycle 2 was initially limited to 75% of licensed power. Our review of fuel densification and the capability of the emergency core cooling system (ECCS) to adequately cool the core in the event that a LOCA occurs was completed on July 25, 1973, and resumption of operation at licensed full power was authorized. Radioactive releases during Fuel Cycles 1 and 2 have been well within 10 CFR Part 20 limits.

We have evaluated the overall ECCS performance and its conformance at 2300 MWt with "Interim Acceptance Criteria for Emergency Core Cooling Systems for Light Water Reactors" published June 29, 1971, and have concluded that the Robinson-2 ECCS meets these criteria.

We have reviewed the transient analyses that were revised by CP&L for 2300 MWt. The results show that the design and performance objectives will be satisfied during the proposed operation at 2300 MWt. In addition, postulated accidents, including the design basis accident, were reexamined for the higher power level. The presently calculated radiological doses resulting from these postulated accidents are acceptable.

On the basis of our review, we have concluded that there is reasonable assurance that the health and safety of the public will not be endangered by the operation of the Robinson-2 at steady state power levels up to a maximum of 2300 MWt.

## 2.0 REACTOR DESIGN

### 2.1 Thermal and Hydraulic Design

The nuclear steam supply system design for Robinson-2 is similar to that reviewed and approved for Surry Units 1 and 2. A comparison between the plants is shown in Table 1. Compared to Surry 1/2, Robinson-2 has lower power, higher peaking factors, higher coolant inlet temperature, and higher coolant flow rates. The combination of these thermal-hydraulic parameters results in approximately the same departure from nucleate boiling (DNB) margins for the two plants. Hence, the thermal-hydraulic design for Robinson-2 does not represent any extension of accepted PWR thermal and hydraulic design operating limits.

In the thermal-hydraulic analysis, CP&L has made three changes in the calculation of the heat flux for predicting the departure from nucleate boiling (DNB) for fuel cycle 3. These changes included:

- (1) Elimination of the 1.9% reduction in DNB ratio (DNBR) due to pellet eccentricity or clad ovality. Westinghouse performed power spike DNB tests and showed that no differences existed in the predicted critical heat flux between the tests in which the power spike was imposed and the tests in which the power spike was absent.
- (2) Elimination of the heat flux engineering hot channel factor which was 1.03. The justification was the same as explained in item 1 above.
- (3) Elimination of the 10% DNBR penalty to cover possible effects of clad flattening. Clad flattening is not predicted during fuel cycle 3.

Experimental evidence and justification for the deletion of items 1 and 2 have been documented in WCAP 8219, "Fuel Densification Experimental Results and Model for Reactor Application." The clad flattening analysis and justification is delineated in WCAP-8243, "H. B. Robinson Unit 2 Justification for Operation at 2300 MWt."

We have reviewed the transient analysis that were revised for 2300 MWt operation. The limiting design and performance criteria were not changed from the 2200 MWt analyses. We have concluded that the Robinson-2 thermal-hydraulic design is acceptable for reactor operation at steady state power levels up to 2300 MWt on the basis of: (1) our review of the thermal-hydraulic analyses which showed that the DNB ratio exceeded 1.3 for all transients, and (2) the successful operation of the Robinson-2 plant for more than two years at power levels up to 2200 MWt.

### 2.2 Fuel Performance

During Fuel Cycles 1 and 2, there was no evidence of leakage of fission products from the fuel rods to the primary coolant. However, toward the end of Fuel Cycle 1, flux spikes indicative of axial gaps and possibly fuel

TABLE 1

THERMAL AND HYDRAULIC DESIGN PARAMETERS

	ROBINSON-2		SURRY 1/2
	<u>Present</u>	<u>Proposed</u>	<u>FSAR</u>
Total Heat Output, MWt	2200	2300	2441
Nominal System Pressure, psia	2250	2250	2250
Minimum DNBR for Design Transients	1.3	1.3	1.3
Hot Channel Factors			
Heat flux			
-Nuclear, $F_q^N$	2.34	2.57	2.39*
-Engineering, $F_q^E$	1.03	1.03	1.03*
Total	2.41	2.65	2.46*
Enthalpy Rise			
Nuclear $F_{\Delta H}$	1.55	1.55	1.55
Coolant Flow			
Total Flow Rate, lbs/hr	$101.5 \times 10^6$	$101.5 \times 10^6$	$100.7 \times 10^6$
Coolant Temperature, °F			
Nominal Inlet	546	546	543
Average Rise in Core	58	61	63
Heat Transfer			
Active Heat Transfer			
Surface Area, ft <sup>2</sup>	42,460	42,460	42,460
Maximum Heat Flux, Btu/hr-ft <sup>2</sup>	438,700	488,100	534,100
Maximum Thermal Output at 102% operation based on ECCS Limitations (kW/ft)	14.2	15.8 **	15.7*
Fuel Central Temperatures, °F			
Maximum at 100% Power	4000	3800	4050
DNB Ratio - Minimum Ratio			
During: Nominal Operating Conditions	2.01	2.02	1.97
Transients	1.30	1.30	1.30

\* Change No. 15 to the Technical Specifications for Surry 1/2

\*\* Revised by letter of 5/17/74



clad collapse, were observed. During the subsequent refueling outage, the replaced fuel assemblies were visually inspected. Of the visible (peripheral) fuel rods, 1.3% were found to have collapsed cladding. The fuel rods in this group of fuel assemblies contained uranium dioxide having relatively low density and the rods were not prepressurized with helium.

The remaining fuel assemblies in the reactor were unloaded for inspection. The fuel rods in these assemblies also contained uranium dioxide of relatively low density but were prepressurized with helium. None of the visible rods had collapsed cladding. These assemblies were returned to the core and new fuel assemblies were loaded as planned in place of the assemblies which were not prepressurized.

For Fuel Cycle 2, we initially limited operation of Robinson-2 to 1650 MWt (75% of licensed power) pending completion of our review of fuel densification. On completion of our review, we issued Change No. 44 to the Technical Specifications, which permitted CP&L to operate the reactor at power levels up to 2200 MWt provided that the power distribution was limited so that fuel cladding temperatures would not exceed certain values in the event of a LOCA. For fuel with relatively low density (2/3 of the core), the limit was 1800°F, and for fuel with higher density, the limit was 2300°F. CP&L was able to demonstrate to our satisfaction, that the excore flux detectors would provide adequate surveillance of the power distribution at relatively high power levels and that the axial power distribution monitoring system (APDMS) would provide adequate surveillance at the highest power levels.

During the present (second) refueling outage, all the low density fuel is being replaced with improved Westinghouse prepressurized fuel of higher density.

The applicant uses the approved Westinghouse Fuel Densification and Power Spike Models to evaluate the effects of fuel densification in pressurized zircaloy cladding for normal operation and anticipated transient and accident conditions. The fuel densification model, as described in WCAP-8218, is applicable for fuel performance calculations (centerline and average fuel temperatures), for input to power spike evaluations (axial size, frequency and distribution), for determining the fuel stack axial shrinkage factor for the LOCA analysis, and for calculating a temperature uncertainty for accident analysis. A previously approved Westinghouse clad creep model has been used to predict that cladding collapse will not occur during Cycle 3.

Because the reactor will be completely loaded with improved fuel for Fuel Cycle 3 which is scheduled to commence in early June, 1974, we conclude that it is appropriate to decrease the value of the spike peaking penalty factor at the core midplane from 1.17 to 1.04 and to rescind the requirement for limiting the fuel clad temperature to 1800°F for a LOCA. Further, we conclude that the power peaking factors proposed by CP&L in Table 1 can be met using axial offset limits on the excore instrumentation. In this regard, CP&L has prepared an appropriately conservative limit, as shown in Figure 1 on p. 2.5, on the power peaking factor as a function of axial offset.

In the area of reactor fuel and fuel performance, the applicant uses approved fuel performance, cladding creep and power spike models. Therefore, in the fuels area, we conclude that operation at 2300 MWt for Cycle 3 is acceptable.

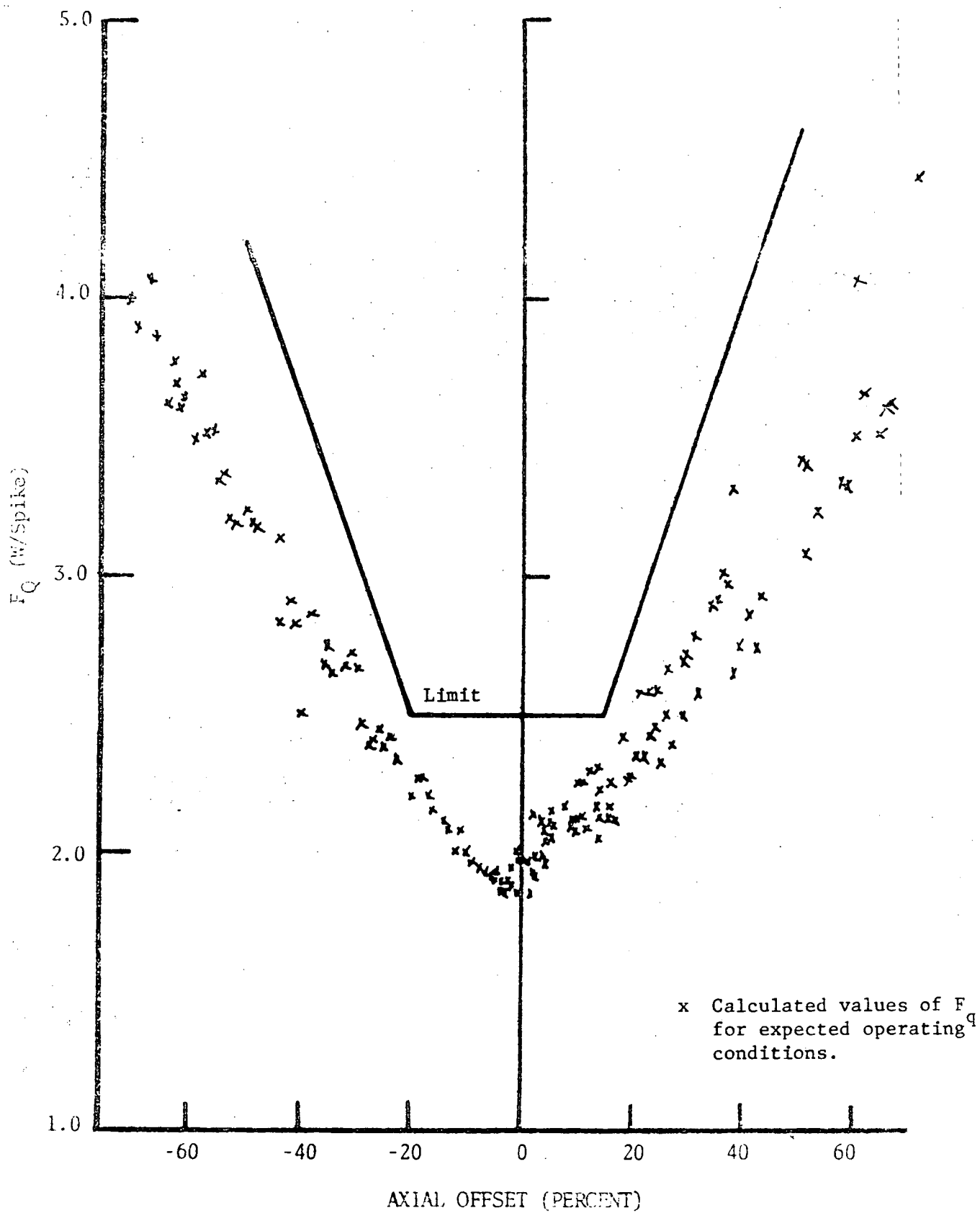


FIGURE 1  
 $F_Q$  VERSUS AXIAL OFFSET

### 3.0 CONTAINMENT AND ENGINEERED SAFETY FEATURES

#### 3.1 Containment Tests

The containment structure is a steel-lined concrete vessel which is prestressed in the vertical direction with grouted steel bar tendons and is conventionally reinforced in the circumferential direction. Design pressure for containment is 42 psig. In their petition for the operating license, CP&L calculated that the peak accident pressure would be 38 psig following shutdown from 2300 MWt.

Prior to initial operation of the reactor, structural proof tests of containment were performed successfully at 42.0 psig and at 48.3 psig (115% of design pressure). Technical Specification 4.4.4.2.a requires that proof tests at 42.0 psig be repeated after 3 years and after 20 years of operation. CP&L is performing the 3-year test during the current refueling outage. For this test, CP&L has derived and we have found acceptable, maximum acceptance criteria based on the observed response of the containment structure during the initial proof test.

Prior to initial operation, integrated leak tests of containment were performed at 21 psig and 42 psig with marginal but acceptable results. Technical Specification 4.4.1.1 requires that integrated leak tests at 21 psig be repeated at intervals of approximately 3-1/3 years. CP&L has performed an integrated leak test during the current refueling outage and the results are satisfactory. Our analysis of LOCA indicated that the present technical specification on integrated leak rate, i.e., 0.1% per day for a steam-air mixture, is acceptable for operation at 2300 MWt.

#### 3.2 Emergency Core Cooling System

The design of the safety injection system is essentially that proposed at the time the construction permit was issued. The design provided for both hot and cold leg injection to cool the core during the initial recovery from a LOCA. Pursuant to a change in the Technical Specifications, automatic hot leg injection was eliminated because the emergency coolant may be entrained by the high velocity steam coming from the core and would be ineffective in mitigating the accident.

#### 4.0 ACCIDENT ANALYSES

##### 4.1 Loss-Of-Coolant Accident

The LOCA analysis for plant operation at 2300 MWt was performed at 102% of the core power and at a peak linear power of 15.8 kW/ft for the double ended cold leg guillotine. The analysis considered the effects of fuel densification and was done in accordance with the requirements of the Interim Acceptance Criteria for ECCS. The results indicated that the maximum local rod power that will meet the 2300°F clad temperature limit is 15.8 kW/ft. Based on this limit, 100% core power operation is permissible provided the total peaking factor ( $F_q^T$ ) no greater than 2.65 is maintained. The total core metal water reaction is 0.07% for the limiting break.

In the Safety Evaluation Report supporting issuance of the operating license for 2200 MWt, we estimated for the LOCA a thyroid dose of 280 Rem at the site boundary; and for operation at 2300 MWt, we noted that the dose would be approximately 5% higher but still within the guidelines in 10 CFR Part 100. Because this extrapolated thyroid dose for operation at 2300 MWt approaches 10 CFR Part 100 guidelines, we reevaluated the iodine removal effectiveness of the containment spray system and our estimates of the value X/Q appropriate for accident analyses using current methods and criteria. We based our reevaluation on the assumption that the 2-minute delay and override capability will be removed. The LOCA doses calculated with the spray system designed for Robinson-2 are 290 rem to the thyroid for the 0 - 2 hours at the exclusion distance.

We conclude that the plant meets the exposure guidelines of 10 CFR Part 100 at the 2300 MWt power level provided the 2-minute delay and override in the spray additive system actuation is eliminated.

##### 4.2 Steam Line and Steam Generator Tube Rupture Accidents

On the basis of our experience with the evaluation of postulated steam line break and steam generator tube rupture accidents for PWR plants of similar design, we have concluded that the consequences of these accidents can be controlled by limiting the permissible primary and secondary coolant system radioactivity concentrations so that potential offsite doses are relatively small. We will include appropriate limits in the Technical Specifications in our action authorizing operation at 2300 MWt.

##### 4.3 Control Rod Ejection Accident

CP&L has reanalyzed the control rod ejection accident for the worst case, i.e., at the beginning of cycle life. In the unlikely event that a control rod ejection accident occurs, their results indicate for the hottest fuel rod that less than 10% of the fuel would melt and that the stored energy would not exceed 187 cal/gm. These results are acceptable and the accident would not lead to undue risk to the public.

## 5.0 CONDUCT OF OPERATIONS

### 5.1 Plant Operation

The startup and power testing program results substantiated design predictions for operation at 2200 MWt. The core thermal and hydraulic performances showed that the core operated within the specified thermal and hydraulic limits. Reactor system stability measurements were within applicable criteria. Control rod reactivity worth measurements and rod insertion scram times were satisfactory.

Overall operation at power has been quite successful although operation has been interrupted on occasion for steam generator testing and power level was temporarily restricted because of fuel densification. Nevertheless, the plant capacity factor has been 66.7% since commercial operation began and 83.5% since the second refueling outage.

### 5.2 2300 MWt Power Test Program

CP&L has prepared a brief test program to verify that plant performance is acceptable at the slightly higher power density and power level. Before and after increasing power from 2200 MWt to 2300 MWt, CP&L will: (a) determine the power distribution by flux mapping, (b) obtain data to assure that the nuclear instrumentation is properly realigned; (c) perform calorimetric heat balances, and (d) conduct radiation surveys. We conclude that this level of effort in conjunction with surveillance as required by the Technical Specifications is satisfactory for operation.

### 5.3 Technical Competence

The operating organization, its qualifications and responsibilities, operating procedures, records, maintenance, and review and audit functions have been improved as the result of experience acquired by CP&L since the operating license was issued. The technical staff has increased in size and capability. Additional reactor operating experience gained since the issuance of the operating license has made the staff of CP&L more alert to abnormal and significant events. The general technical performance of the CP&L staff has demonstrated its competence during the startup and power operations to date.

## 6.0 TECHNICAL SPECIFICATIONS

Several changes to the Technical Specifications involving power level, power distribution, and temperature are necessary. Appropriate changes are being prepared and will be incorporated in the license by amendment.

## 7.0 REVIEW BY THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

### 7.1 Operation at 2200 MWt

Subject to satisfactory completion of construction and pre-operational testing and giving due regard to certain items addressed in their letter of April 16, 1970, the ACRS found that Robinson-2 can be operated at power levels up to 2200 MWt without undue risk to the health and safety of the public. As indicated in Section 5.0 of this report, construction and pre-operational testing have been satisfactorily completed. The status of the items of additional concern to ACRS are discussed below.

The ACRS stated that further study is required of the bases and means whereby decisions concerning reactor operations will be made in the event of an earthquake in the region of the site. CP&L has installed a strong-motion recorder to monitor horizontal and vertical ground accelerations. In the event that the seismic alarm setpoint, 0.01 g in the horizontal direction, is exceeded, CP&L's Standing Order No. 5 requires that the facility be inspected by the operating crew and that film from the strong-motion recorder be retrieved and processed. If the ground acceleration exceeds 0.2 g in the horizontal direction or 0.16 g in the vertical direction, Standing Order No. 5 requires that the unit be shut down. For Robinson-2, the operating basis earthquake is 0.10 g horizontally and 0.067 g vertically, and the safe shutdown earthquake is 0.20 g horizontally and 0.133 g vertically. We conclude that the requirement for shutdown in the standing order is not acceptably conservative and we will require that the reactor be shut down if the operating basis earthquake is exceeded and remain shut down until inspection of the facility shows that no damage has been incurred which would jeopardize safe operation of the facility or until such damage is repaired.

The ACRS expressed the opinion that a crew of five, as proposed by CP&L, for operation of Robinson-1 (coal-fired) and Robinson-2 (nuclear) would not provide sufficient operator attention for safe operation of Robinson-2. CP&L is operating Units 1 and 2 with a crew of six. Further, Technical Specification 6.1.3.2 requires that two licensed reactor operators and one additional operator perform duties related only to Robinson-2. The shift foreman, who must hold a senior reactor operator's license, is responsible for both units. We have concluded that adding an additional operator to the crew has provided sufficient operator attention for safe operation of Robinson-2.

With regard to fuel rods prepressurized with helium, the need was expressed for surveillance of the rods to assure that they would be capable of withstanding anticipated transients at high burnup levels. As discussed in Section 2.2, monitoring of the flux distribution during operation and inspection of fuel during refueling indicated that bulging of prepressurized fuel rods had not occurred. We conclude that CP&L's program is adequate in this regard.



The ACRS expressed reservations regarding CP&L's plans to perform continuously during the life of the plant leak testing of containment seams and penetrations in lieu of performing periodically integrated leak tests of containment. Further, ACRS recommended additional study of the feasibility of demonstrating the structural integrity of containment during the life of the plant. As described in Section 3.1, periodic containment test requirements have been established for Robinson-2 which are satisfactory to the Regulatory staff.

The ACRS stated that operation with less than three reactor cooling loops in operation should be prohibited until it could be shown that no design limits would be exceeded and that trip points would be reliably reset by automatic means. CP&L has demonstrated to the satisfaction of the Regulatory staff that design limits would not be exceeded at 45% of licensed power with one of the three reactor cooling loops out of service. To assure that the reactor is not operated above this power level with one loop out of service, the plant protection system automatically trips the reactor if these conditions are violated. Further, CP&L stated in an amendment to the Final Safety Analysis Report that the Overtemperature  $\Delta T$  trip point will be manually reduced to the appropriate level within 1 hour after a cooling loop is removed from service. Subject to these conditions, we found operation of Robinson-2 with two loops in service to be acceptable.

The ACRS recommended that precautions be taken relative to turbine missiles prior to or early in the operation of the plant. Specifically, the ACRS recommended that a redundant turbine overspeed control system be provided and that protection be installed in appropriate areas to protect against damage in the unlikely event of large missiles arising from failure of the turbine rotor. CP&L has installed a redundant turbine overspeed control system and, where necessary to meet our requirements, missile shielding and redundant safeguards components.

Implementation of methods for continuous monitoring of the boron concentration in the primary cooling system and for detecting gross failure of a fuel assembly was suggested by the ACRS as methods are developed. A boron monitoring device has been installed which utilizes a neutron source, however, the device has not been reliable. A radiation monitor has been installed for the detection of failed fuel and has functioned reliably. Relative to development in these areas, we conclude that CP&L's efforts have been satisfactory to date.

The ACRS noted that CP&L had underway studies of means to prevent common mode failures from negating scram action and of design features to make tolerable the consequences of failure to scram during anticipated transients. In response to our recent request, CP&L has agreed to provide by October 1, 1974, their analysis of the consequences of anticipated transients without scram and an indication of any required equipment changes that result from the analysis.

The ACRS also noted that additional review should be performed of the control of hydrogen buildup in containment in the unlikely event of a LOCA. Robinson-2 does not have hydrogen recombiners; however, it does have two independent filter systems so that the hydrogen concentration can be controlled by purging. We have evaluated their system and we find that purging would be required 23 days after LOCA and that the thyroid dose at the outer boundary of the low population zone would be approximately 15 Rem. We conclude that this dose is acceptably low.

#### 7.2 Proposed Operation at 2300 MWt

The application for the Robinson-2 power increase is being reviewed by the ACRS. Their report to the Commission will be placed in the public record.

## 8.0 CONCLUSION

Based upon our review of the application, of relevant information pertaining to facility operation to date, and of minor modifications to the containment spray system as discussed in this evaluation, we have concluded that with operation of the H. B. Robinson Steam Electric Plant Unit No. 2 at steady state power levels up to a maximum of 2300 MWt, there is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations. The issuance of this amendment will not be inimical to the health and safety of the public.

wel 12

BY MR. DAVIS:

Q I now hand you a four-page document entitled, "Staff Response to Questions from the Board Directed to Applicant and Regulatory Staff in Order dated July 14, 1975," and ask you if you can identify those?

A These are the questions that we answered.

Q Those are your answers to the Board questions?

A Yes.

Q Are those true and accurate to the best of your knowledge?

A They are.

Q Do you adopt them as your testimony?

A Yes, sir.

MR. DAVIS: Mr. Chairman, I would ask that these four pages, Staff Response to Board's Questions, be included in the record as if read.

CHAIRMAN WOLF: Do you propose this as a separate exhibit?

MR. DAVIS: No, sir. That is testimony to be included in the record, just as if read.

BY MR. DAVIS:

Q I hand you another document, which is entitled Enclosure 1, which is enclosure 1 to the Staff responses to the Board's questions. That document is also entitled, "Supplement No. 1 to the Safety Evaluation Report," and ask

wel 13

1 you if you can identify that?

2 DR. CALLIHAN: What's the date of that, Mr. Davis?

3 THE WITNESS: July 31.

4 DR. CALLIHAN: 1975?

5 THE WITNESS: Yes, sir.

6 BY MR. DAVIS:

7 Q Can you identify that document?

8 A That is the document, the supplement we prepared  
9 to the original supplement.

10 Q Was that prepared under your direction?

11 A Yes, sir.

12 Q Do you have any corrections to offer to that  
13 document?

14 A Only one correction. On page 3 of that document,  
15 under paragraph 2.1, the fourth line reads 15.8. That should  
16 be 15.5. There are no other corrections.

17 Q With that correction is the information contained  
18 therein true and accurate to the best of your ability?

19 A Yes, it is.

20 MR. DAVIS: Mr. Chairman, I would ask that this  
21 document, SER Supplement Number 1, be labeled as Staff Exhibit  
22 2 and included in the record. A copy of that has been  
23 furnished to the Reporter.

24 CHAIRMAN WOLF: Are there any objections?

25 MR. WHISENHUNT: Subject only to Your Honor's

wel 14

1 ruling already that we could question on any temperatures that  
2 might appear there.

3 CHAIRMAN WOLF: Do you have any objections, Mr.  
4 Trowbridge?

5 MR. TROWBRIDGE: No objections.

6 MR. DAVIS: Mr. Chairman, that document, for  
7 purposes of the record, also includes Enclosure (2), which  
8 are revisions to the technical specifications for the stretch  
9 application. That's stapled together with the original copy.

10 CHAIRMAN WOLF: Staff Exhibit Number 2 is received  
11 into the record. It is identified as Enclosure 1, Supplement  
12 No. 1 to the Safety Evaluation Report by the Office of Nuclear  
13 Reactor Regulation, U. S. Nuclear Regulatory Commission,  
14 In the Matter of Carolina Power and Light Company H. B.  
15 Robinson Steam Electric Plant Unit No. 2 Power Increase,  
16 Docket No. 50-261," Issue Date: July 31, 1975.

17 (The document referred to was  
18 marked for identification as  
19 Staff Exhibit 2 and was  
20 received in evidence.)

21 (The document follows:)

INSERT

22  
23  
24  
25

Staff Response to "Questions from the Board Directed to Applicant and Regulatory Staff" in Order dated July 14, 1975. Response by Dr. D. N. Bridges, Nuclear Regulatory Commission.

Question: 1

Please describe the Applicant/Licensee's position with respect to conformance with the Acceptance Criteria for the Emergency Core Cooling System. What linear power generation was maintained in Fuel Cycle 3?

Answer:

The licensee is presently operating Robinson-2 with Technical Specifications consistent with those limits calculated during the reevaluation of Robinson-2 Emergency Core Cooling System (ECCS) in accordance with 10 CFR Part 50.46. This reevaluation was done with the approved Westinghouse ECCS model and was submitted to the Nuclear Regulatory Commission (NRC) on March 14, 1975. This analysis yielded a maximum peaking factor of 2.30 resulting in a maximum linear heat generation rate of 13.45 kw/ft.

At the time of the Carolina Power and Light Company (CP&L) application for the Robinson-2 power increase, the ECCS performance calculations were done using the Interim Acceptance Criteria. These calculations yielded a maximum peaking factor of 2.65 with a maximum linear heat generation rate of 15.5 kw/ft and were in effect during the first part of Cycle 3 (from June until October, 1974). On October 2, 1974 CP&L submitted an ECCS analysis using the Final Acceptance Criteria which reduced the peaking factor to 2.32 and the maximum linear heat generation rate to 13.56 kw/ft. These limits remained in effect until the NRC Order for Modification of License of December 27, 1974 which reduced the peaking factor to 2.30 and the maximum linear heat generation rate to 13.45 kw/ft due to slight ECCS model modifications. These limits have remained in effect since December 27, 1974 and have been confirmed by the ECCS reevaluation calculations of March 14, 1975.

CP&L has indicated that the maximum peaking factor thus far attained during core Cycle 3 is 2.10 with a maximum linear heat generation rate of 11.7 kw/ft. This peaking factor is well below the limit of 2.30.

Staff Response to "Questions from the Board Directed to Applicant and Regulatory Staff" in Order dated July 14, 1975. Response by Dr. D. N. Bridges, Nuclear Regulatory Commission.

Question: 2

The ACRS, in its review, dated June 11, 1974, of the proposed action cited a number of items relevant to the power increase. Please discuss the implementation of the Committee's recommendations, including the schedule for those items not yet put into effect.

Answer:

The items of concern raised by the ACRS regarding the Robinson-2 power increase have been considered by the NRC staff and have been reported on in a Supplement to the Safety Evaluation Report. (Enclosure 1). As indicated by the supplement, action is pending on only one item identified by the ACRS. All other items have been resolved to the satisfaction of the NRC staff. The single matter pending is the formulation of operating limits associated with the Emergency Core Cooling System (ECCS) performance evaluation as required by 10 CFR 50.46. The licensee has conducted and submitted to the NRC the necessary ECCS evaluation with the final approved Westinghouse ECCS model. The NRC staff is presently reviewing this submission. A preliminary review indicates that proposed limits are acceptable and are consistent with the present operating limits established by the December 27, 1974 Order for Modification of License. Final NRC staff action on this item is expected by early to mid-September.



Staff Response to "Questions from the Board Directed to Applicant and Regulatory Staff" in Order dated July 14, 1975. Response by Dr. D. N. Bridges, Nuclear Regulatory Commission.

Question: 3

Please supply copies of the Technical Specifications for Robinson, Unit 2 to the members of the Board and to the parties as appropriate.

Answer:

The licensee has agreed to provide an adequate number of copies of the Technical Specifications and will submit these copies directly to the Board. The changes to the Technical Specifications necessary for the power increase from 2200 MWt to 2300 MWt are attached (Enclosure 2).

Staff Response to "Questions from the Board Directed to Applicant and Regulatory Staff" in Order dated July 14, 1975. Response by Dr. D. N. Bridges, Nuclear Regulatory Commission.

Question: 14

What is the status of the staff review of the Robinson No. 2 plant pertaining to ATWS? (Section II.C of Licensing Position on Anticipated Transients without Scram (ATWS) for Water-Cooled Power Reactors).

Answer:

The licensee submitted an "Anticipated Transient Without Trip Analysis" on November 19, 1974. To date the NRC staff review of this analysis is still active. Robinson-2 is an ATWS Class "C" plant and the review of Class "C" plants is scheduled for completion in late calendar year 1975.

ENCLOSURE 1

SUPPLEMENT NO. 1 TO THE SAFETY EVALUATION REPORT

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

U. S. NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF

CAROLINA POWER AND LIGHT COMPANY

H. B. ROBINSON STEAM ELECTRIC PLANT UNIT NO. 2

POWER INCREASE

DOCKET NO. 50-261

ISSUE DATE: July 31, 1975

TABLE OF CONTENTS

	<u>Page No.</u>
1.0 INTRODUCTION	2
2.0 REPORT OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS (ACRS)	3
2.1 Re-evaluation of Operating Limits	3
2.2 Use of the Axial Power Density Monitoring System	5
2.3 Seismic Shutdown Requirements	6
2.4 Turbine Overspeed Control System	6
2.5 Effect of Debris on Operation of Engineered Safeguards Systems	8
2.6 Heatup and Cooldown Pressure-Temperature Limits	10
3.0 CONCLUSIONS	10

## APPENDICES

A - Report of ACRS, June 11, 1974	A-1
B - Bibliography	B-1

## 1.0 INTRODUCTION

The Nuclear Regulatory Commission (NRC) Staff's Safety Evaluation Report (SER) on the application by the Carolina Power and Light Company (CP&L) to amend License No. DPR-23 for the H. B. Robinson Steam Electric Plant Unit No. 2 to allow a power increase (from 2200 MWt to 2300 MWt) was issued on May 20, 1974. Copies of this report were made available to the Advisory Committee on Reactor Safeguards (ACRS or Committee) to assist it in its review of this application. The Committee completed its review of the licensee's application in June, 1974 and reported its findings to the Commission by letter dated June 11, 1974.

A copy of the June 11, 1974 ACRS report to the Commission is included as Appendix A. We have considered the comments and recommendations made by the ACRS in this report. The actions which we have taken relative to their comments and recommendations are described in this supplement to the H. B. Robinson Unit No. 2 Safety Evaluation.

## 2.0 REPORT OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS (ACRS)

Those matters which the ACRS had identified for further attention included the re-evaluation of operating limits pursuant to the requirements of 10 CFR Part 50.46, the use of the Axial Power Density Monitoring System, seismic shutdown requirements, the review of the turbine overspeed control system, the review of the effect of debris on the operation of the engineered safeguards systems, and the review of heatup and cooldown limits for the reactor coolant system. In their report, the ACRS concluded that if due regard were given the items mentioned above and in its previous reports, there is reasonable assurance that the H. B. Robinson Unit No. 2 can be operated at power levels up to 2300 MWt without undue risk to the health and safety of the public.

Specific discussion on these items is as follows:

### 2.1 Re-evaluation of the Operating Limits

At the time of the ACRS review, the Interim Acceptance Criteria for Emergency Core Cooling Systems (ECCS) was used to analyze the loss-of-coolant accident (LOCA). This analysis resulted in a linear power generation limit of 15.8 kw/ft with a maximum total peaking factor ( $F_0^t$ ) of 2.65. Subsequent calculations for the full power case (2300 MWt) with the Final Acceptance Criteria resulted in a new limit of 13.45 kw/ft for the linear heat generation rate and a new peaking factor limit of 2.30. These limits were

included in our December 27, 1974 Order for Modification of Facility License<sup>1</sup> which implemented the requirements of 10 CFR Part 50.46 pending re-evaluation of the ECCS cooling performance with a fully acceptable evaluation model. This re-evaluation,<sup>2</sup> including calculations using the approved Westinghouse ECCS model in accordance with 10 CFR Part 50.46 has now been submitted to the NRC staff for review. Results presented in this latest ECCS cooling performance report from the licensee confirm the correctness of the linear heat generation rate (13.45 kw/ft) and the peaking factor (2.30) included in our Order of December 27, 1974. The NRC staff is presently reviewing this latest submittal by the licensee. A complete description of the NRC staff review and conclusions will be prepared upon completion of this review; however our preliminary review indicates that the results of the required re-evaluation are acceptable.

The licensee now intends to use excore instrumentation to monitor the axial offset limits required to meet the peaking factor restriction (2.30) for the remainder of Core Cycle 3. Justification<sup>3</sup> consisting of past operational data and generic Westinghouse studies<sup>4</sup> have been provided by CP&L to support the use of excore monitoring for this peaking factor. The NRC staff has concluded that this method proposed by the applicant for monitoring the peaking factor of 2.30 is acceptable.

## 2.2 Use of Axial Power Density Monitoring System (APDMS)

Robinson-2 was the first nuclear power plant to depend upon the Westinghouse APDMS as a means for monitoring limiting linear power generation rates in order to operate at full power. The operation of the APDMS was successful and had been planned for continued use in subsequent fuel cycles. In regard to its use, the ACRS recommended that the APDMS be reviewed giving attention to the experience in Robinson-2 and to the evaluation of possible sources of uncertainties in using APDMS to monitor peaking factors whose magnitude are below those which can be monitored using excore surveillance techniques.

A report <sup>5</sup> providing a basis for the APDMS technique and presenting operational experience with APDMS has been provided to the NRC by CP&L. Conclusions from this report and subsequent studies <sup>3</sup> by CP&L indicate that the APDMS is an effective method for monitoring the peaking factor, but it does not provide the control features of the Constant Axial Offset Control (CAOC) approach which also provides the means to provide adequate margin from conditions associated with Departure from Nucleate Boiling (DNB). Analytical studies indicated that increased surveillance using the APDMS in lieu of power reductions required by CAOC procedures could lead to power distributions inconsistent with the basis for



DNB analysis. For this reason CP&L has suspended use of the APDMS and instituted the CAOC procedures. The NRC staff has concurred in this action.

### 2.3 Seismic Shutdown Requirements

The licensee has installed a strong motion recorder to monitor horizontal and vertical ground accelerations and has established the inspection and corrective actions required in the event of a seismic alarm. The ACRS and the NRC Staff had expressed concern regarding the licensee's action and the level of inspection to be taken following indication that the operating basis earthquake has been exceeded. To address this concern, the following Technical Specification<sup>6</sup> was incorporated into the Robinson-2 License: "When the strong-motion recorder indicates that the operating basis earthquake has been exceeded the reactor shall be shutdown and shall remain shutdown until inspection of the facility shows that no damage has been incurred which would jeopardize safe operation of the facility or until such damage is repaired." We conclude that this procedure is acceptable.

### 2.4 Turbine Overspeed Control System

The ACRS recommended that the licensee and the NRC staff review the design of the redundant turbine overspeed control system to assure proper functioning under all fault

conditions. Specific concerns had been raised earlier concerning the philosophy of operation and the system response for loss of power to the solenoid-operated valves for the Turbine Redundant Overspeed Trip System. The licensee has submitted additional information <sup>5</sup> on this subject and the NRC staff has evaluated the functional capability of the turbine overspeed protection system under anticipated fault conditions.

The licensee has responded to the ACRS concerns dealing with failure modes involving loss of power by stating that the fail safe (on loss of power) design philosophy has been carried through to the solenoid valve, but that the solenoid valves are normally de-energized. The power for these solenoids is supplied from two completely independent and separated DC sources. Energizing either solenoid will trip the turbine and prevent overspeed. It is pointed out that this was done for operational reliability and that the same design philosophy is used for engineered safeguards features. The system design includes provisions for periodic testing at power. Moreover, the system used to protect the turbine from overspeed events is identical to other systems in similar plants such as Point Beach 1 and 2, Indian Point 2 and 3, and Three Mile Island 2.

The NRC staff has determined that the turbine overspeed protection for H. B. Robinson Unit 2 is identical to previously reviewed systems. In addition, the NRC staff believes the licensee has provided sufficient justification for the design philosophy as it applies to anticipated fault conditions

including loss of power. Therefore, we conclude that provisions for protection against turbine overspeed at H. B. Robinson Unit 2 are acceptable.

## 2.5 Effect of Debris on Operation of Engineered Safeguard Systems

The ACRS recommended that the licensee and the NRC staff review possible sources of debris and the effect of such debris on the functioning of engineered safeguards systems. Carolina Power and Light Company has made a detailed study in this area and submitted a report <sup>7</sup> to the NRC staff on this subject. The study addressed: the sources of debris; design features of the H. B. Robinson Unit 2 plant which tend to minimize missile damage and debris formation during a LOCA or a plant equipment failure; and the manner in which debris would impact on engineered safeguards systems operation.

In a postulated post-LOCA environment, possible sources of debris include pieces of containment liner insulation, pipe lagging, corrosion products, and equipment parts dislodged by missile impact. In their study, a number of Robinson-2 design features were presented and discussed by the licensee to demonstrate how these features minimize debris formation. These features include the crane wall missile shield design, containment liner insulation wire covering, physical spacing of high pressure piping restraints to prevent completely severed pipes from striking the containment liner insulation, and location of equipment in missile shielded areas.

The licensee's study further pointed out that the only path by which debris can enter the emergency safeguards system is through the containment sump during the long term recirculation phase following the LOCA. Debris entering the residual heat removal pump suction piping would be removed by a series of filters. These filters include a one-inch coarse filtration at the crane wall, removal of floating and submerged debris by a baffle system, and filtration by two screens ( $1/2$ " and  $7/32$ ") in series prior to entry to pump suction line openings. By maintaining a low water velocity, the system allows slowly settling debris to settle before reaching the final two screens. Debris smaller than the minimum size filtered will be accommodated throughout the piping system. To ensure that the containment sump is initially free of debris and corrosion, operating procedures require sump inspection before each plant heatup.

We have reviewed the information provided by the licensee and have concluded that the containment sump design is consistent with the guidelines of Regulatory Guide 1.82, "Sumps for Emergency Core Cooling and Containment Spray Systems", and is acceptable. We further conclude that debris will not adversely affect the functional capability of the engineered safeguards system.

## 2.6 Heatup and Cooldown Pressure-Temperature Limits

The ACRS recommended that the Technical Specifications for H. B. Robinson Unit 2 specify heatup and cooldown pressure-temperature limits that can be shown to be as conservative as practical with respect to 10 CFR Part 50, Appendix G. The Robinson-2 Technical Specifications have recently been amended<sup>8</sup> to include updated heatup-cooldown pressure-temperature limits. These heatup and cooldown curves were based on experimental data and the analytical methods spelled out in Appendix G to 10 CFR Part 50. The NRC staff has reviewed the experimental data, the analytical techniques, and the proposed heatup and cooldown pressure-temperature limits. The proposed heatup and cooldown pressure-temperature limits contain conservatisms beyond those required by Appendix G to 10 CFR Part 50 and these limits have been determined to be adequate.

## 3.0 CONCLUSION

With the exception of the Robinson-2 ECCS cooling performance evaluation which is still under active review by the NRC staff we conclude that items raised by the ACRS have been adequately considered and addressed. Our conclusions as stated in the May 20, 1974 Safety Evaluation Report remain unchanged.

APPENDICES

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
UNITED STATES ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

June 11, 1974

RECEIVED

'74 JUN 12 AM 10:28

OFFICE OF THE SECRETARY

Honorable Dixy Lee Ray  
Chairman  
U. S. Atomic Energy Commission  
Washington, D. C. 20545

Subject: REPORT ON H. B. ROBINSON UNIT NO. 2

Dear Dr. Ray:

During its 170th meeting, June 6-8, 1974, the Advisory Committee on Reactor Safeguards reviewed the request by the Carolina Power and Light Company for an amendment to License No. DPR-23 to permit an increase in the steady-state power level of the H. B. Robinson Unit No. 2 from 2200 Mwt to 2300 Mwt. During this review the requested power increase and the operating experience of the H. B. Robinson Unit No. 2 were considered at a Subcommittee meeting on May 21, 1974, in Washington, D. C. During its review, the Committee had the benefit of discussions with representatives of the Applicant, the Westinghouse Electric Corporation, and the AEC Regulatory Staff. The Committee also had the benefit of the documents listed below. The Committee reported on the construction of this plant on February 17, 1967, and on its operation on April 16, 1970.

The H. B. Robinson Unit No. 2 achieved criticality on September 20, 1970. The licensed full power of 2200 Mwt was reached on February 23, 1971, and commercial operation started on March 14, 1971. Robinson-2 has operated successfully for two fuel cycles. Examination of data from startup testing and power operation by the Directorates of Licensing and Regulatory Operations have shown that design predictions were confirmed in most areas initially and in the remaining areas after modifications.

Although Robinson-2 was designed for operation at 2300 Mwt, initial operation has been limited to 2200 Mwt. The proposed increase in maximum power is based on favorable operating experience, use of prepressurized high density fuel, and on the application of thermal-hydraulic and ECCS performance evaluation models currently approved for use for Westinghouse pressurized water reactors. On the basis of analyses, the Interim Acceptance Criteria for Emergency Core Cooling Systems in Light Water

June 11, 1974

Reactors, including consideration of the effects of fuel densification, can be met for the fuel loading proposed for Fuel Cycle 3 if the linear power generation in the fuel is limited to 15.8 kw/ft. Based on this limit, operation up to power levels of 2300 MWt is acceptable, providing the total peaking factor ( $F_{G}^{T}$ ) is no greater than 2.65. The Applicant intends to use excore radiation detection instrumentation to monitor the axial offset limits required to meet this peaking factor restriction.

Re-evaluation of operating limits will be necessary as a result of the recently promulgated 10 CFR Part 50.46. The Committee wishes to be kept informed.

During Fuel Cycle 2, Robinson-2 was the first nuclear power plant to depend upon the Westinghouse Axial Power Density Monitoring System (APDMS) as a means for monitoring limiting linear power generation rates in order to operate at full power. The operation of the system was generally successful and enabled safe operation with peaking factors below those which can be adequately monitored using excore instrumentation alone. This Applicant does not expect to use the APDMS system in Fuel Cycle 3 under the Interim Acceptance Criteria. However, the system may be proposed for use in this and other Westinghouse plants in the future. Consequently the Committee recommends that the use of APDMS be reviewed, giving attention to the experience in Robinson-2 and to the evaluation of possible sources of uncertainties in using APDMS to monitor peaking factors whose magnitudes are below those which can be monitored using excore surveillance techniques. The Committee wishes to be kept informed.

The Applicant has installed a strong motion recorder to monitor horizontal and vertical ground accelerations and has established the inspection and corrective actions required in the event of a seismic alarm. The Committee concurs with the Regulatory Staff that the reactor be required to be shut down if the operating basis earthquake is exceeded and remain shut down until inspection shows that no damage has been incurred which would jeopardize safe operation of the facility, or until such damage is repaired. This matter should be resolved to the satisfaction of the Regulatory Staff.

The Committee recommends that the Applicant and the Regulatory Staff review the design of the redundant turbine overspeed control system to assure proper functioning under all fault conditions. This matter should be resolved to the satisfaction of the Regulatory Staff.

The Committee believes the Applicant and the Regulatory Staff should review possible sources of debris, such as particles of loose insulation in the containment, as well as the possible effect of such debris on the functioning of engineered safeguards systems.



June 11, 1974

The Committee recommends that the Technical Specifications for H. B. Robinson-2 specify heatup and cooldown pressure-temperature limits that can be shown to be as conservative as practical with respect to 10 CFR Part 50, Appendix G.

Other generic problems relating to large water reactors identified by the Regulatory Staff and the ACRS have been discussed in the Committee's report dated February 13, 1974. These problems should be dealt with appropriately by the Regulatory Staff and the Applicant.

The Advisory Committee on Reactor Safeguards believes that, if due regard is given to the items mentioned above and in its previous reports, there is reasonable assurance that the H. B. Robinson Unit No. 2 can be operated at power levels up to 2300 MWt without undue risk to the health and safety of the public.

Sincerely yours,

*W. R. Stratton*

W. R. Stratton  
Chairman

References:

1. Safety Evaluation by the Directorate of Licensing, USAEC (DRL), H. B. Robinson Steam Electric Plant Unit No. 2, Power Increase, dated May 20, 1974
2. WCAP-8243, "H. B. Robinson Unit 2 - Justification of Operation at 2300 MWt", dated December 1973
3. Application by Carolina Power & Light Company (CP&L) dated February 1, 1974, requesting amendment No. DPR-23 to permit operation at steady-state power levels not in excess of 2300 MWt
4. Letter dated March 12, 1974, CP&L to DRL, submitting additional information pertinent to 2300 MWt operation
5. Letter dated April 12, 1974, CP&L to DRL, submitting additional information pertinent to 2300 MWt operation
6. Letter dated April 29, 1974, CP&L to DRL, submitting additional information pertinent to 2300 MWt operation
7. Letter dated September 7, 1973, V. Stello (DRL) to D. Skovholt (DRL) concerning use of R technique

APPENDIX B

BIBLIOGRAPHY

(Documents referenced in or used to prepare Supplement 1 to Safety Evaluation Report)

1. Order for Modification of License for H. B. Robinson Steam Electric Plant Unit No. 2 dated December 27, 1974 enclosed in letter from G. Lear, NRC to J. A. Jones, CP&L.
2. Letter from E. E. Utley, CP&L to E. G. Case, NRC dated March 14, 1975 enclosing a reanalysis of the ECCS cooling performance for H. B. Robinson Unit 2.
3. Letter from E. E. Utley, CP&L to B. C. Rusche, NRC dated June 20, 1975 proposing changes to the requirements for monitoring incore peaking factors.
4. T. Marita et. al., "Topical Report-Power Distribution Control and Load Following Procedures", WCAP-8403, September, 1974.
5. Letter from E. E. Utley, CP&L to B. C. Rusche, NRC dated May 19, 1975 enclosing report entitled "Axial Power Distribution Monitoring System-Analysis and Data" and data on Turbine Redundant Overspeed Trip System.

6. Amendment No. 9 to Facility License No. DPR-23 enclosed in letter from K. R. Goller, AEC, to E. E. Utley, CP&L dated June 14, 1974.
7. Letter from E. E. Utley, CP&L to B. C. Rusche, NRC dated May 9, 1975 enclosing information on the Residual Heat Removal Sump Design for Robinson-2.
8. Amendment No. 12 to Facility License No. DPR-23 enclosed in letter from G. Lear, NRC, to J.A. Jones, CP&L dated July 22, 1975.

ENCLOSURE 2

REVISIONS TO TECHNICAL SPECIFICATIONS

H. B. Robinson Unit No. 2

2300 MWt CORE POWER OPERATION

JULY, 1975

## TECHNICAL SPECIFICATIONS AND BASES

### 1.0 DEFINITIONS

The following frequently used terms are defined for the uniform interpretation of the specifications.

#### 1.1 Rated Power

A steady state nuclear steam supply output (reactor core thermal power) of 2300 MWt.

#### 1.2 Reactor Operation

##### 1.2.2 Cold Shutdown Condition

"When the reactor is subcritical and  $T_{avg}$  is  $\leq 200^{\circ}\text{F.}$ "

##### 1.2.3 Hot Shutdown Condition

"When the reactor is subcritical and  $T_{avg}$  is  $> 200^{\circ}\text{F.}$ "

##### 1.2.4 Reactor Critical

When the neutron chain reaction is self-sustaining and  $K_{eff} = 1.0$ .

##### 1.2.5 Power Operating Condition

When the reactor is critical and the neutron instrumentation indicates greater than 2% of rated power.

## 2.0 SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

### 2.1 SAFETY LIMIT, REACTOR CORE

#### Applicability:

Applies to the limiting combinations of thermal power, Reactor Coolant System pressure, coolant temperature, and flow when the reactor is critical.

#### Objective:

To maintain the integrity of the fuel cladding.

#### Specification:

- a. The combination of thermal power level, coolant pressure, and coolant temperature shall not exceed the limits shown in Figure 2.1-1 when full flow from three reactor coolant pumps exists and shall not exceed the limits shown in Figure 2.1-2 when the full flow from two reactor coolant pumps exists.
- b. When full flow from one reactor coolant pump exists, the thermal power level shall not exceed 20%, the coolant pressure shall remain between 1820 psig and 2400 psig, and the Reactor Coolant System average temperature shall not exceed 590°F.
- c. When natural circulation exists, the thermal power level shall not exceed 12%, the coolant pressure shall remain between 2135 psig and 2400 psig, and the Reactor Coolant System average temperature shall not exceed 620°F.
- d. The safety limit is exceeded if the combination of Reactor Coolant System average temperature and thermal power level is at any time above the appropriate pressure line in Figures 2.1-1 or 2.1-2 or if the thermal power level, coolant pressure, or Reactor Coolant System average temperature violates the limits specified above.

(DELETE)

#### Basis:

To maintain the integrity of the fuel cladding and prevent fission product release, it is necessary to prevent overheating of the cladding under all operating conditions. This is accomplished by maintaining the

hot regions of the core within the nucleate boiling regime of heat transfer, wherein the heat transfer coefficient is very large and the clad surface temperature is only a few degrees Fahrenheit above the coolant saturation temperature. The upper boundary of the nucleate boiling regime is termed departure from nucleate boiling (DNB) and at this point there is a sharp reduction of the heat transfer coefficient, which would result in high clad temperatures and the possibility of clad failure. DNB is not, however, an observable parameter during reactor operation. Therefore, the observable parameters, thermal power, reactor coolant temperature and pressure, have been related to DNB through the L-Grid DNB correlation. The L-Grid DNB correlation has been developed to predict the DNB flux and the location of DNB for axially uniform and non-uniform heat flux distributions. The local DNB heat flux ratio, defined as the ratio of the heat flux that would cause DNB at a particular core location to the local heat flux, is indicative of the margin to DNB. The minimum value of the DNB ratio, DNBR, during normal operational transients and anticipated transients (those transients listed on page 14.1-1 of the FSAR) is limited to 1.30. A DNB ratio of 1.30 corresponds to a 95% probability at a 95% confidence level that DNB will not occur and is chosen as an appropriate margin to DNB for all operating conditions.<sup>(1)</sup> The DNB ratio limit of 1.30 is a conservative design limit which is used at the basis for setting core safety limits. Based on rod bundle DNB tests, no fuel rod damage is expected at this DNB ratio or greater.

The curves of Figure 2.1-1 which show the allowable power level decreasing with increasing temperature at selected pressures for constant flow (three loop operation) represent the loci of points of thermal power, coolant system average temperature, and coolant system pressure for which the DNB ratio is not less than 1.30. The area where clad integrity is assured is below these lines. In order to completely specify limits at all power levels, arbitrary constant upper limits of average temperature are shown for each pressure at powers lower than approximately 75%. The temperature limits at low power are considerably more conservative than would be required if they were based upon a minimum DNB ratio of 1.30 but are such that the plant conditions required to violate the limits are precluded by

the self actuated safety valves on the steam generators. An arbitrary upper safety limit of 120% for thermal power is shown. The upper limit is below the damage limit of 1.7% for maximum clad strain which is reached at 123% thermal power with design hot channel factors.

The curves of Figure 2.1-2 which show the allowable power level decreasing with increasing temperature at selected pressures for constant flow (two loop operation) represent the loci of points of thermal power, coolant system average temperature, and coolant system pressure for which either the DNB ratio is equal to 1.30 or the average enthalpy at the exit of the core is equal to the saturation value. At low pressures or high temperatures the average enthalpy at the exit of the core reaches saturation before the DNB ratio reaches 1.30 and, thus, this arbitrary limit is conservative with respect to maintaining clad integrity. In order to completely specify limits at all power levels, arbitrary constant upper limits of average temperatures are shown for each pressure at powers lower than approximately 40%. The limits at low power as well as the limits based on the average enthalpy at the exit of the core are considerably more conservative than would be required if they were based upon a minimum DNB ratio of 1.30. The plant conditions required to violate these limits are precluded by the protection system and the self actuated safety valves on the steam generator. An upper limit of 70% for power is shown to completely bound the area where clad integrity is assured. This latter limit is arbitrary but cannot be reached due to the permissive 8 protection system setpoint which will trip the reactor on high nuclear flux when only two reactor coolant pumps are in service. Additional peaking factors to account for local peaking due to fuel rod axial gaps and reduction in fuel pellet stack length have been included in the calculations of the curves shown in Figures 2.1-1 and 2.1-2. The figures also include the effects of uprating to 2300 MWt. (4)

The limits specified for one loop operation and natural circulation result in DNB ratios greater than 1.30.

The specified limits are based on  $F_{\Delta H}^N$  of 1.55, a 1.55 cosine axial flux shape and a DNB analysis as described in Section 4 of the report Fuel Densification - H. B. Robinson Steam Electric Plant, Unit 2 (WCAP-8114).

The recalculated DNB core safety limits have been found to be less limiting than those previously presented in the FSAR, i.e., the reduction in DNB penalties due to densification and removal of the clad flattening penalty more than offsets the effects of the increased power level on the DNB ratio.

These limiting hot channel factors are higher than those calculated at full power for the range from all control rods fully withdrawn to maximum allowable control rod insertion. The control rod insertion limits are covered by Specification 3.10. Somewhat worse hot channel factors could occur at lower power levels because additional control rods are in the core. However, the control rod insertion limits dictated by Figure 3.10-1 ensure that the DNB ratio is always greater at part power than at full power.



The hot channel factors are also sufficiently large to account for the degree of malpositioning of part length rods that is allowed before the reactor trip setpoints are reduced and rod withdrawal block and load runback may be required.<sup>(2)</sup> Rod withdrawal block and load runback occurs before reactor trip setpoints are reached.

The safety limit curves given in Figures 2.1-1 and 2.1-2 are for constant flow conditions. These curves would not be applicable in the case of a loss of flow transient. The evaluation of such an event would be based upon the analysis presented in Section 14.1 of the FSAR.

The reactor Control and Protection System is designed to prevent any anticipated combination of transient conditions for Reactor Coolant System temperature, pressure, and thermal power level that would result in a DNB ratio of less than 1.30<sup>(3)</sup> based on steady state nominal operating power levels less than or equal to 100%, steady state nominal operating Reactor Coolant System average temperatures less than or equal to 575.4°F, and a steady state nominal operating pressure of 2235 psig. Allowances are made in initial conditions assumed for transient analyses for steady state errors of +2% in power, +4°F in Reactor Coolant System average temperature, and  $\pm$  30 psi in pressure. The combined steady state errors result in the DNB ratio at the start of a transient being 10 percent less than the value at nominal full power operating conditions. The steady state nominal operating parameters and allowances for steady state errors given above are also applicable for two loop operation except that the steady state nominal operating power level is less than or equal to 45%.

To provide the Commission with added verification of the safety and reliability of pre-pressurized zircaloy clad nuclear fuel, a limited program of nondestruction fuel inspection will be conducted. The program shall consist of a visual inspection (e.g., underwater TV, periscope, and other) of the two lead burnup fuel assemblies during the second and third refueling outages. Any condition observed by this inspection which could lead to unacceptable fuel performance may be the object of an expanded effort. The visual inspection program and, if indicated, the expanded program will be conducted in addition to that being performed in the Saxton and Cabrera reactors. If another domestic plant which contains pre-pressurized fuel of the same design as that used for H. B. Robinson Unit No. 2 and reaches the second and third refueling outages first, and if a limited inspection program is or has been performed there, then the program may not have to be performed at H. B. Robinson Unit No. 2. However, such action requires approval of the AEC.

(DELETE)

References:

- (1) FSAR, Section 3.2.2
- (2) FSAR, Section 14.1.3
- (3) FSAR, Section 7.2.1
- (4) WCAP-8243, "H. B. Robinson Unit 2 - Justification for Operation at 2300 MWt," December, 1973

Figure 2.1-1  
Protection Boundaries  
N-Loop Operation

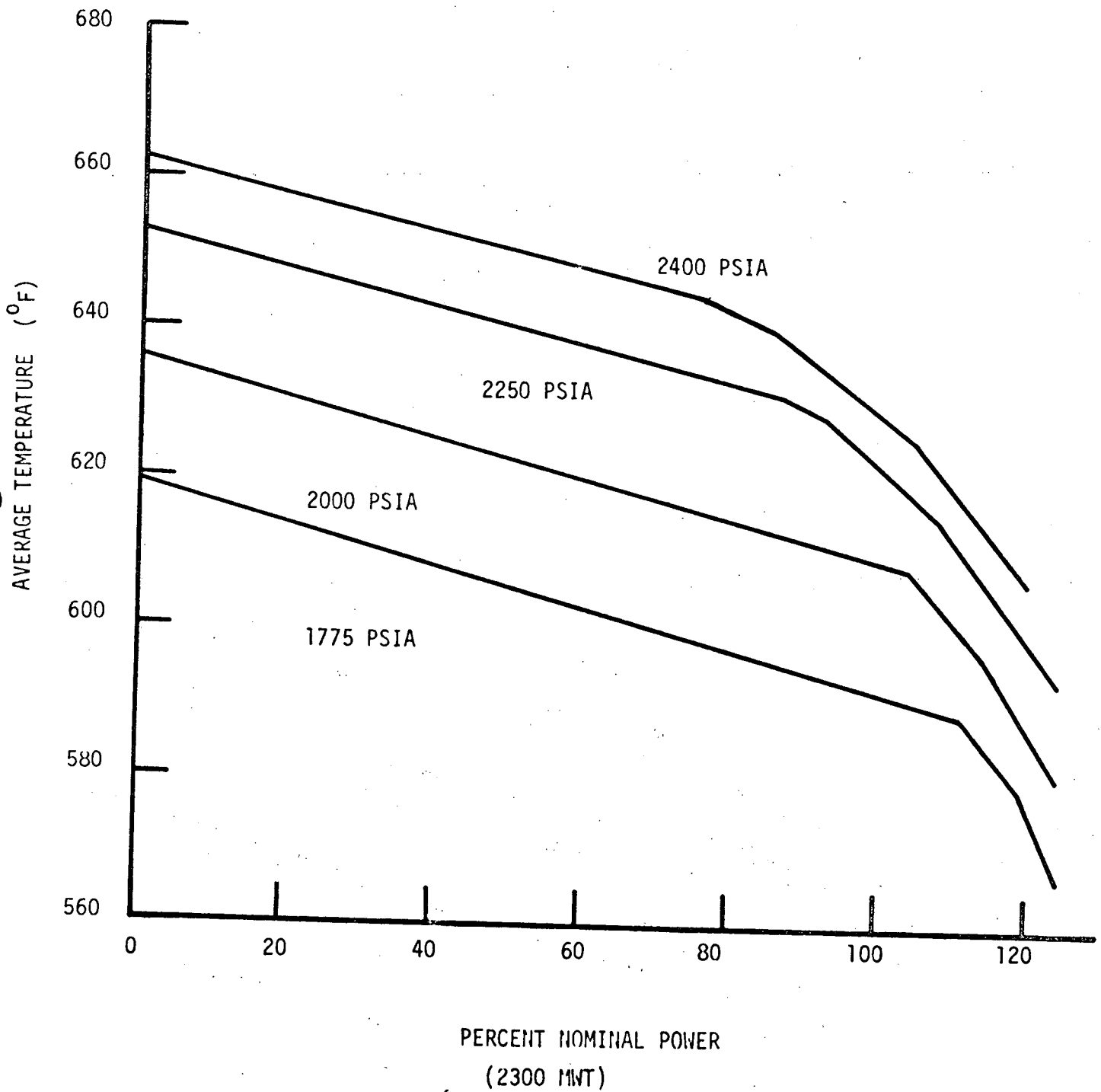
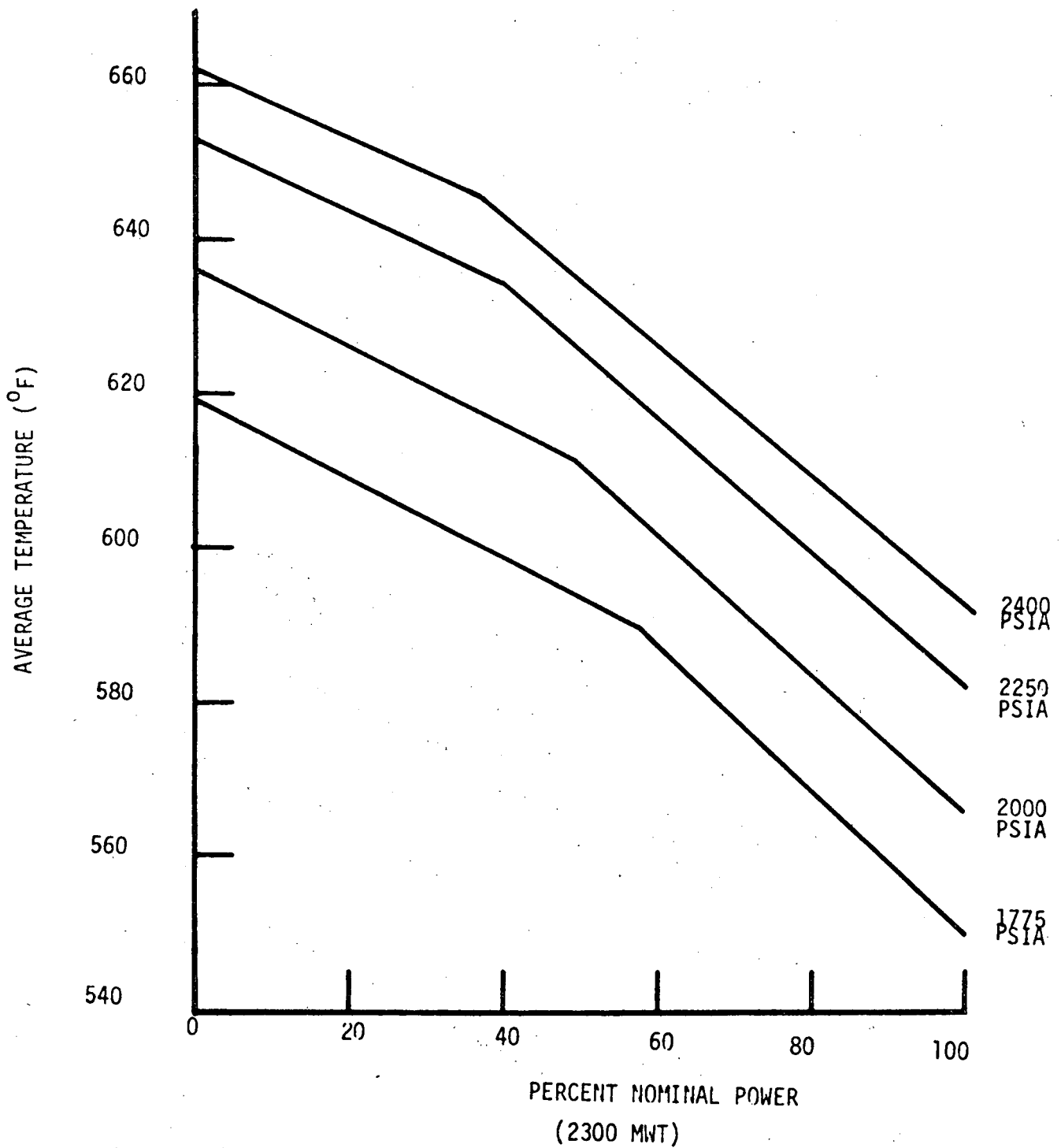


Figure 2.1-2  
Protection Boundaries  
N-1 Loop Operation  
Flow = 171000 GPM



(d) Overtemperature  $\Delta T$

$$\leq \Delta T_o \{ K_1 - K_2 (T - 575.4) + K_3 (P - 2235) - f(\Delta I) \}$$

where:

$\Delta T_o$  = Indicated T at rated power,  $^{\circ}\text{F}$

T = Average temperature,  $^{\circ}\text{F}$

P = Pressurizer pressure, psig

$K_1$  = 1.1619

$K_2$  = 0.01035

$K_3$  = 0.0007978

and  $f(\Delta I)$  is a function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

- (1) For  $(q_t - q_b)$  within +12% and -17% where  $q_t$  and  $q_b$  are percent power in the top and bottom halves of the core respectively, and  $q_t + q_b$  is total core power in percent of rated power,  $f(\Delta I) = 0$ . For every 2.4% below rated power level, the permissible positive flux difference range is extended by +1 percent. For every 2.4% below rated power level, the permissible negative flux difference range is extended by -1 percent.
- (2) For each percent that the magnitude of  $(q_t - q_b)$  exceeds +12% in a positive direction, the  $\Delta T$  trip setpoint shall be automatically reduced by 2.4% of the value of  $\Delta T$  at rated power.
- (3) For each percent that the magnitude of  $(q_t - q_b)$  exceeds -17%, the  $\Delta T$  trip setpoint shall be automatically reduced by 2.4% of the value of  $\Delta T$  at rated power.

(e) Overpower  $\Delta T$

$$\leq \Delta T_o \{ K_4 - K_5 \frac{dT}{dt} - K_6 (T - T') - f(\Delta I) \}$$

where

$\Delta T_o$  = Indicated  $\Delta T$  at rated power,  $^{\circ}\text{F}$

T = Average temperature,  $^{\circ}\text{F}$

$T'$  = Indicated average temperature at nominal conditions and rated power,  $^{\circ}\text{F}$

$K_4 = 1.07$

$K_5 = \begin{cases} 0 & \text{for decreasing average temperature} \\ 0.2 \text{ seconds per } ^{\circ}\text{F} & \text{for increasing average temperature} \end{cases}$

$K_6 = 0.002235 \text{ for } T \geq T'; K_6 = 0 \text{ for } T < T'$

$f(\Delta I) = \text{as defined in (d) above,}$

(f) Low reactor coolant loop flow  $\geq 90\%$  of normal indicated flow

(g) Low reactor coolant pump frequency  $\geq 57.5 \text{ Hz}$

(h) Under voltage  $\geq 70\%$  of normal voltage

#### 2.3.1.3 Other reactor trips

(a) High pressurizer water level  $\leq 92\%$  of span

(b) Low-low steam generator water level  $\geq 5\%$  of narrow range instrument span

The overtemperature  $\Delta T$  reactor trip provides core protection against DNB for all combinations of pressure, power, coolant temperature, and axial power distribution provided only that (1) the transient is slow with respect to piping transit delays from the core to the temperature detectors (about 4 seconds)<sup>(4)</sup>, and (2) pressure is within the range between the high and low pressure reactor trips. With normal axial power distribution, the reactor trip limit, with allowance for errors, (2) is always below the core safety limit as shown in Figure 2.1-1 or 2.1-2. If axial peaks are greater than design, as indicated by difference between top and bottom power range nuclear detectors, the reactor trip is automatically reduced.<sup>(5)(6)</sup>

The overpower  $\Delta T$  reactor trip prevents power density anywhere in the core from exceeding 112% of design power density as discussed in Section 7.2.3 and 14.1.3 of the FSAR and includes corrections for axial power distribution, change in density, and heat capacity of water with temperature, and dynamic compensation for piping delays from the core to the loop temperature detectors. The specified setpoints<sup>(2)</sup> meet this requirement and include allowance for instrument errors.

The overpower and overtemperature protection system setpoint have been revised to include effects of fuel densification and the increase in rated thermal output to 2300 MWt on core safety limits. The revised setpoints in the Technical Specifications insure the combination of power, temperature, and pressure will not exceed the core safety limits as shown in Figures 2.1-1 and 2.1-2.

The low flow reactor trip protects the core against DNB in the event of a sudden loss of power to one or more reactor coolant pumps. The setpoint specified is consistent with the value used in the accident analysis.<sup>(7)</sup> The under voltage and underfrequency reactor trips protect against a decrease in flow caused by low electrical voltage or frequency. The specified setpoints assure a reactor trip signal before the low flow trip point is reached.

The high pressurizer water level reactor trip protects the pressurizer safety valves against water relief. Approximately 1150 ft<sup>3</sup> of water corresponds to 92% of span. The specified setpoint allows margin for instrument error<sup>(2)</sup> and transient level overshoot beyond this trip setting so that the trip function prevents the water level from reaching the safety valves.

The low-low steam generator water level reactor trip protects against loss of feedwater flow accidents. The specified set point assures that there will be sufficient water inventory in the steam generators at the time of trip to allow for starting delays for the auxiliary feedwater system.<sup>(8)</sup>

The specified reactor trips are blocked at low power where they are not required for protection and would otherwise interfere with normal plant operations. The prescribed set point above which these trips are unblocked assures their availability in the power range where needed.

Above 10% power, an automatic reactor trip will occur if two reactor coolant pumps are lost during operation. Above 45% power, an automatic reactor trip will occur if any pump is lost. This latter trip will prevent the minimum value of the DNB ratio, DNBR, from going below 1.30 during normal operational transients and anticipated transients when only two loops are in operation and the overtemperature  $\Delta T$  trip setpoint is adjusted to the value specified for three loop operation.

The turbine and steam-feedwater flow mismatch trips do not appear in the specification as these settings are not used in the transient and accident analysis (FSAR Section 14).

#### References

- 1) FSAR Section 14.4.1
- 2) FSAR Page 14-3
- 3) FSAR Section 14.3.1
- 4) FSAR Section 14.1.2
- 5) FSAR Section 7.2.2, 7.2.3
- 6) FSAR Section 3.2.1
- 7) FSAR Section 14.1.6
- 8) FSAR Section 14.1.11



### 3.1.5 LEAKAGE

#### Specification:

- 3.1.5.1 If the primary system leakage exceeds 1 gpm and the source of leakage is not identified within 12 hours, the reactor shall be placed in the hot shutdown condition utilizing normal operating procedures. If the source of leakage exceeds 1 gpm and is not identified within 24 hours, the reactor shall be placed in the cold shutdown condition utilizing normal operating procedures.
- 3.1.5.2 If the sources of leakage have been identified and it is evaluated that continued operation is safe, operation of the reactor with a total leakage rate not exceeding 10 gpm shall be permitted. If leakage exceeds 10 gpm, the reactor shall be placed in the hot shutdown condition within 12 hours utilizing normal operating procedures. If the leakage exceeds 10 gpm for 24 hours, the reactor shall be placed in the cold shutdown condition utilizing normal operating procedures.
- 3.1.5.3 If the primary to secondary leakage in a steam generator exceeds 1 gpm the reactor shall be placed in the hot shutdown condition within 8 hours utilizing normal operating procedures. If the leakage exceeds this limit for 24 hours, the reactor shall be placed in the cold shutdown condition utilizing normal operating procedures.

#### Basis:

Leakage from the Reactor Coolant System is collected in the containment or by the other closed systems. These closed systems are: the Steam and Feedwater System, the Waste Disposal System, and the Component Cooling System. Assuming the existence of the maximum allowable activity in the reactor coolant, the rate of 1 gpm unidentified leakage is a conservative limit on what is allowable before the guidelines of 10 CFR Part 20 would be exceeded. This is shown as follows: If the reactor coolant activity as  $50/\bar{E}$  uCi/cc ( $\bar{E}$  = average beta plus gamma energy per disintegration in Mev) and 1 gpm of leakage is assumed to be discharged through the air ejector, the yearly whole body dose resulting from this activity at the site boundary, using an annual average  $X/Q = 2.00 \times 10^{-5}$  sec/m<sup>3</sup> is about the 10 CFR Part 20 guideline of 0.5 R/yr<sup>(1,2)</sup>.

With the limiting reactor coolant activity and assuming initiation of 1 gpm leak from the Reactor Coolant System to the Component Cooling System, the radiation monitor in the component cooling pump inlet

by cooling coils of the main recirculation units. This system provides a dependable and accurate means of measuring integrated total leakage, including leaks, from the cooling coils themselves which are part of the containment boundary. Condensate flows from approximately 0.5 gpm to greater than 10 gpm can be detected and measured by this system. Condensate flow corresponding to coolant leakage of approximately 1 gpm can be detected within 10 minutes.

Leaks less than 1 gpm can be measured by periodic observation of the level changes in the condensate collection system.

If leakage is to another closed system, it will be detected by the plant radiation monitors and/or inventory control.

(DELETE)

Operator action to start to place the reactor in the hot shutdown condition within 12 hours utilizing normal operating procedures provides adequate time for an orderly reduction of power. The hot shutdown condition allows personnel to enter the containment and inspect the pressure boundary for leaks. The 24 hours allowed prior to the operator starting to place the reactor in the cold shutdown condition utilizing normal operating procedures allows reasonable time to correct small deficiencies. If major repairs are needed, a cold shutdown condition would be in order.

3.3 EMERGENCY CORE COOLING SYSTEM, AUXILIARY COOLING SYSTEMS,  
AIR RECIRCULATION FAN COOLERS, CONTAINMENT SPRAY, POST  
ACCIDENT CONTAINMENT VENTING SYSTEM, AND ISOLATION SEAL  
WATER SYSTEM

Applicability:

Applies to the operating status of the Emergency Core Cooling System, Auxiliary Cooling Systems, Air Recirculation Fan Coolers, Containment Spray, Post Accident Containment Venting System, and Isolation Seal Water System.

Objective:

To define those limiting conditions for operation that are necessary: (1) to remove decay heat from the core in emergency or normal shutdown situations, (2) to remove heat from containment and critical components in normal operating and emergency situations, and (3) to remove airborne iodine from the containment atmosphere following a postulated Design Basis Accident.

Specification

3.3.1 Safety Injection and Residual Heat Removal Systems

- 3.3.1.1 The reactor shall not be made critical, except for low temperature physics tests, unless the following conditions are met:
- a. The refueling water tank contains not less than 300,000 gal. of water with a boron concentration of at least 1950 ppm.
  - b. The boron injection tank contains not less than 900 gal. of 20,000 to 22,500 ppm boron solution at a temperature of at least 145°F. Two channels of heat tracing shall be available for the flow path.
  - c. Each accumulator is pressurized to at least 600 psig and contains at least 825 ft<sup>3</sup> and no more than 841 ft<sup>3</sup> of water with a boron concentration of at least 1950 ppm. No accumulator may be isolated.

sodium hydroxide addition, are capable of being operated on emergency power with one diesel generator inoperable. If all diesel generators are operating or another source of emergency power is available, the other containment spray pump, with sodium hydroxide addition, can be operated to provide iodine removal in excess of the minimum requirements. Adequate power for operation of the redundant containment heat removal system (i.e. four fan-cooler units and two containment spray pumps) is also assured in this case.

The Component Cooling System is different from the other systems discussed above in that the components are so located in the auxiliary buildings as to be accessible for repair after a loss-of-coolant accident.<sup>(4)</sup>

A total of four service water pumps are installed, a minimum of two of which are required to operate during the postulated loss-of-coolant accident.<sup>(5)</sup>

A minimum of 300,000 gallons of water will be maintained in the refueling water storage tank. This requirement is based on recirculation mode operation which may start with a depth of 1.5 feet on the containment floor. This depth of water is equivalent to the amount of water in the primary system plus 60% of the refueling water storage tank, approximately 215,000 gallons of water at 263°F.<sup>(1)</sup>

Analysis have shown that the consequences of the steam line break accident are successfully mitigated with a boron injection tank boron concentration of 15,000 ppm or greater.<sup>(9)</sup> The specification of 20,000 ppm as a minimum concentration is maintained to provide additional margin in the event of such an accident.

36

The post accident containment venting system is designed with redundant air supply and vent paths. The valves in the system will be demonstrated to be operable prior to criticality. Testing of the air supply system is not required because of the long lead time between an accident and the required operation of the venting system. This period of time will permit maintenance effort, if required. The efficiency of the filters in each vent path was not used in this safety analysis; therefore, testing of these filters is not required.<sup>(6)</sup>

The Isolation Seal Water System provides a reliable means for injecting seal water between the seats and stem packing of the globe and double disc types of isolation valves and into the piping between closed diaphragm type isolation valves.<sup>(7)</sup>

The minimum 825 ft<sup>3</sup> and maximum 841 ft<sup>3</sup> of water in the accumulators correspond to an instrument reading of 61.5% and 80.4% of instrument span, respectively.

#### References

- |   |                          |
|---|--------------------------|
| (1) FSAR Section 6.2  | (4) FSAR Section 9.3     |
| (2) FSAR Section 6.3  | (5) FSAR Section 9.6.2   |
| (3) FSAR Section 14.3.5   | (6) FSAR - Appendix 6B   |
|   | (7) FSAR - Section 5.2.2 |
| (8) CP&L report and supplemental letters of September 29, November 5, December 8, 1971, and March 20, 1972. |                          |
| (9) CP&L letter of August 30, 1974.   |                          |

36

### Basis

A reactor shutdown from power requires removal of core decay heat. Immediate decay heat removal requirements are normally satisfied by the steam bypass to the condenser. Therefore, core decay heat can be continuously dissipated via the steam bypass to the condenser as feedwater in the steam generator is converted to steam by heat absorption. Normally, the capability to return feedwater flow to the steam generators is provided by operation of the turbine cycle feedwater system.

The twelve main steam safety valves have a total combined rated capability of 10,068,845 lbs/hr. The total full power steam flow is 10,068,845 lbs/hr., therefore twelve (12) main steam safety valves will be able to relieve the total steam flow if necessary.<sup>(1)</sup> Following a loss of load, which represents the worst transient, steam flows are below the total capacity of the 12 safety valves. Therefore, overpressurization of the secondary system is not possible.

In the unlikely event of complete loss of turbine-generator and off-site electrical power to the plant, decay heat removal would continue to be assured by the availability of either the steam-driven auxiliary feedwater pump or one of the two motor-driven auxiliary steam generator feedwater pumps operated from the diesel generators and steam discharge to the atmosphere via the main steam safety valves and atmospheric relief valves. One motor-driven auxiliary feedwater pump can supply sufficient feedwater for removal of decay heat from the plant.<sup>(2)</sup> The minimum amount of water in the condensate storage tank is the amount needed for at least 2-hours operation at hot standby conditions. If the outage is more than 2 hours, deep well or Lake Robinson water may be used.

An unlimited supply is available from the lake via either leg of the plant service water system for an indefinite time period.

### 3.10

#### REQUIRED SHUTDOWN MARGINS, CONTROL ROD, AND POWER DISTRIBUTION LIMITS

##### Applicability:

Applies to the required shutdown margins, operation of the control rods, and power distribution limits.

##### Objective:

To ensure (1) core subcriticality after a reactor trip and during normal shutdown conditions, (2) limited potential reactivity insertions from a hypothetical control rod ejection, and (3) an acceptable core power distribution during power operation.

##### Specifications:

#### 3.10.1 Full Length Control Rod Insertion Limits

3.10.1.1 (Deleted by Change No. 21 issued 7/6/73)

3.10.1.2 When the reactor is critical, except for physics tests and full length control rod exercises, the shutdown control rods shall be fully withdrawn.

3.10.1.3 When the reactor is critical, except for physics tests and full length control rod exercises, the control rods shall be no further inserted than the limits shown by the solid lines on Figure 3.10-1 for 3 loop or 2 loop operation.

3.10.1.4 After 50% of the second and subsequent cycles as defined by burnup, the limits shall be adjusted as a linear function of burnup toward the end-of-core life values as shown by the dotted lines on Figure 3.10-1.

3.10.1.5 Except for physics tests, if a part-length or full-length control rod is more than 15 inches out of alignment with its bank, then within two hours:

- a. Correct the situation, or
- b. Determine by measurement the hot channel factors and apply Specification 3.10.2.1, or
- c. Limit power to 70% of rated power for 3 loop operation or 45% of rated power for 2 loop operation.

3.10.1.6 Insertion limits do not apply during physics tests or during periodic exercise of individual rods. However, the shutdown margin indicated in Figure 3.10-2 must be maintained except for the low power physics test to measure control rod worth and shutdown margin. For this test the reactor may be critical with all but one full length control rod inserted and part length rods fully withdrawn. Prior to this test the withdrawn rod must be tested and shown to be capable of being tripped.

### 3.10.2 Power Distribution Limits

3.10.2.1 At all times except during low power physics tests, the hot channel factors defined in the basis must meet the following limits:

$$F_Q(Z) \leq (2.30/P) \times K(Z) \text{ for } P > .5$$

$$F_Q(Z) < (4.60) \times K(Z) \text{ for } P \leq .5$$

$$F_{\Delta H}^N < 1.55 (1 + 0.2(1-P))$$

where P is the fraction of rated power at which the core is operating, K(Z) is the function given in Figure 3.10-3, and Z is the core height location of  $F_Q$ .

3.10.2.1 If either measured hot channel factor exceeds these values the reactor power shall be reduced so as not to exceed a fraction of the design value equal to the ratio of the  $F_Q^N$  or  $F_{\Delta H}^N$  limit to measured value, whichever is less, and the high neutron flux trip setpoint shall be reduced by the same ratio. If subsequent incore mapping cannot, within a 24 hour period, demonstrate that the hot channel factors are met, the overpower  $\Delta T$  and overtemperature  $\Delta T$  trip setpoints shall be similarly reduced.

3.10.2.2 Following initial loading and at regular monthly intervals thereafter, power distribution maps using the movable detector system, shall be made to confirm that the hot channel factor limits of specification 3.10.2.1 are satisfied. For the purpose of this confirmation:

- a. The measurement of total peaking factor,  $F_Q^{\text{Meas}}$ , shall be increased by three percent to account for manufacturing tolerances and further increased by five percent to account for measurement error.
- b. The measurement of enthalpy rise hot channel factor,  $F_{\Delta H}^N$ , shall be increased by four percent to account for measurement error.

3.10.2.3 The reference equilibrium indicated axial flux difference for each excore channel as a function of power level (called the target flux difference) shall be measured at least once per effective full power quarter. If the axial flux difference has not been measured in the last effective full power month, the target flux difference must be updated monthly by linear interpolation using the most recent measured value and the value predicted for the end of the cycle life.

3.10.2.4 The indicated axial flux difference shall be considered outside of the limits of sections 3.10.2.5 through 3.10.2.8 when more than one of the operable excore channels are indicating the axial flux difference to be outside a limit.

3.10.2.5 Except during physics tests, during excore detector calibration and except as modified by 3.10.2.6 through 3.10.2.8 below, the indicated axial flux difference shall be maintained within a  $\pm 5\%$  band about the target flux difference (defines the target band on axial flux difference).



- 3.10.2.6 At a power level greater than 90 percent of rated power, if the indicated axial flux difference deviates from its target band, the flux difference shall be returned to the target band immediately or reactor power shall be reduced to a level no greater than 90 percent of rated power.
- 3.10.2.7 At a power level no greater than 90 percent of rated power,
- a. The indicated axial flux difference may deviate from its  $\pm 5\%$  target band for a maximum of one hour (cumulative) in any 24 hour period provided the flux difference does not exceed an envelope bounded by  $-11\%$  and  $+11\%$  percent at 90% power and increasing by  $-1\%$  and  $+1\%$  for each 2% of rated power below 90%. If the cumulative time exceeds one hour, then the reactor power shall be reduced immediately to no greater than 50% power and the high neutron flux setpoint reduced to no greater than 55% of rated power.
  - b. A power increase to a level greater than 90% of rated power is contingent upon the indicated axial flux difference being within its target band.
- 3.10.2.8 At a power level no greater than 50 percent of rated power,
- a. The indicated axial flux difference may deviate from its target band.
  - b. A power increase to a level greater than 50% of rated power is contingent upon the indicated axial flux difference not being outside its target band for more than two hours (cumulative) out of the preceding 24 hour period.

One half of the time the indicated axial flux difference is out of its target band up to 50% of rated power is to be counted as contributing to the one hour cumulative maximum the flux difference may deviate from its target band at a power level less than or equal to 90% of rated power.

3.10.2.9 Alarms shall normally be used to indicate non-conformance with the flux difference requirement of 3.10.2.6 or the flux difference-time requirement of 3.10.2.7.a. If the alarms are temporarily out of service, the axial flux difference shall be logged, and conformance with the limits assessed, every hour for the first 24 hours, and half-hourly thereafter.

### 3.10.3 Quadrant Power Tilt Limits

3.10.3.1 Except for physics tests and during power increases below 50% of full power, whenever the indicated quadrant power tilt ratio exceeds 1.02, the tilt condition shall be eliminated within two hours or the following actions shall be taken:

- a. Restrict core power level and reset the power range high flux setpoint to be less two percent of rated values for every percent of indicated power tilt ratio exceeding 1.0, and
- b. If the tilt condition is not eliminated after 24 hours, the power range high flux setpoint shall be reset to 55% of allowed power. Subsequent reactor operation would be permitted up to 50% power for the purpose of measurement and testing to identify the cause of the tilt condition.

3.10.3.2 Except for low power physics tests, if the indicated quadrant tilt exceeds 1.09 and there is simultaneous indication of a misaligned rod:

- a. The core power level shall be reduced by 2% of rated values for every 1% of indicated power tilt exceeding 1.0, and
- b. If the tilt condition is not eliminated within two hours, the reactor shall be brought to a hot shutdown condition.
- c. After correction of the misaligned rod, reactor operation will be permitted to 50% power until the indicated quadrant tilt falls below 1.09.

3.10.3.3 If the indicated quadrant tilt exceeds 1.09 and there is not simultaneous indication of rod misalignment, except as stated in Specification 3.10.3.2.c, the reactor shall immediately be brought to a hot shutdown condition.

### 3.10.4 Rod Drop Time

3.10.4.1 The drop time of each control rod shall be not greater than 1.8 seconds at full flow and operating temperature from the beginning of rod motion to dashpot entry.

### 3.10.5 Part Length Control Rod Banks

3.10.5.1 The eight (8) part length control rods shall be configured under administrative control into one of the following part length rod configurations.

- a. Four part length rod occupying core positions K-6, K-10, F-6, and F-10 shall constitute a part length control rod bank, hereafter designated bank P-1.

b. Four part length rods occupying core positions P-8, H-2, H-14, and B-8 shall constitute a part length control bank, hereafter designated part length bank P-2.

c. Combined Banks P-1 and P-2, hereafter designated bank P-3.

3.10.5.2 The part length control rods will not be inserted. They will remain in the fully withdrawn position except for physics tests and for axial offset calibration which will be performed at 75% of permitted power or less.

3.10.6 Inoperable Full Length and Part Length Control Rods

3.10.6.1 A full length or part length control rod shall be deemed inoperable if (a) the rod is misaligned by more than 15 inches with its bank, (b) if the rod cannot be moved by its drive mechanism, or (c) if its rod drop time is not met in the case of a full length rod.

3.10.6.2 No more than one inoperable control rod shall be permitted during power operation. This requirement does not apply to part length rods when they are fully withdrawn from the core.

3.10.6.3 If a full length control rod cannot be moved by its mechanism, boron concentration shall be changed to compensate for the withdrawn worth of the inoperable rod such that shutdown margin equal to or greater than shown on Figure 3.10-2 results.

3.10.7 Power Ramp Rate Limits

3.10.7.1 During the return to power following a shutdown where fuel assemblies have been handled (e.g. refueling, inspection), the rate of reactor power increase shall be limited to 3% of full power in an hour between 20% and 100% of full power. This ramp rate requirement applies during the initial startup and may apply during subsequent power increases depending on the maximum power level achieved and length of operation at that power level. Specifically, this requirement can be removed for reactor power levels below a power level P (20%  $< P \leq 100\%$ ) provided that the plant has operated at or above power level P for at least 72 cumulative hours out of any 7-day operating period following the shutdown.

3.10.7.2 The rate of reactor power increases above the highest power level sustained for at least 72 cumulative hours during the preceding 30 cumulative days of reactor power operation shall be limited to 3% of full power in an hour. Alternatively, reactor power increase can be accomplished by a single step increase less than or equal to 10% of full power followed by a maximum ramp rate of 3% of full power in an hour beginning 3 hours after the step increase.

3.10.8      Required Shutdown Margins

- 3.10.8.1      When the reactor is in the hot shutdown condition, the shutdown margin shall be at least that shown in Figure 3.10-2.
- 3.10.8.2      When the reactor is in the cold shutdown condition, the shutdown margin shall be at least 1%  $\Delta k/k$ .
- 3.10.8.3      When the reactor is in the refueling operation mode, the shutdown margin shall be at least 10%  $\Delta k/k$ .

Basis:

The reactivity control concept is that reactivity changes accompanying changes in reactor power are compensated by control rod motion. Reactivity changes associated with xenon, samarium, fuel depletion, and large changes in reactor coolant temperature (operating temperature to cold shutdown) are compensated by changes in the soluble boron concentration. During power operation, the shutdown groups are fully withdrawn and control of reactor power is by the control groups. A reactor trip occurring during power operation will put the reactor into the hot shutdown condition.

The control rod insertion limits provide for achieving hot shutdown by reactor trip at any time assuming the highest worth control rod remains fully withdrawn with sufficient margins to meet the assumptions used in the accident analysis. In addition, they provide a limit on the maximum inserted rod worth in the unlikely event of hypothetical rod ejection and provide for acceptable nuclear peaking factors. The solid lines shown in Figure 3.10-1 meet the shutdown requirement for the first 50% of Cycle 3. The end-of-cycle life limit is represented by the dotted lines. The end-of-cycle life limit may be determined on the basis of plant startup and operating data to provide a more realistic limit which will allow for more flexibility in plant operation and still assure compliance with the shutdown requirement. The maximum shutdown margin requirement occurs at end of core life and is based on the value used in analysis of the hypothetical steam break accident. Early in core life, less shutdown margin is required, and Figure 3.10-2 shows the shutdown margin equivalent to 1.77% reactivity (3) at end of life with respect to an uncontrolled cooldown. All other accident analyses are based on 1% reactivity shutdown margin. The specified control rod insertion limits have been revised for Cycle 3 in order to meet the design basis criteria on (1) potential ejected control rod worth and peaking factor (4), (2) radial power peaking factors,  $F_{\Delta H}$ , and (3) required shutdown margin.

The various control rod banks (shutdown banks, control banks, and part length rods) are each to be moved as a bank, that is, with all rods in the bank within one step (5/8 inch) of the bank position. Position indication is provided by two methods: a digital count of actuation pulses which shows the demand position of the banks and a linear position indicator (LVDT) which indicates the actual rod position (2). The 15-inch permissible misalignment provides an enforceable limit below which design distribution is not exceeded. In the event that an LVDT is not in service, the effects of a malpositioned control rod are observable on nuclear and process information displayed in the control room and by core thermocouples and in-core movable detectors. The determination of the hot channel factors will be performed by means of the movable in-core detectors.

The two hours in 3.10.1.5 are acceptable because complete rod misalignment (part-length or full-length control rod 12 feet out of

alignment with its bank) does not result in exceeding core safety limits in steady state operation at rated power and is short with respect to probability of an independent accident. If the condition cannot be readily corrected, the specified reduction in power to 70% will ensure that design margins to core limits will be maintained under both steady state and anticipated transient conditions.

The intent of the test to measure control rod worth and shutdown margin (Specification 3.10.1.6) is to measure the worth of all rods less the worth of the worst case for an assumed stuck rod; that is, the most reactive rod. The measurement would be anticipated as part of the initial startup program and infrequently over the life of the plant, to be associated primarily with determinations of special interest such as end of life cooldown, or startup of fuel cycles which deviate from normal equilibrium conditions in terms of fuel loading patterns and anticipated control bank worths. These measurements will augment the normal fuel cycle design calculations and place the knowledge of shutdown capability on a firm experimental as well as analytical basis.

Operation with abnormal rod configuration during low power and zero power testing is permitted because of the brief period of the test and because special precautions are taken during the test.

Two criteria have been chosen as a design basis for fuel performance related to fission gas release, pellet temperature, and cladding mechanical properties. First, the peak value of linear power density must not exceed 21.1 kW/ft. Second, the minimum DNBR in the core must not be less than 1.30 in normal operation or in short term transients.

In addition to the above, the initial steady state conditions for the peak linear power for a loss-of-coolant accident must not exceed the values assumed in the accident evaluation. This limit is required in order for the maximum clad temperature to remain below that established by the ECCS Acceptance Criteria. To aid in specifying the limits on power distribution the following hot channel factors are defined.

$F_Q$ , Heat Flux Hot Channel Factor, is defined as the maximum local heat flux on the surface of a fuel rod divided by the average fuel rod heat flux, allowing for manufacturing tolerances on fuel pellets and rods.

$F_Q^N$ , Nuclear Heat Flux Hot Channel Factor, is defined as the maximum local fuel rod linear power density divided by the average fuel rod linear power density, assuming nominal fuel pellet and rod dimensions.

$F_Q^E$ , Engineering Heat Flux Hot Channel Factor, is defined as the allowance on heat flux required for manufacturing tolerances. The engineering factor allows for local variations in enrichment, pellet density and diameter, surface area of the fuel rod and eccentricity of the gap between pellet and clad. Combined statistically the net effect is a factor of 1.03 to be applied to fuel rod surface heat flux.

$F_{\Delta H}^N$ , Nuclear Enthalpy Rise Hot Channel Factor, is defined as the ratio of the integral of linear power along the rod with the highest integrated power to the average rod power.

It should be noted that  $F_{\Delta H}^N$  is based on an integral and is used as such in the DNB calculations. Local heat fluxes are obtained by using hot channel and adjacent channel explicit power shapes which take into account variations in horizontal (x-y) power shapes through the core. Thus, the horizontal power shape at the point of maximum heat flux is not necessarily directly related to  $F_{\Delta H}^N$ .

It has been determined by extensive analysis of possible operating power shapes that the design limits on peak local power density and on minimum DNBR at full power are met, provided:

$$F_Q^N \leq 2.233 \cdot K(z) \text{ and } F_{\Delta H}^N \leq 1.55$$

$K(z)$  is the normalized peaking factor axial dependence used in the LOCA analysis and is shown in Figure 3.10-3. For normal operation, it is not necessary to measure these quantities. Instead, it has been determined that, provided certain conditions are observed, the above hot channel factor limits will be met; these conditions are as follows:

1. Control rods in a single bank move together with no individual rod insertion differing by more than 15 inches from the bank demand position.
2. Control rod banks are sequenced with overlapping banks as shown in Figure 3.10-1.
3. The control bank insertion limits are not violated.
4. Part length control rods are not inserted.
5. Axial power distribution control procedures, which are given in terms of flux difference control, are observed. Flux difference refers to the difference in signals between the top and bottom halves of two-section excore neutron detectors. The flux difference is a measure of the axial offset which is defined on the difference in power between the top and bottom halves of the core.

For operation at a fraction  $P$  of full power the design limits are met, provided,

$$F_Q^N \leq \frac{2.233 \cdot K(z)}{P} \text{ in the flux difference range } -17 \text{ percent to } +12 \text{ percent}$$

$$\text{and } F_{\Delta H}^N \leq 1.55 \{1 + 0.2 (1-P)\}$$

where  $P$  is the fraction of full power at which the reactor is operating:  $0 \leq P \leq 1.0$ .



The permitted relaxation in  $F_{AH}^N$  with reduced power allows radial power shape changes with rod insertion to the insertion limits. It has been determined that provided the above conditions 1 through 4 are observed, these hot channel factors limits are met.

The procedures for axial power distribution control referred to above include operator control of flux difference to minimize the effects of xenon redistribution on the axial power distribution during load-follow maneuvers. Basically, control of flux difference is required to limit the difference between the current value of Flux Difference ( $\Delta I$ ) and a reference value which corresponds to the full power equilibrium value of Axial Offset (Axial Offset =  $\Delta I$ /fractional power). The reference value of flux difference varies with power level and burnup but expressed as axial offset, it varies primarily with burnup.

The target (or reference) value of flux difference is determined as follows: At any time that equilibrium xenon conditions have been established, the indicated flux difference is noted with part length rods withdrawn from the core and with control Bank D more than 190 steps withdrawn. This value, divided by the fraction of full power at which the core was operating is the full power value of the target flux difference. Values for all other core power levels are obtained by multiplying the full power value by the fractional power. Since the indicated equilibrium value was noted, no allowances for excore detector error are necessary and indicated deviation of  $\pm 5$  percent  $\Delta I$  is permitted from the indicated reference value. During periods where extensive load following is required, it may be impossible to establish the required core conditions for measuring the target flux difference every month. For this reason, the specification provides two methods for updating the target flux difference.

Strict control of the flux difference (and rod position) is not as necessary during part power operation. This is because xenon distribution control at part power is not as significant as the control at full power and allowance has been made in predicting the heat flux peaking factors for less strict control at part power.

Strict control of the flux difference is not possible during certain physics tests, control rod exercises, or during the required periodic excore calibration which require larger flux differences than permitted. Therefore, the specifications on power distribution are not applicable during physics tests, control rod exercises, or excore calibrations; this is acceptable due to the extremely low probability of a significant accident occurring during these operations. Excore calibration includes that period of time necessary to return to equilibrium operating conditions. In some instances of rapid plant power reduction automatic rod motion will cause the flux difference to deviate from the target bank when the reduced power level is reached. This does not necessarily affect the xenon distribution sufficiently to change the envelope of peaking factors which can be reached on a subsequent return to full power within the target band, however, to simplify the specification, a limitation of one hour in any

period of 24 hours is placed on operation outside the band. This ensures that the resulting xenon distributions are not significantly different from those resulting from operation within the target band. The instantaneous consequence of being outside the band, provided rod insertion limits are observed, is not worse than a 10 percent increment in peaking factor for flux difference in the range +14 percent to -14 percent (+11 percent to -11 percent indicated) increasing by +1 percent for each 2 percent decrease in rated power. Therefore, while the deviation exists the power level is limited to 90 percent or lower depending on the indicated flux difference. In all cases the (+5) percent target band is the Limiting Condition for Operation. Only when the target band is violated do the limits under specification 3.10.2.7 apply.

If, for any reason, flux difference is not controlled with the  $\pm 5$  percent band for as long a period as one hour, then xenon distributions may be significantly changed and operation at 50 percent is required to protect against potentially more severe consequences of some accidents.

As discussed above, the essence of the limits is to maintain the xenon distribution in the core as close to the equilibrium full power condition as possible. This is accomplished by using the chemical volume control system to position the full length control rods to produce the required indication flux difference.

An upper bound envelope of 2.30 times the normalized peaking factor axial dependence has been determined from extensive analysis considering all operating maneuvers consistent with the technical specifications on power distribution control as given in Section 3.10.2. The specifications on power distribution control insure that xenon distributions are not developed which, at a later time could cause greater local power peaking even though the flux difference is then within limits. The results of a loss of coolant accident analysis based on this upper bound envelope indicate that the peak clad temperature would not theoretically exceed the 2200°F limits. The nuclear analyses of credible power shapes consistent with the power distribution control procedures have shown that the  $F_q^T$  limit of  $2.30/P$  is not exceeded.

For transient events the core is protected from exceeding 21.1 KW/ft locally, and from going below a minimum DNBR of 1.30, by automatic protection on power, flux difference, pressure and temperature.

Measurements of the hot channel factors are required as part of startup physics tests and whenever abnormal power distribution conditions require a reduction of core power to a level based on measured hot channel factors.

In the specified limit of  $F_q^N$  there is a 5% allowance for uncertainties<sup>(1)</sup> which means that normal operation of the core within the defined conditions and procedures is expected to result in a measured  $F_q^N < 2.233/1.05$ ; for example, at rated power even on a worst case basis. When a measurement is taken, experimental error must be allowed for and 5% is the appropriate allowance for a full core representative map taken with the movable incore detector flux mapping system.

In the specified limit of  $F_{\Delta H}^N$  there is an 8% allowance for design prediction uncertainties which means that normal operation of the core is expected to result in  $F_{\Delta H}^N \leq 1.55/1.08$  at rated power. The uncertainty to be associated with a measurement of  $F_{\Delta H}^N$  by the movable incore system on the other hand is 4% which means that the normal operation of the core shall result in a measured  $F_{\Delta H}^N \leq 1.55/1.04$  at rated power. The logic behind the larger design uncertainty in this case is that (a) abnormal perturbation in the radial power shape (e.g., rod misalignment) affect  $F_{\Delta H}^N$  in most cases without necessarily affecting  $F_{\Delta H}^N$  through movement of part length rods and can limit it to the desired value (b) while the operator has some control over  $F_{\Delta H}^N$  through  $F_{\Delta H}^Z$  by motion of control rods, he has no direct control over  $F_{\Delta H}^N$ , and (c) an error in the predictions for radial power shape which may be detected during startup physics tests can be compensated for in  $F_{\Delta H}^N$  by tighter axial control, but compensation for  $F_{\Delta H}^N$  is less readily available.

Quadrant power tilts are based upon the following considerations. The radial power distribution within the core must satisfy the design values assumed for calculation of power capability. Radial power distributions, measured as part of the startup physics testing, are periodically measured at a monthly or greater frequency. These measurements are taken to assure that the radial power distribution with any quarter core radial power asymmetry conditions are consistent with the assumptions used in power capability analyses. It is not intended that extended reactor operation would continue with a power tilt condition which exceeds the radial power asymmetry considered in the power capability analysis.

During normal plant startup, quadrant power tilt ratio may exceed 1.02 due to instrumentation instabilities as a result of rodded configurations and low excore detector signal levels below 50% of full power. Sustained power operation below 50% of full power would require a renormalization of the calculational methods for determining power tilt to compensate for change in signal levels once equilibrium conditions are met.

The two-hour time interval in this specification is considered ample to identify a dropped or misaligned rod and complete realignment procedures to eliminate the tilt. In the event that the tilt conditions cannot be eliminated within the two-hour time allowance, additional time would be needed to investigate the cause of the tilt condition. The measurements would include a full core physics map utilizing the movable detector system. For a tilt condition  $\leq 1.09$  an additional 22 hours time interval is authorized to accomplish these measurements. However, to assure that the peak core power is maintained below limiting values, a reduction of reactor power of two percent for each one percent of indicated tilt is required. Physics measurements have indicated that the core radial power peaking would not exceed a two-to-one relationship with the indicated tilt from the excore nuclear detector system for the worst rod misalignment.

In the event the tilt condition of 1.09 cannot be eliminated after 24 hours, the reactor power level will be reduced to the range required for low power physics testing. To avoid reset of a large number of protection setpoints, the power range nuclear instrumentation would be reset to cause an automatic reactor trip at 55% of allowed power. A reactor trip at this power has been selected to prevent, with margin, exceeding core safety limits even with a nine percent tilt condition. If a tilt ratio greater than 1.09 occurs which is not due to a misaligned rod, the reactor power shall be brought to a hot shutdown condition for investigation.

However, if the tilt condition can be identified as due to rod misalignment, operation can continue at a reduced power (2% for each one percent the tilt ratio exceeds 1.0) for the two-hour period necessary to correct the rod misalignment.

The specified rod drop time is consistent with safety analyses that have been performed. (1)

Part length rod insertion has been limited to eliminate adverse power shapes (Section 3.10.5.2).

An inoperable rod imposes additional demands on the operator. The permissible number of inoperable control rods is limited to one in order to limit the magnitude of the operating burden, but such a failure would not prevent dropping of the operable rods upon reactor trip.

Normal reactor operation causes significant pellet cracking and fragmentation. Consequently, handling of irradiated fuel assemblies can result in relocation of these fragments against the cladding. Calculations show that high cladding stresses can occur if the reactor power increase is rapid during the subsequent startup.

The 72-hour period allows for stress relaxation of the clad before the ramp rate requirement is removed, thereby, reducing the potential harmful effects of possible pellet or fragment relocation.

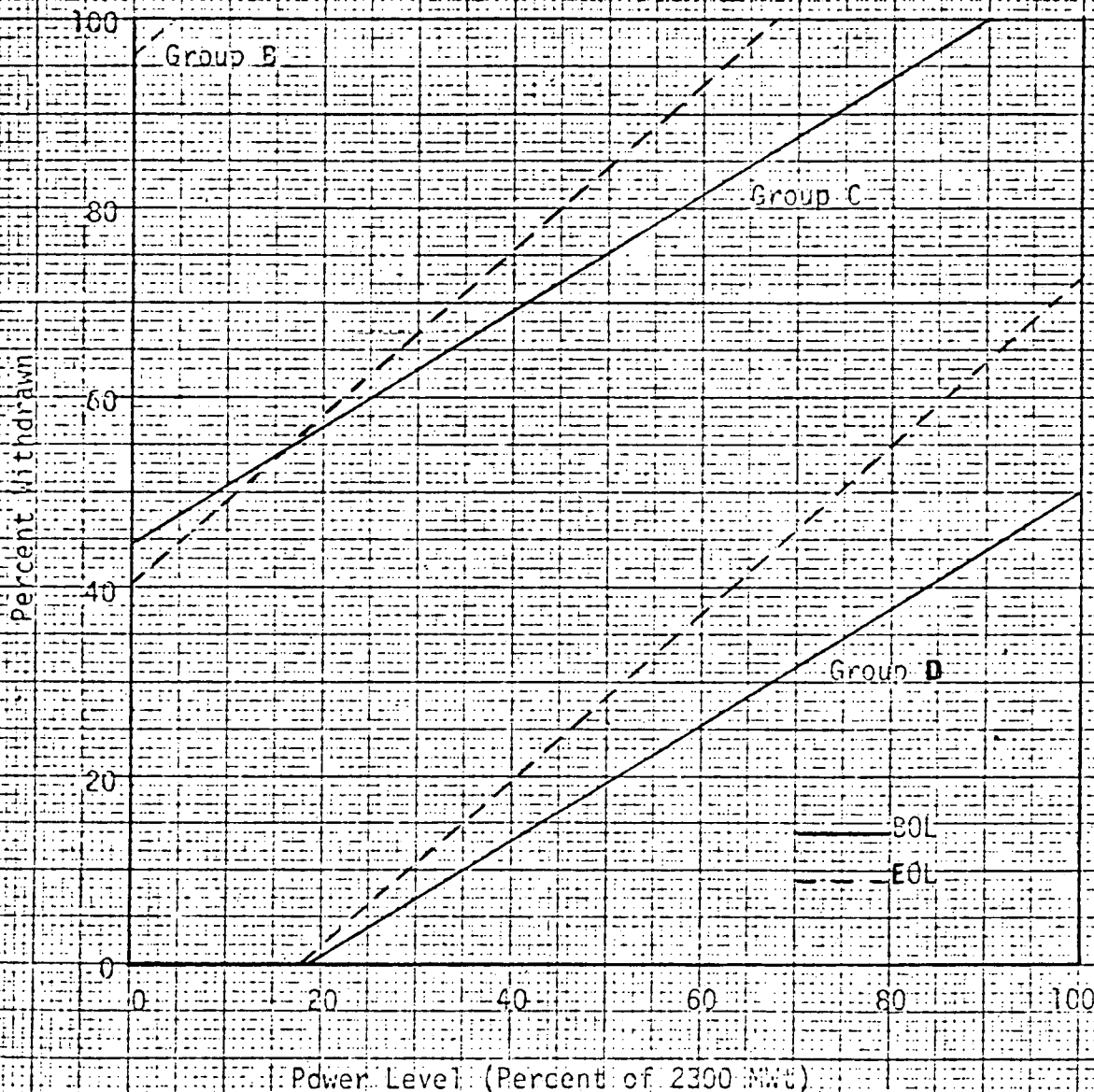
The 3% limit is imposed to minimize the effects of adverse cladding stresses resulting from part power operation for extended periods of time. The time period of 30 days is based upon the successful power ramp demonstrations performed on Zircaloy clad fuel in operating reactors, resulting in no cladding failures.

#### References

- (1) FSAR, Section 14 and WCAP-8243
- (2) FSAR, Section 7.3
- (3) WCAP-8243, Section 4.4.2
- (4) WCAP-8243, Section 4.4.3

Figure 3.10-1

Control Group Insertion Limits for  
Three Loop or Two Loop Operation



10 X 10 TO 1/2 INCH 45 1320  
7 X 10 INCHES MADE IN U.S.A.  
KEUFFEL & ESSER CO.

REQUIRED SHUTDOWN  
VS. BORON CONCENTRATION  
H. B. ROBINSON #2 - CYCLE 3

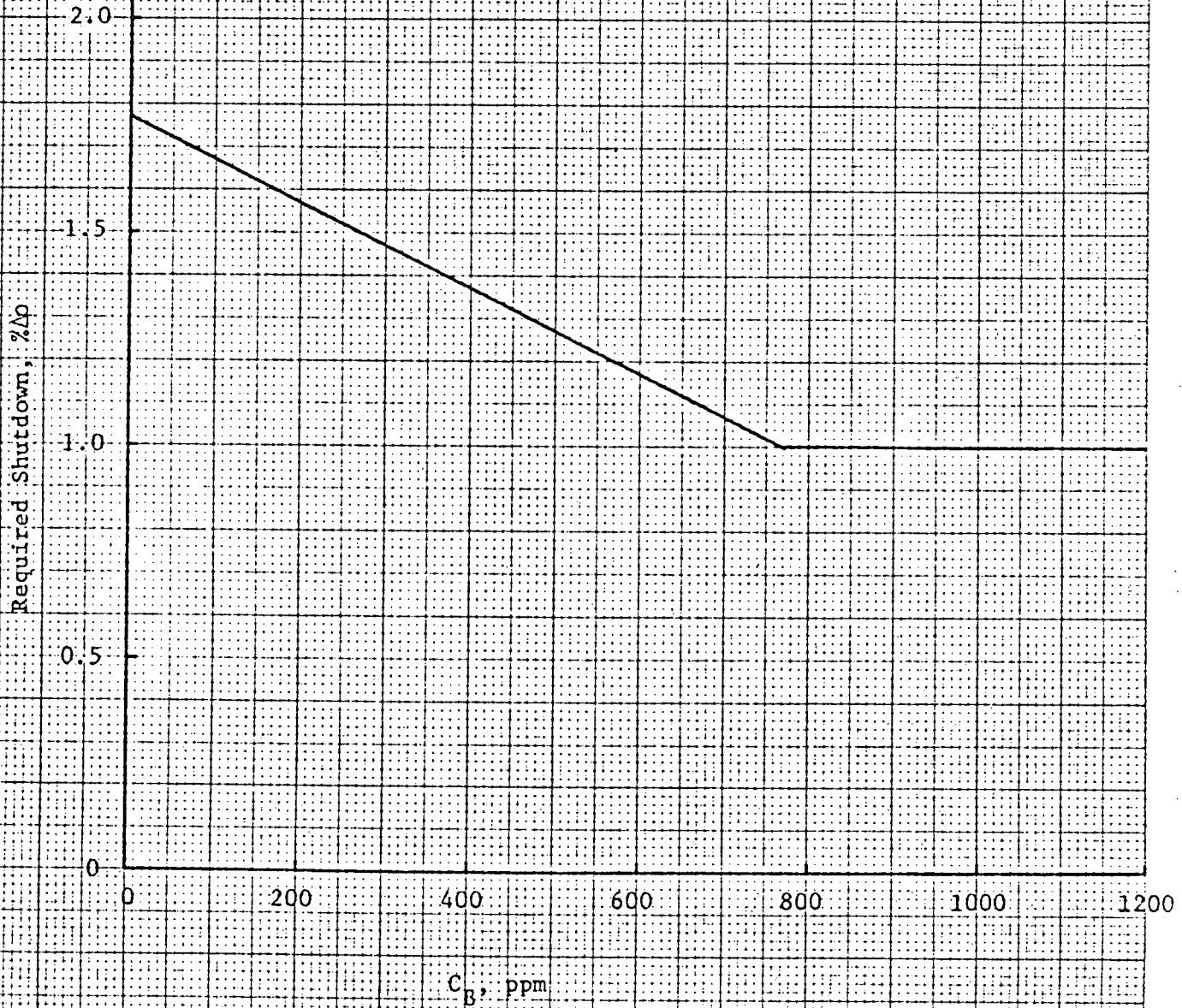


Figure 3.10-2

Normalized Axial Dependence Factor  
 $K(z)$

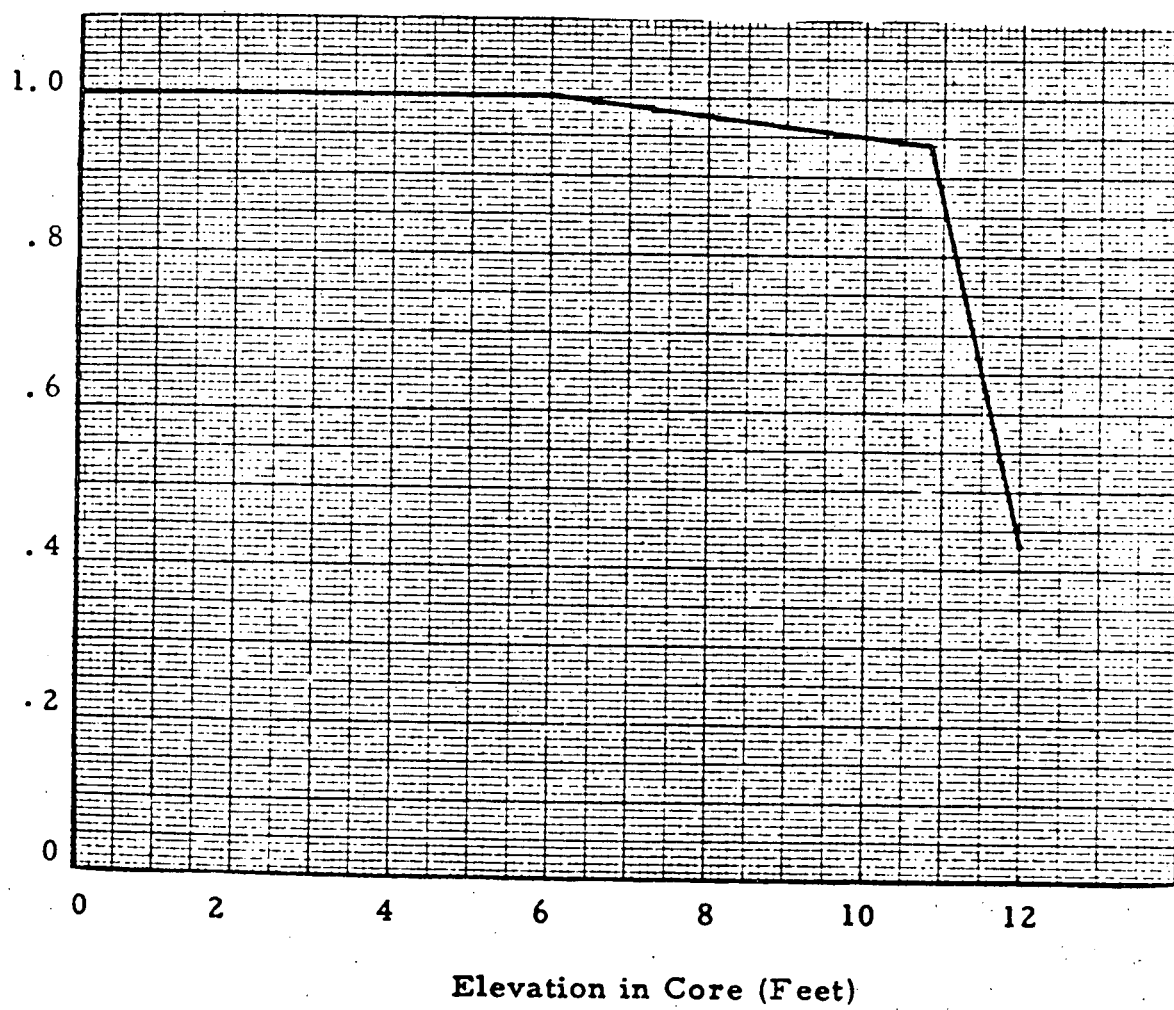


Figure 3.10-3 Normalized Axial Dependence Factor  
for  $F_Q$  versus Elevation

wel 14

1 BY MR. DAVIS:

2 Q Dr. Bridges, I hand you a sheet entitled,  
3 "Professional Qualifications, Donald N. Bridges." Do you  
4 recognize it?

5 A Yes. I prepared it.

6 Q Is that a statement of your professional qualifica-  
7 tions?

8 A Yes, sir.

9 Q Do you have any additions or corrections to that?

10 A No corrections.

11 Q Do you adopt that as a true and accurate statement  
12 of your professional qualifications?

13 A Yes.

14 MR. DAVIS: Mr. Chairman, I would ask that this  
15 document, entitled "Professional Qualifications, Donald N.  
16 Bridges," be included in the record as if read.

17 CHAIRMAN WOLF: Any objection?

18 MR. WHISENHUNT: None, Your Honor.

19 MR. TROWBRIDGE: No objection.

20 CHAIRMAN WOLF: It will be so included.

21 (The document follows:)

22 INSERT  
23  
24  
25



## PROFESSIONAL QUALIFICATIONS

Donald N. Bridges  
Operating Reactors Branch No. 3  
Division of Reactor Licensing  
Nuclear Regulatory Commission

I am a Project Manager on the staff of Operating Reactors, Division of Reactor Licensing, U. S. Nuclear Regulatory Commission. My primary responsibility is the management of licensing actions and the evaluation of concomitant safety considerations for operating reactors to assure that such actions do not adversely affect the health and safety of the public. I have primary responsibility for Robinson-2 and have been with the NRC in that position since November, 1974.

I received a Bachelor of Civil Engineering degree and a Master of Science degree from N. C. State University in 1958 and 1960, respectively. I also have a doctorate in Nuclear Engineering from the Georgia Institute of Technology (1970) and am a registered professional engineer in North Carolina. My PhD studies involved theoretical and experimental work in reactor kinetics.

From 1960 to 1962, I worked with the Dupont Company at the Savannah River Plant as a civil engineer. I was engaged in general engineering work with the U. S. Navy Civil Engineer Corps from 1962 to 1966. I attended graduate school at Georgia Tech from 1966 to 1970 and worked as a nuclear engineer at Savannah River with the AEC from 1970 to 1974. My responsibilities at Savannah River included managerial research and development work, production-related work, and reactor safety studies.

I am a member of the American Nuclear Society and serve in the Naval Reserve as a Lieutenant Commander (Civil Engineer Corps) in an engineering reserve unit.

1 MR. DAVIS: Mr. Chairman, the witness is now  
2 available for questioning by the Board and by the parties as  
3 to safety matters in connection with the operation of the  
4 Robinson-2 plant.

5 CHAIRMAN WOLF: Thank you.

6 The witness is now available, Mr. Trowbridge, for  
7 any questioning that you might care to make.

8 MR. TROWBRIDGE: I have no questions.

9 CHAIRMAN WOLF: All right. Mr. Whisenhunt, do  
10 you have any questions?

11 MR. WHISENHUNT: If your Honor please, you've  
12 given me the right to reserve to examine him later as to  
13 temperature. Under the circumstances, I would ask further  
14 that the right to examine him as to any questions relating  
15 herein, in that I have not had an opportunity to read it.  
16 I might not have any questions, but then again the information  
17 contained herein, related to other information, may lead me  
18 to the desire to ask the gentleman questions on other than  
19 temperatures.

20 CHAIRMAN WOLF: Permission granted.

21 MR. SCINTO: Mr. Chairman, in that regard the  
22 Staff was not quite sure that there is a full and unfettered  
23 right to cross-examine in that regard. However, subject to  
24 it being reasonable at the time it's raised, we have no  
25 objection to Mr. Whisenhunt -- no problem with him participating

in this. We may wish to raise an objection later on if we feel that it gets beyond what we feel is reasonable.

CHAIRMAN WOLF: That's your right, Mr. Scinto.

DR. CALLIHAN: Mr. Davis, referring to the supplement to the Staff Evaluation Report, the supplement being dated July 31, 1975, was this document, to your knowledge, served on the Board and the parties at an earlier date, and if so, what was the service date?

MR. DAVIS: The service date was the initial submission of testimony date of July 22, 1975. I did receive a call from Dr. Cole, I believe, who hadn't received his copy yet. I did send an additional copy to him. It should have been received under cover letter of the same date.

DR. CALLIHAN: July 22?

MR. DAVIS: July 22.

#### EXAMINATION BY THE BOARD

BY DR. COLE:

Q Dr. Bridges, on page 1.1 of Staff Exhibit Number 1, in the second paragraph on that page, it says that Robinson-2 was initially designed for operation at 2300 megawatts thermal. I note that the original license was issued for 2200 megawatts thermal.

Could you explain to the Board why it was licensed at 2200 megawatts thermal rather than the 2300 megawatts thermal which this statement indicates it was

1 initially designed for?

2 A I think there was some initial conservatisms  
3 taken in the licensing process at that time, as to the  
4 background and operational experience at 2200.

5 Q Have those problems been resolved to the  
6 satisfaction of the Staff, and they are now content with  
7 the operation at 2300 megawatts?

8 A Yes, sir.

9 Q With respect to question number 1, which I  
10 believe you answered, in your view would the application of  
11 the ECCS criteria modify in any way the operating methods for  
12 the reactor such that 2300 megawatts thermal would not be  
13 achievable?

14 A The latest indications are that with the most  
15 current ECCS criteria, they can operate at 2300 megawatts.

16 Q And still be ECCS --

17 A Yes, sir.

18 Q Question number 4 pertaining to ATWS, I was going  
19 to say, is the Staff satisfied that Robinson-2 will be in  
20 reasonable compliance with ATWS, but I note here that the  
21 review is scheduled for review is late calendar year '75.  
22 What is really the status of the review? Do you expect a  
23 favorable report on that?

24 A We expect a favorable report. That's the latest  
25 indication we have. I wouldn't care to speculate beyond that.

wel 18 1

Q That would, in your opinion, have no effect on  
the licensing operation at 2300 megawatts thermal, or would  
it?

2

A I really couldn't say, beyond the answer I've  
given you. The indications are that at this point. But I  
wouldn't care to speculate. I don't know completely what  
the results of that review will be.

3

Q You did not address yourself to the matter of  
Appendix I?

4

A No, sir.

5

Q I won't ask you that question then.

6

A Save that.

Burns fls 13

14

15

16

17

18

19

20

21

22

23

24

25

TAKE 8  
JRB:jrb1

BY DR. CALLIHAN:

Q And one of the questions the Board posed, No. 2, there there was reference to outstanding matters proposed or propounded originally by ACRS, and there is one pending, and you will note in your answers on page -- the second page of your response; can you comment on what is yet to be done in this ECCS evaluation?

A We have essentially reviewed this and the only things that remains to be resolved are the procedural details. That is immanent, the approval of that; the technical point is acceptable.

Q Perhaps you can help the Board or at least this part of the Board and review what are the significant -- without defining the term -- changes in technical specifications that are necessitated by the proposed increase in power?

A Well, many of the major changes relate to the Appendix K criteria, which are included in that document. In a case or two --

Q "Appendix K" is, for the record?

A It is the ECCS.

Most of the other tech specs relate to the increased linear power generation rate; that is primarily what the tech specs relate to for the increase in power.

CHAIRMAN WOLF: That completes the Board's questions at this time. It may be that we may have additional questions.

jrb 2 1 Will Mr. Bridges be available later on?

2 MR. DAVIS: Yes, Mr. Chairman, he will.

3 CHAIRMAN WOLF: Does anyone else have any questions?

4 MR. DAVIS: I have one.

5 REDIRECT EXAMINATION

6 BY MR. DAVIS:

7 Q Dr. Bridges, you stated on a speculative basis it  
8 was your estimate that the plant would comply with ATWS  
9 criteria; do you have any information to indicate that it will  
10 not?

11 A None whatsoever.

12 CHAIRMAN WOLF: Mr. Trowbridge, any questions?

13 MR. TROWBRIDGE: No questions.

14 CHAIRMAN WOLF: You are excused.

15 (Witness excused.)

16 CHAIRMAN WOLF: Are there any additional matters  
17 we might take up at this time?

18 MR. DAVIS: We have no more testimony for this  
19 afternoon, Mr. Chairman.

20 CHAIRMAN WOLF: Well, it appears that we may have  
21 one preliminary matter.

22 Mr. Scinto?

23 MR. SCINTO: Yes, if the Board is waiting for a  
24 motion, I would just note we have apparently reduced the  
25 Applicant's concern for a delay of 24 hours up to about an hour

jrb 3

1 and a half. If the Board is awaiting a motion from the parties  
2 then --

3 MR. TROWBRIDGE: I have a motion, a pending motion,  
4 to proceed in Applicant's case. I really, Mr. Chairman, do  
5 not find that having these people here, Staff and Applicant's  
6 witnesses, prepared to proceed -- and I do not understand  
7 that because Mr. Whisenhunt may or may not withdraw, why we  
8 should not proceed with the case as planned.

9 CHAIRMAN WOLF: We aren't proceeding with the case  
10 because you have raised a question of jurisdiction.

11 MR. TROWBRIDGE: I have not raised a question of  
12 jurisdiction, Mr. Chairman. I have raised questions of  
13 jurisdiction with the Board which need to be decided before  
14 proceeding in total; but we are perfectly prepared to proceed  
15 with our case, whichever way the Board wishes or rules.

16 MR. SCINTO: Mr. Chairman, Staff is also prepared  
17 to proceed with the case, but, you know, the Board does have  
18 the authority to control the conduct of the proceeding as it  
19 deems appropriate. We are not now talking about, I don't believe,  
20 talking about some 24-hour delay, if the Board is thinking  
21 of reconvening at 3 tomorrow afternoon, we are now at 3:30  
22 in the afternoon. Mr. Whisenhunt has indicated certain reasons  
23 why he would prefer to proceed at a later time. I have not  
24 yet seen a compelling reason for proceeding contrary to  
25 Mr. Whisenhunt's wishes.



jrb 4

1 We are ready now to proceed with something valid  
2 and if there's something worthwhile that we could do right at  
3 the moment while those other questions are pending, certainly  
4 we are willing to proceed. But, Mr. Chairman, we are talking  
5 about an hour and a half, and I think that is well within the  
6 time the Board has in its ordinary discretion for adjourning.

7 MR. TROWBRIDGE: Mr. Scinto, may I ask when your  
8 witnesses are arriving? The Board, as I understand it, is  
9 adjourning until these state and EPA witnesses arrive. The  
10 state witness would not be here before 2:30 tomorrow. We don't  
11 know when the EPA witnesses are going to be here.

12 We are talking about 24 hours.

13 CHAIRMAN WOLF: I don't think that the length of  
14 time really is such that we can do anything about that. We  
15 have a problem, and the Board feels it should not proceed  
16 with the case in chief until we have settled that problem.  
17 And we think Mr. Whisenhunt's position is reasonable under  
18 the circumstances.

19 At this time, before we do anything else,  
20 Mr. Whisenhunt, you have a motion for discovery?

21 MR. WHISENHUNT: Your Honor, I don't take the  
22 position it is a motion for discovery; it is a notice to  
23 produce, which only requires reasonable notice to the party  
24 to produce instruments, and puts them on notice that if he  
25 doesn't produce those instruments which are in his exclusive

jrb5

1 possession, then I am going to have to present secondary evidence  
2 through witnesses.

3 I have not moved to examine these, I have just  
4 asked him to produce; and under all the rules of reasonable  
5 notice to produce documents -- I found part of them in the  
6 course of discovery, where they listed the names of people --  
7 I have asked him to produce those letters. They put out the  
8 advertisements to the sale of these lots and restrictions,  
9 and I have asked them to produce them. If they don't, then  
10 I am asking under my notice that I can produce secondary  
11 evidence.

12 And that is the only motion I've got pending; and  
13 I don't consider it really a motion. It is a notice.

14 CHAIRMAN WOLF: Mr. Trowbridge?

15 Are you familiar with the matter Mr. Whisenhunt  
16 has raised in regard to material, I think advertising material?

17 MR. TROWBRIDGE: Mr. Chairman, we have two problems.  
18 To begin with we do regard this as a portion of extended  
19 discovery. I discussed it at length with a partner in my  
20 office who is very familiar with the federal rules and the  
21 request to produce at a hearing is in the course of discovery.  
22 This is in fact a request to produce all of our temperature  
23 records from July 1, 1974. It is a late request and one which  
24 should not be allowed.

25 Let me make a comment about this: One of the

jrb6

1 requests is for written complaints. We have those with us.  
2 Mr. Whisenhunt is welcome to them. There is no problem with  
3 written complaints.

4 On the temperature measurements, we have boxes  
5 here of temperature measurements. Mr. Whisenhunt, we do not  
6 have what is in the warehouses or at the plant; there are all  
7 kinds of temperature measurements, and we have not brought in  
8 all those from our warehouses. But we would be glad to let him  
9 see and examine what is here.

10 Now, let me talk to the other item: this is the  
11 advertisements for sale. I have a totally different objection  
12 to this. We might as well straighten it out now, because it  
13 has been introduced by oral argument, and to a degree by the  
14 testimony offered.

15 Let me say at the outset for the record that  
16 Carolina Power and Light does not agree with any question of  
17 misrepresentation of the use of the lake. Quite the contrary;  
18 but we do not think that this is a civil trial proceedings  
19 for misrepresentation. And we do not think this Board should  
20 spend time at this hearing. This is a question of the thermal  
21 impact at this time and its evaluation by this Board, to  
22 be weighed against benefit; and that is all that should be  
23 before this Board.

24 An inquiry by this Board serves no purpose whatsoever.  
25 And it is going to be very time-consuming if it goes into the

jrb 7 1 antecedents of the sale of property. I think it is totally  
2 apart from the purposes of this proceeding.

3 CHAIRMAN WOLF: I will take under advisement the  
4 question of the advertisements.

5 As to the thermal records, Mr. Whisenhunt, I  
6 understand from what Mr. Trowbridge says that they do have  
7 some of these records here.

8 Is that correct?

9 MR. TROWBRIDGE: We have some of the records here.  
10 And we would be glad to supply explanations to avoid  
11 confusing Mr. Whisenhunt on this.

12 CHAIRMAN WOLF: Do you want to contact them and  
13 examine these? You are free to do so.

14 As to the other item, you say you have that?

15 MR. TROWBRIDGE: We have the written complaints  
16 here. We have responded already to the interrogatories.

17 CHAIRMAN WOLF: So you can look at those,  
18 Mr. Whisenhunt.

19 MR. WHISENHUNT: Your Honor, they have identified  
20 parties by name and did not put in the context of the  
21 complaints. I asked for them to produce them, so I think  
22 they are pertinent to the inquiry as to what problems have  
23 been created.

24 Now, on the thermals readings and all, he is  
25 talking about warehouses full -- I don't want the warehouses

jrb8

1 full. All I want is when they started a monitoring system  
2 daily, I want to know what readings they've been getting,  
3 because, like I say, these reports come in here and they've  
4 gone up and gone up; I want the actual readings -- not the  
5 estimates. And I think I am entitled to the actual readings;  
6 such as they have taken; and I limited it from July 1st of '74,  
7 but then they have had all the time since we agreed back in  
8 November to give this Board the thermal things that were  
9 requested in questions by the Board.

10 As to the advertisements and all, I was required  
11 to show an interest before I could even petition. Where did  
12 my interest derive? My interest derived in purchasing  
13 this lot from Carolina Power and Light. I put them on notice  
14 to produce the advertisements, and I think I am entitled to  
15 them, to show them, because they have repeatedly in these  
16 environmental reports bragged on the recreational facilities  
17 of this lake. And, truly, it was beautiful to begin with.

18 They sold the lots and then they come along and  
19 they ruin the lake, as far as I am concerned; and I think I  
20 am entitled to have this Board and have one of the members of  
21 the Board ask the questions about the sale of these lots in  
22 the area and all, and the effects of this thermal heat.  
23 I think we are entitled to have that evidence before this  
24 Board as to how it was advertised, how it was presented to the  
25 public, and, as I say, in some of the interrogatories -- they

jrb9

1 have two offers; and this is Subdivision No. 2. I have  
2 limited myself to Subdivision No. 2, because that's the only  
3 one I am interested in, in that that's the only one I can  
4 show this Board I've got an interest and where I qualify.

5 We feel, your Honor, we are entitled to it.

6 MR. TROWBRIDGE: Mr. Chairman, we conceded in our  
7 first finding, we conceded Mr. Whisenhunt's interest as a  
8 resident of the property near the lake. That is an issue that  
9 went away over two years ago. He can suggest now that his  
10 showing of interest ties into getting into a case and  
11 making misrepresentations about the thermal data. As to the  
12 thermal data, that is clearly a request for information. As  
13 he explained it himself, it had nothing to do with his  
14 producing secondary evidence.

15 If you want to see our data, we've answered all those  
16 interrogatories to date; and at the eleventh hour by mail he  
17 wants documents.

18 MR. DAVIS: Mr. Chairman, Staff would support the  
19 Intervenor's request to get the written complaints and  
20 temperatures, that information is relevant to this proceeding.

21 However, as to Item No. 1, any and all advertisements  
22 for sales of lots, the Staff cannot see the relevance of this  
23 in respect to the issues in this hearing. The inducements by  
24 CP&L to a prospective buyer, that I think is getting fairly far  
25 out of field of whether or not a plant should be shut down.

jrb10

1 We would oppose the request to produce the advertising documents

2 CHAIRMAN WOLF: Thank you.

3 MR. WHISENHUNT: Mr. Chairman, he keeps objecting  
4 to someone closing down the plant. We are not trying to close  
5 down the plant. The whole thing turns on the thermal effects  
6 of this nuclear plant, and how it has ruined this lake,  
7 the wildlife and recreation and the human body, swimming,  
8 water skiing and so forth.

9 Now, there has been representation after represen-  
10 tation as to the temperatures which this thing has increased  
11 to, and some charts put out -- as I say, even the Staff  
12 denied any responsibility even though they published it, because  
13 it wasn't proper material. Now, I want to get the temperature  
14 readings, and I want to see if they correspond with temperature  
15 readings of people on those same days.

16 I want these advertisements to show that they  
17 led -- throughout these reports they said what a great  
18 recreational area we gave for all the people -- in their  
19 environmental reports made to the Atomic Energy Commission,  
20 they said that. I think I am entitled to show that they also  
21 presented to the people time after time, they said there was  
22 no objection and no intervention until I intervened. Well,  
23 I think the representations they made to the people of this  
24 area are highly pertinent, and then what they did to it and  
25 did with it after these representations, I think bears on their

jrb11

1 credibility as to thermal effects in this lake.

2 CHAIRMAN WOLF: Well, as I said earlier, we will  
3 take under advisement the question of the making available of  
4 advertisements; but the thermal information, Mr. Trowbridge  
5 says you can look at here and discuss with them.

6 We now are faced, I guess, with the problem of  
7 is there any reason for convening in the morning at 10 o'clock.

8 MR. TROWBRIDGE: Mr. Chairman, I would inquire  
9 of the Staff: Is there any likelihood as to when you will  
10 know about EPA?

11 MR. DAVIS: I will call them right now.

12 CHAIRMAN WOLF: Shall we take a ten-minute recess?  
13 Will that give you enough time to make the call?

14 MR. DAVIS: Yes.

15 CHAIRMAN WOLF: Do that, please, and see what you  
16 can come up with in that regard?

17 (Recess.)

18 CHAIRMAN WOLF: Mr. Davis?

19 MR. DAVIS: I talked with Mr. Sargent of the EPA  
20 Regional Office in Atlanta. He will be up here by 10 o'clock  
21 tomorrow; so we may begin by discussing matters with him.  
22 Then I have a witness, Frank Cardile, who will testify as  
23 to radiological releases. If we have some spare time we can  
24 put him on.

25 CHAIRMAN WOLF: That is helpful, Mr. Davis.



jrb 12

1 If there are no further matters, we will adjourn,  
2 until 10 tomorrow morning.

3 MR. TROWBRIDGE: Two questions: One, a substantive  
4 one, and the other logistic.

5 On the substantive side, we have been puzzled  
6 -- and maybe I'm not being too sharp about it -- but Dr. Cole's  
7 question about waiting on the 316, and the Chairman's remark,  
8 as I understood it, that perhaps we are to adjourn this  
9 hearing to wait until the conclusion of the 316. We have not  
10 really been able to connect up in our minds why we might  
11 adjourn, and if we are not being responsive to the Board,  
12 therefore, we would like to be.

13 And maybe if we could have a little explanation  
14 we can redirect ourselves to the Board's line of thinking.

15 DR. COLE: If the 316(a) exemption is not granted,  
16 then the discharges will be approximately the same as is being  
17 presented to us; and therefore, our evaluation would not be  
18 different at all. Is that correct?

19 MR. TROWBRIDGE: If it the exemption is granted?

20 DR. COLE: If the exemption is granted -- that's  
21 what I meant to say; if I put a "not" in there, I didn't mean  
22 to do that.

23 If the exemption is granted then it is the same  
24 situation. If the exemption is not granted, then modifications  
25 would have to take place and certain facilities might have to

jrb 13 1 be added, perhaps some auxiliary systems; and then the discharges  
2 would be different from what we evaluated. So then the  
3 environmental review which we, the Board, conducted would  
4 then be meaningless because it would not have been the  
5 situation which is going to take place for some period of time.

6 So my point is, should we proceed in view of the  
7 fact that we don't know what the thermal discharge limits  
8 are going to be? And that is the question I addressed to you.

9 MR. TROWBRIDGE: I understand the question now.

10 One comment further: Mr. Chairman, a number of us  
11 have commitments in conflict with this hearing schedule here  
12 on Friday; we do not know the Board's plans about the Friday  
13 hearing. If the Board is prepared to stay, we will cancel  
14 our other commitments for Friday.

15 CHAIRMAN WOLF: We had planned, if we went ahead,  
16 to use the full week, that is, including Friday. How it will  
17 turn out now I do not know.

18 MR. DAVIS: Mr. Chairman, just one small matter:  
19 this inquiry as to when Dr. Bridges' testimony in response to  
20 Board questions, the SER, and supplements were mailed out,  
21 I gave an incorrect date. The date of my cover letter was  
22 August 5; and I just wanted to correct the record on that.

23 I told the Board I had mailed the testimony out  
24 on July 22nd; that was incorrect.

jrb14

1 CHAIRMAN WOLF: Thank you.

2 DR. CALLIHAN: Is the service --

3 MR. DAVIS: Dr. Bridges' response to Board questions,  
4 the SER supplement and SER itself; that all was contained  
5 in an office cover letter that I sent out. I apologize for  
6 misspeaking.

7 CHAIRMAN WOLF: Let us adjourn the meeting.

8 (Whereupon, at 4:20 p.m., Tuesday, 12 August  
9 1975, the hearing was adjourned, to reconvene  
10 at 10 a.m., Wednesday, 13 August 1975, at the  
11 same place.)

12

13

14

15

16

17

18

19

20

21

22

23

24

25