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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of:

CAROLINA POWER & LIGHT COMPANY
AND NORTH CAROLINA EASTERN
MUNICIPAL POWER AGENCY

(Shearon Harris Nuclear
Power Plant)

Docket No. 50-400-OL
50-401-OL

ORAL ARGUMENT

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Location: Bethesda, Maryland
Date: Wednesday, August 28, 1985

Pages: 1 - 82

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Court Reporters
1625 I St., N.W.
Suite 921

Washington, D.C. 20006
(202) 293-3950

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

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In the Matter of: :
CAROLINA POWER & LIGHT COMPANY :
and NORTH CAROLINA EASTERN :
MUNICIPAL POWER AGENCY : Docket No. 50-400 OL
(Shearon Harris Nuclear : 50-400 OL
Power Plant) :
- - - - - x

Wednesday, August 28, 1985
4350 East West Highway
5th Floor Hearing Room
Bethesda, Maryland

The Oral Argument in the above-entitled matter
was convened, pursuant to notice, at 10:00 a.m.

BEFORE:

THOMAS S. MOORE, Esq.
Chairman of the Board
REGINALD L. GOTCHY, Member
HOWARD A. WILBER, Member

1 APPEARANCES:

2 On behalf of the Applicant, CP&L:

3 THOMAS A. BAXTER, P.C.

4 JOHN H. O'NEILL, JR., P.C.

5 DEBORAH B. BAUSER, Esq.

6 Shaw, Pittman, Potts & Trowbridge

7 1800 M Street, N.W.

8 Washington, D.C. 20036

9

10 RICHARD E. JONES, Esq.

11 DALE E. HOLLAR, Esq.

12 Carolina Power & Light Company

13

14 On behalf of the Joint Intervenors, Conservation

15 Council of North Carolina, Inc., Kudzu Alliance,

16 and Chapel Hill Anti-Nuclear Group Effort

17 (CHANGE), and pro se:

18 WELLS EDDLEMAN

19 806 Parker Street

20 Durham, North Carolina 27701

21

22 On behalf of the NRC Staff:

23 JANICE E. MOORE, Esq.

24 CHARLES A. BARTH, Esq.

25 Office of Executive Legal Director

P R O C E E D I N G S

1
2 JUDGE MOORE: Good morning. We are hearing oral
3 argument this morning on the appeals of the Joint Intervenors
4 and Wells Eddleman from the Licensing Board's February 20,
5 1985 Partial Initial Decision on environmental issues in the
6 operating license proceeding for the Shearon Harris Nuclear
7 Power Plant.

8 The argument is governed by the terms of our
9 June 25th, 1985 order. As provided therein, each side is
10 allotted a total of 45 minutes for the presentation of
11 argument. The Appellants may reserve a reasonable portion of
12 their time for rebuttal.

13 Before beginning this morning, I would appreciate it
14 if each of you would identify yourselves for the reporter.

15 MS. MOORE: Your Honor, for the Staff, my name
16 is Janice Moore and with me today is Charles Barth, also
17 representing the NRC Staff.

18 JUDGE MOORE: Thank you.

19 MR. BAXTER: Appearing on behalf of the Applicants,
20 I am Thomas A. Baxter from the firm, Shaw, Pittman, Potts and
21 Trowbridge. I'd also like to introduce the other counsel for
22 Applicants with me today. To my extreme left from Carolina
23 Power and Light Company, Richard E. Jones, the Vice President
24 and Senior Counsel, and Dale E. Hollar, Associate General
25 Counsel.

1 To my immediate left is Deborah Bauser and to my
2 right, John H. O'Neill, Jr.. Mr. O'Neill and Mrs. Bauser are
3 with Shaw Pittman, also.

4 JUDGE MOORE: Thank you.

5 MR. EDDLEMAN: I am Wells Eddleman appearing for
6 myself and the Joint Intervenors.

7 JUDGE MOORE: Thank you. Mr. Eddleman, are you
8 prepared to proceed?

9 MR. EDDLEMAN: Yes, sir.

10 JUDGE MOORE: Please proceed.

11 Mr. Eddleman, before you start, would you like to
12 reserve a portion of your time for rebuttal?

13 MR. EDDLEMAN: Yes, sir, I would like to hold
14 20 minutes for rebuttal.

15 JUDGE MOORE: Well, that's a bit excessive.

16 MR. EDDLEMAN: Well, how about 15?

17 JUDGE MOORE: That's a little more reasonable.

18 MR. EDDLEMAN: I don't have a long argument, and
19 that's the reason I wanted to do it that way.

20 JUDGE MOORE: Fine. Proceed.

21 MR. EDDLEMAN: I believe the issues in this appeal
22 are quite straightforward. I would like to start with the
23 2.758 petition because this is where I think plain English is
24 most applicable.

25 The plain language of the adoption of this rule says

1 that it is to avoid unnecessary litigation. If you look at
2 the statement that the NRC produced in its original notice of
3 August 3rd, 1981, it provides repeatedly that if you can show
4 an environmentally and economically superior alternative, an
5 exception will or would -- and they keep using those words
6 "will" and "would", which imply it will be done -- be granted
7 under Section 2.758.

8 The purpose of the rule is to avoid unnecessary
9 litigation. If there is an environmentally and economically
10 superior alternative, then litigation is necessary.

11 Now, the Staff has argued -- compare pages 56 and
12 following in their brief -- that there's no unique
13 circumstance regarding Shearon Harris, and I submit that there
14 are several. The most important one is this detailed analysis
15 because the Commission, 47 Federal Register 12.9.41, in
16 commenting on the Lovins-Ross analysis, says the Commission
17 does not necessarily agree with the varied comments on these
18 articles; however, the Commission finds the articles lack
19 sufficient analysis and documentation to support the arguments
20 made.

21 In this petition, I have submitted detailed analysis
22 and documentation to support the arguments. So that's a
23 unique circumstance of Shearon Harris.

24 Another unique circumstance of Harris is that Units
25 2, 3 and 4, which are under the same construction permit as

1 Unit 1, have already been cancelled voluntarily by the
2 Applicants. Now, I submit that that's a pretty strong
3 admission; that there are circumstances under which it is not
4 economical to construct those units. You know, a construction
5 permit simply allows construction, it does not require it.

6 Now as to Unit 1, the Chairman of CP&L, Mr. Sherwood
7 Smith, was quoted in a public interview some 2 1/2 years ago,
8 more than that, June of 1982, as saying if they had it to do
9 over, Harris 1 would be a coal plant. I submit that that
10 indicates that CP&L is well aware that there are alternatives
11 to Shearon Harris that are economically and environmentally
12 viable.

13 Now, there's two pieces of the question of the
14 alternatives; the capacity and the kilowatt hours. As to
15 capacity, we have demonstrated an ability to get rid of 2600
16 megawatts of capacity with this alternative. The addition of
17 that is all in the petition. I don't want to bore you with
18 it. The Staff challenged 800 megawatts of that. Let's assume
19 for the sake of argument that they're right. We're left with
20 1800 megawatts, which is twice the capacity of Shearon Harris
21 Unit 1.

22 As to kilowatt hours, it is demonstrated that the
23 alternative will displace more kilowatt hours than the Staff
24 in its Draft Environmental Statement says Shearon Harris would
25 produce. So that's taken care of both ways.

1 Now, the Licensing Board says that the petition does
2 not consider the alternative of using Harris to displace
3 coal-fired generation. Now of course, CP&L's coal-fired
4 plants that are already built are there. But I would point
5 out to you that the petition actually says at the place the
6 Board cites that having disposed of the question of need for
7 additional capacity, the only additional use for Shearon
8 Harris is to displace coal generation. We then use the
9 Applicant's own figures as to the dollar savings from that and
10 demonstrate that the alternative will save much more money.
11 That's as clear a demonstration of economic superiority as I
12 think you could ask.

13 As to environmental superiority, the extensive
14 documentation in the Holdren, Medsker and TVA documents --
15 pardon me, just Holdren and Medsker, who have analyzed the
16 effects of nuclear power production and the alternative energy
17 sources -- show that this alternative which happens to include
18 of the alternatives those with minimal environmental impacts
19 as discussed in the petition and supporting affidavits, are
20 superior to Shearon Harris.

21 JUDGE GOTCHY: Are you arguing that an older,
22 existing baseload coal-fired plant is environmentally superior
23 to Harris?

24 MR. EDDLEMAN: No. What I'm saying is that if
25 you're going to displace that older, existing baseload coal

1 plant, this alternative will displace it with less
2 environmental effect than using Harris to displace it because
3 the alternative has less environmental effects than Harris and
4 can provide more equivalent kilowatt hours.

5 JUDGE GOTCHY: But doesn't the alternative assume
6 that you keep those baseload -- the older baseload coal-fired
7 plants operating?

8 MR. EDDLEMAN: It assumes that they are operated to
9 the extent needed, but if they are displaced, you can displace
10 them better with the alternative than you can with Harris.
11 That's important.

12 JUDGE GOTCHY: Have you demonstrated that -- I
13 thought your assumption was that the existing baseload
14 coal-fired plants were assumed to operate into the next
15 century.

16 MR. EDDLEMAN: They are assumed to be there and
17 operable for the purposes of peaking capacity.

18 JUDGE GOTCHY: I see.

19 MR. EDDLEMAN: However, the alternative displaces
20 all additional peaking capacity. Then if you get kilowatt
21 hours out of the coal plant, the alternative displaces the
22 kilowatt hours with less environmental impact and more dollar
23 savings than Shearon Harris.

24 JUDGE GOTCHY: But Shearon Harris is not a peaking
25 plant, is it?

1 MR. EDDLEMAN: That's right. So what I'm saying is
2 as far as peaking is concerned, you are displacing Harris
3 capacity. That's taken care of in basically the first 10
4 pages of the first supporting affidavit; it describes how that
5 is done. Pardon me, the first nine pages.

6 Then on the tenth page, we take up the question of
7 using Harris to displace coal-fired generation and how that it
8 is economically superior to use the alternative to displace
9 coal-fired generation. Use the Applicant's own figures for
10 the dollar amount that they would save by displacing
11 coal-fired generation with Harris and show that the
12 alternative will save far more dollars.

13 JUDGE WILBER: But even if you were to use your
14 alternative, isn't there still -- I thought there were still
15 some 3500 megawatts of coal-fired capacity in there as the
16 baseload.

17 MR. EDDLEMAN: Those exist for the purpose of
18 meeting the peak load.

19 JUDGE WILBER: Well, what is used for baseload? I
20 thought your argument was that that was baseload.

21 MR. EDDLEMAN: Let me try to distinguish this. You
22 have a load curve which goes through the year, and you have
23 low load periods and high load periods. Now, a baseload plant
24 typically would operate such that if you add in a new baseload
25 plant, it pushes up everything else on the load curve. So at

1 peak, for example, you would simply push some of CP&L's
2 non-baseload coal-fired capacity right off the curve, because
3 those would be not necessary.

4 What I'm saying is if you use the alternative you
5 bring the peak down by two Shearon Harrises. So you're
6 displacing more coal-fired generation there on peak than you
7 could with Shearon Harris by at least a factor of 2.

8 Now the other question is, do you need kilowatt
9 hours from Shearon Harris to meet energy needs throughout the
10 year, at any time period. Part of that time you'd be
11 displacing baseload coal; part of the time you might be
12 displacing other units, less efficient coal units that don't
13 operate on baseload. Either way you do it, CP&L's analysis --
14 let me back up here. CP&L's analysis assumes that you use
15 Shearon Harris in economic dispatch to displace whatever else
16 is running at that time. It has a higher energy production
17 cost at that time.

18 They add up all those energy dollars. And what I
19 did was converted that to constant dollars and came out with
20 about \$4 billion. That analysis is shown in the first
21 supporting affidavit. However, the alternative comes out at
22 about \$6.8 to \$8 billion savings. That's what I'm getting at.

23 JUDGE WILBER: But even if you were to use your
24 alternative and save \$6.8 billion, isn't there still 3500
25 megawatts of coal-fired capacity in the baseload?

1 MR. EDDLEMAN: No.

2 JUDGE WILBER: What's left after you use your entire
3 energy savings system, then?

4 MR. EDDLEMAN: Well, in the first place, you don't
5 need the entire 3500 megawatts for base right now. There's
6 3500 megawatts of plant that can generate in baseload that
7 CP&L has, but you don't have to use it all the time. That's
8 what may be part of the confusion here. I'm trying to clear
9 it up. I hope I don't complicate matters further.

10 The baseload capacity is only needed when you have a
11 baseload that's as large as that 3500 megawatts plus all the
12 available nuclear that now exists, not counting Harris.
13 That's another 2200 megawatts.

14 Now, if you look through the scenario of the
15 alternative, you'll see that you can limit the load at the
16 peaking season of the year to 6700 megawatts. Okay, how do
17 you meet that? You would fire up some of your non-baseload
18 capacity if you needed it, but you would be displacing with
19 the alternative twice the capacity of Shearon Harris on peak
20 and all the kilowatt hours that Shearon Harris generates
21 through the year on average.

22 So what that means is it doesn't really matter if
23 that 3500 megawatts is there. To the extent that you want to
24 displace it, you can displace it at a greater economic
25 advantage and with less environmental effects if you use the

1 alternative than if you use Shearon Harris.

2 JUDGE GOTCHY: Didn't you agree -- or at least I
3 read that one cite you gave at page 10 of your affidavit to
4 read that you agree that Harris can generate power cheaper
5 than existing coal-fired plants?

6 MR. EDDLEMAN: It generates a marginal kilowatt hour
7 for its fuel and O&M costs, operating and maintenance costs.
8 A coal plant's fuel cost is higher; O&M is less. So that's
9 true. But that saving is incorporated into the Applicant's
10 number for fuel savings, which is the \$4 billion. The
11 alternative saves more money, so it's economically superior.

12 What I'm saying is the extent to which Shearon
13 Harris is cheaper than coal is the only economic benefit that
14 you can possibly get out of the plant because it's
15 demonstrated that it's not needed for additional peaking
16 capacity.

17 JUDGE GOTCHY: Yes, but wouldn't you normally, in
18 the peaking curve, you would use your least expensive baseload
19 plant. In fact, I think in your affidavit at page 131 you
20 state that cheaper fuel is used first in the loading of
21 reactional power generating systems, and more expensive fuel
22 is used for meeting additional demand.

23 MR. EDDLEMAN: That's correct.

24 JUDGE GOTCHY: I agree with that. It makes sense.

25 But if you have a large baseload plant that you can

1 put online that you need during that peak period for baseload,
2 and you can add these other peaking units on top of it, why
3 don't you use the cheapest generating capacity that you have?

4 MR. EDDLEMAN: What I'm assuming is that you do
5 that. Okay. That CP&L scenario -- put Shearon Harris in, use
6 it at peak and at other times; at peak for capacity and at
7 other times for baseload generation. That saves you \$4
8 billion constant dollars.

9 Now in comparing that with not using Harris, putting
10 the alternative in place, that saves you over \$6 billion
11 constant dollars and displaces twice Shearon Harris' output on
12 peak.

13 JUDGE GOTCHY: But that does assume that the
14 existing baseload coal-fired power plants stay online during
15 that period, as I understand it, into the next century. Isn't
16 that right?

17 MR. EDDLEMAN: Well, they're going to be there.
18 That's right. They are built. I'm not proposing that CP&L go
19 out and demolish --

20 JUDGE GOTCHY: No, but they're going to be operated,
21 aren't they? I mean, the baseload plants have got to be
22 operated. With all your energy-saving alternatives, you can't
23 -- I mean, you can't save more energy than there is available.

24 MR. EDDLEMAN: That's right. But you can save more
25 than Shearon Harris can displace. And that's the point. If

1 you can save that energy cheaper, then Shearon Harris is
2 economically superior as a means of displacing --

3 JUDGE GOTCHY: Why wouldn't it be economically
4 superior to use Harris instead of the coal-fired plants and
5 use your alternatives in addition to that?

6 MR. EDDLEMAN: Well, what you're doing then is
7 saying let's take the alternative and the thing it's an
8 alternative to and add them up. Now admittedly, you could
9 save more that way. But the point is that it is an
10 alternative to Harris. It's something that is not done now,
11 it's something that goes beyond CP&L's load management
12 program.

13 JUDGE GOTCHY: But Harris is an alternative to these
14 other baseload coal-fired plants. I don't see how you can
15 really exclude them from the whole picture.

16 MR. EDDLEMAN: That's right. Harris is an
17 alternative to operation of them at some times. When the load
18 curve isn't big enough to even support the nuclear power
19 plants that CP&L has and the load curve for them goes down
20 that low, then Harris isn't an alternative to anything; it
21 just sits.

22 JUDGE WILBER: And that would be what, about 3100
23 megawatts?

24 MR. EDDLEMAN: That's right.

25 JUDGE WILBER: And you expect their base to go down

1 that low? Is this what you're saying?

2 MR. EDDLEMAN: The minimum loads on CP&L go down
3 about 23, 24, 25, 26 hundred. But that's only part of the
4 time. I'm not making that as a major point.

5 The main point is that sure, if you want to use this
6 alternative to displace load and save a lot of money, and then
7 stack Shearon Harris on top of it and try to save more money
8 that way on fuel, you could do that. But this thing is an
9 alternative to Shearon Harris. It is cheaper to use the
10 alternative, and it is environmentally superior to use the
11 alternative to displace peak demand and kilowatt hour
12 generation. That's what economically and environmentally
13 superior means, as far as I can tell.

14 Now, does that --

15 JUDGE GOTCHY: I have no more questions on that.

16 MR. EDDLEMAN: There were some objections raised in
17 47 FR 12.941 in analysis of the comments. It says,
18 "Significant deficiencies mentioned were the analysis is far
19 from complete; it has questionable cost figures, fails to
20 discuss the rate at which conservation and alternative energy
21 sources could be employed, fails to discuss the institutional
22 measures that might be necessary to implement the changes, and
23 fails to discuss the environmental consequences and societal
24 cost of these actions."

25 We've taken care of that in these affidavits. The

1 cost figures come from off-the-shelf equipment. There's
2 nothing in this alternative that you can't go out and buy
3 right now in North Carolina, could buy in 1983, for that
4 matter.

5 The rate at which conservation and alternative
6 energy sources are employed is specified in this, and a means
7 of financing it is laid out, and that means as the no-net cost
8 loan which means that the customer gets the energy savings
9 without having to pay out any money. Their bill is basically
10 held the same, and the power company finances, or whoever
11 finances, they finance the cost of the energy saving
12 improvement out of the saving of energy on that bill.

13 And by the way, these savings are computed at CP&L's
14 former rates; they've gone up since. But even on the rates
15 they had in the time period of this affidavit, that's covered.

16 The environmental consequences and societal costs
17 are covered in detail in Medsker's analysis, and also to some
18 extent in Holdren. And I discussed that some in the first
19 affidavit. What I'm saying is that we've got this covered.

20 Now, the final question is the one of -- wait a
21 second, I have one other thing here. The Staff has argued at
22 pages 65 and 66 about having an environmental impact statement
23 and saying well, since that's not necessary unless you have
24 clear environmental superiority, this applies to the 2.758
25 petition. I don't think it does.

1 If you look at 47 FR 12.941 in the righthand column
2 about the EIS, the Commission says that where it appears that
3 an alternative exists that clearly and substantially
4 environmentally superior, the Commission will be obligated
5 under NEPA to address these issues in its environmental impact
6 statement.

7 It says it's generally not needed. Now, if a 2.758
8 petition succeeds, it's very clear that there is an
9 alternative that covers that, and the EIS would have to be
10 revised. But this is not about the EIS; this is about a
11 determination made by the Commission as to whether you can tip
12 the environmental balance against Shearon Harris. If the
13 alternative is environmentally and economically superior, I
14 submit that that means litigation of it is necessary, and if
15 it is environmentally and economically superior it means that
16 it would tip the NEPA balance against operation of the plant.

17 JUDGE GOTCHY: How is your argument with regard to
18 these alternatives different from those of Lovins and Ross,
19 that was considered by the Commission in that rulemaking?

20 MR. EDDLEMAN: These alternatives are principally
21 different. There is one overlap I think, which is the
22 efficient appliances. But these basically take specific,
23 off-the-shelf technologies and analyze their specific impact
24 available on the CP&L system, and add them up. I think that's
25 the main difference.

1 JUDGE GOTCHY: Is there off-the-shelf, no-cost
2 financing available? I mean, I'd like to find some. How do
3 you accomplish that?

4 MR. EDDLEMAN: Well, there are places that do this.
5 There are financing institutions in North Carolina that will
6 do a third-party financing arrangement this way. That is,
7 it's paid back through the energy savings.

8 JUDGE GOTCHY: But doesn't it require agreement by
9 all three parties?

10 MR. EDDLEMAN: It requires the agreement of the
11 financing institution, the person on whose premises the
12 equipment is installed, and the third party. It does require
13 agreement of the utility or any regulatory body, to my
14 knowledge.

15 JUDGE GOTCHY: I thought you were arguing that the
16 utility was going to provide the finance for these no-cost
17 loans.

18 MR. EDDLEMAN: The utility could do it, that's the
19 cleanest way to do it, but they don't have to.

20 JUDGE GOTCHY: What's their incentive to do that?

21 MR. EDDLEMAN: They would save an enormous amount of
22 money.

23 JUDGE GOTCHY: How can they save an enormous amount
24 of money if they walk away from Harris? They've got several
25 billion dollars sunk.

1 MR. EDDLEMAN: Well, as I understand it, we're not
2 supposed to consider sunk costs here, but for the sake of
3 argument, let me answer the question. That multi-billion
4 dollars sunk is an enormous tax write-off which would, in a
5 period when CP&L is not pursuing additional construction,
6 shield their deferred income taxes which they would otherwise
7 have to start paying back to the government.

8 JUDGE GOTCHY: All right.

9 MR. EDDLEMAN: Let me now turn to the full review
10 issue which is covered in the Joint Intervenors' brief at
11 pages 8 to 10. I'd like to make an analogy here.

12 Calvert Cliffs requires fullest consideration of
13 environmental effects of a project. And I'd like you to think
14 of yourselves as marine inspectors for a moment in deciding
15 whether a ship will float. And if there are some holes in the
16 boat revealed, which I say are analogous to deficiencies or
17 errors revealed upon cross examination, would you say that the
18 preponderance of the Titanic is structurally sound and
19 leaktight, or would you fix the leak? That's what we think
20 has to be done, and I think that pretty well covers it.

21 As to the aspects of Contention 8.F.1 on the coal
22 fire particulates, there are two points I want to raise here.
23 One is the fullness of consideration of environmental impacts,
24 and in this case we have a range of possible impacts. So I
25 want you to think of yourselves as standing before a dark

1 doorway, a doorway so extremely dark that you can't see
2 anything inside it and it says, Step Down. And since you
3 can't see anything inside this doorway, you consult your
4 experts and you ask of them: How far down is that first
5 step? And the experts say, well, it could be four inches or
6 it could be as much as 40 feet. Do you step across the
7 threshold knowing that?

8 This is approximately what was revealed in the
9 hearing on this issue; that there is a substantial range. The
10 Board seems to think that it can simply adopt a part of this
11 range and say, that is it, without taking into account the
12 fact that the particulates have health effects wherever they
13 go. And the only complete analysis as done by Dr. Hamilton
14 shows the largest number of deaths.

15 The second point I want to make is that the Board
16 has an affirmative obligation to find that it's worth it under
17 NEPA. If there's an adverse effect, it's got to decide that
18 the electricity from Shearon Harris -- which is I think
19 concededly the only benefit that's argued here from Harris
20 operation -- is worth those lives.

21 So I'd like you to think about those people's lives
22 as real, live people for a moment. That these are not some
23 statistics on a page, but they are persons; a young child
24 going into the hospital with a respiratory ailment --

25 JUDGE GOTCHY: Are those known? Are those known

1 effects? I mean, you say known in there, but didn't the
2 Harvard researchers say that their uncertainty includes zero
3 effects at those levels?

4 MR. EDDLEMAN: If you go to 100 percent uncertainty,
5 it does include zero. If you go to 95 percent --

6 JUDGE GOTCHY: I don't think you have to go to 100
7 percent.

8 MR. EDDLEMAN: If you go to 95 percent, it does not
9 include zero.

10 JUDGE GOTCHY: All right, I agree with that.

11 MR. EDDLEMAN: Now, it is known that these sorts of
12 particulates cause these kinds of health effects, too, that is
13 known.

14 JUDGE GOTCHY: At those concentrations, or at higher
15 concentrations?

16 MR. EDDLEMAN: That would depend on whether you
17 accepted a threshold for carcinogenicity. I don't believe --

18 JUDGE GOTCHY: Well, forget carcinogenicity. Most
19 of these people are dying in old age from respiratory failure
20 and heart disease, that sort of thing, during periods of air
21 pollution episodes. Isn't that right?

22 MR. EDDLEMAN: For particulates I'm not certain that
23 that's fully correct. Some of the data is derived from that
24 sort of source.

25 JUDGE GOTCHY: As I recall, didn't they -- they

1 excluded people who died in accidents, they excluded people
2 who were shot and murdered or committed suicide, that sort of
3 thing. But they looked at, I believe, all of the related
4 deaths that could not be given to some specific cause like car
5 accidents and murder, that sort of thing.

6 MR. EDDLEMAN: They looked at them over a period of
7 a year, as I recall, and related them to the particulate
8 concentrations in that year.

9 Now one of the uncertainties that was brought out
10 was that the past particulate exposure of the people was not
11 considered in the studies.

12 JUDGE GOTCHY: Let me ask you a question about
13 that. I have some other questions, too, but I recall that
14 there was some testimony by -- well, in the 1983 Harvard
15 report which was Staff Exhibit 3, at page 13, there's a -- I
16 can quote here, "Cross-sectional studies may capture more of
17 the chronic health effects of air pollution than would the
18 time series studies." There's also a statement in there by
19 the Staff around TR. 1422 which says, "Older people are most
20 sensitive to air pollution and it is assumed that they `have
21 been exposed to such concentrations in the previous years of
22 their lives.`"

23 And further there was a statement at 1423 that says,
24 in cross-sectional studies "you have to make an assumption
25 that okay, the same levels persist over the person's life."

1 Dr. Ozkaynak, who was a staff witness on health effects
2 testified at 1418 that, "Cross-sectional mortality studies
3 typically refer to chronic effects of air pollution." Now
4 that means to me more than a year. I don't know how long it
5 is, but I mean, it has to be over a substantial part of that
6 person's life.

7 MR. EDDLEMAN: Well, that's correct. And I think if
8 you'll look -- I can't give you an exact cite, but I think
9 that the witnesses admitted that they didn't have data on the
10 exposure to those people other than in the year when they
11 died.

12 JUDGE GOTCHY: That's correct, but that's a
13 different assumption. You stated that there was no
14 consideration prior to that. There's a difference between not
15 considering it and not having data to be able to determine how
16 well your assumption matches past exposure. But I think it's
17 clear that in the cross-sectional studies, which you rely on
18 and which the Board relied on, that there is a consideration
19 of chronic exposure that preceded that year they died.

20 MR. EDDLEMAN: Only by assumption. There's no data
21 to support it.

22 JUDGE GOTCHY: By assumption, that's correct.

23 MR. EDDLEMAN: I think the other thing you're asking
24 about is aren't these effects chronic, don't they build up
25 over a period of years when they kill people, and of course,

1 that's correct.

2 JUDGE GOTCHY: Proceed.

3 MR. EDDLEMAN: Okay. These people are actually
4 going through this series of illnesses and eventually death,
5 and it's not oh, this statistic died; it's grandmother died,
6 or father died, or Mrs. Jones died. These are actual people.

7 I want you to think of the care that's given in a
8 death penalty case to the evidence and the proceedings and so
9 on. In this case, we don't know how many people may be
10 killed. It may even be known, which is a complicating factor,
11 just as a judge or jury handing down a death sentence does not
12 know for sure that that person will be executed.

13 Nevertheless, I think the same standard of care is
14 appropriate, and in a full consideration of the environmental
15 effects, one certainly could not exclude the upper confidence
16 limit that was given in these studies, which both sets of
17 witnesses agreed was the best available data that they could
18 get. So that you've got to decide is it worth it.

19 The last thing I want to address --

20 JUDGE GOTCHY: Are you arguing still that the Board
21 in its decision where it got its range of 10 to 70 deaths for
22 40 years of operation didn't use the 2.3 plus or minus 1. --
23 whatever it was you had -- that was a 2 sigma, around that
24 value?

25 MR. EDDLEMAN: I believe if you calculate the number

1 out --

2 JUDGE GOTCHY: I did.

3 MR. EDDLEMAN: Okay. There's two sets of inputs
4 that you could do. I don't think they used 2.3, but if you
5 show me a calculation that makes it work, then it could
6 certainly appear.

7 JUDGE GOTCHY: I can get 10 to 70 simply by using
8 the 2.3 figure and all of your other calculations except using
9 a 40 percent assumption for the release of fine particulates
10 as opposed to 68 percent, which you used.

11 MR. EDDLEMAN: Well, if you use 40 percent -- I
12 don't think the Board made that clear. But if you used 40
13 percent it would certainly be consistent because .4 times 1.3
14 plus or minus .6 I think it is --

15 JUDGE GOTCHY: 1.62, I haven't seen that.

16 MR. EDDLEMAN: I mean, pardon me, .68 times that
17 figure is approximately equal to .4 times the 2.3 plus or
18 minus -- so it could be the same way.

19 JUDGE GOTCHY: I think they did use that. That's
20 what I concluded. I get the range of roughly 10 to 70 using
21 the 2.31 plus or minus 1.62 that you used, but instead of
22 using 68 percent they used 40 percent.

23 MR. EDDLEMAN: Well the Board might have, but when
24 they discussed the use of the coefficient they picked the 1.3,
25 and that's why I assumed that they had used it.

1 If there are no more questions on this --

2 JUDGE GOTCHY: You mentioned Dr. Hamilton's
3 calculations where he did the calculations for the 50-mile
4 population and for the whole U.S., which includes the 50-mile
5 population.

6 MR. EDDLEMAN: Right.

7 JUDGE GOTCHY: The ranges that I find are .013 to
8 .26 deaths per year for the whole U.S., including the 50-mile
9 population, and a range of .006 to .13 deaths per year for the
10 50-mile population; both those presumably at 95 percent
11 confidence level. Is that your understanding?

12 MR. EDDLEMAN: If it was on the 1.3 that would be a
13 50 percent confidence level.

14 JUDGE GOTCHY: .13, I'm sorry.

15 MR. EDDLEMAN: Oh, the range. Yes, that would be a
16 95 percent confidence limit.

17 JUDGE GOTCHY: That's my understanding. Now, it
18 looks to me like the lower range for the whole United States,
19 including the U.S. -- including the 50-mile population and the
20 U.S. is that the upper range for the 50-mile population is 10
21 times higher than the lower range for the whole U.S.,
22 including the 50-mile population.

23 MR. EDDLEMAN: That's correct.

24 JUDGE GOTCHY: And with that kind of uncertainty
25 because of the substantial overlap in these statistical

1 ranges, what's to be gained by considering populations beyond
2 50 miles?

3 MR. EDDLEMAN: It's an effect that actually happens
4 in the United States. When you talk about fullest
5 consideration of something, you don't put up a wall. In fact,
6 the witnesses admitted that there's no wall at 50 miles that
7 stops the health effects.

8 JUDGE GOTCHY: There are limitations apparently to
9 the models they can use, though, for calculating those health
10 effects. Isn't that right?

11 MR. EDDLEMAN: Yes, there are limitations to those
12 models. But what I'm saying is, for example, suppose I have
13 two measurements of, say, the response of a certain animal
14 strain to a disease. Now, both of them are calculated
15 according to the best information I have available. Now, if I
16 just pick one of them, arbitrarily exclude the other, I've got
17 to have a good reason for doing it, for saying this other
18 range does not apply. There's no good reason to exclude the
19 rest of the United States.

20 If you're going to make a full consideration of your
21 data, what you would do in the scientific situation I
22 described with the animals would be to take the range from the
23 low of the low range to the high of the high range and say
24 it's probably more likely that it's in the middle range where
25 both overlap, but we don't know for sure.

1 This is decisionmaking under uncertainty. But what
2 I'm saying is when you're under uncertainty a full
3 consideration certainly requires that you consider the high
4 end as well as the low end. You don't know that you're not
5 authorizing more than 70 deaths; you don't know that you're
6 authorizing zero or 10. If you don't know, you've got to
7 decide that it's worth it, even if it is the high range.

8 JUDGE GOTCHY: All right. Proceed.

9 MR. EDDLEMAN: The last thing I'd like to cover is
10 the spent fuel transportation. I believe it's pretty well
11 covered in our brief. The main point I would like to make
12 about it is that these are important effects which were
13 disposed of before they could ever get to discovery, before we
14 could ever deal with them. We think the Board misapplied the
15 standards, we think that the Board has taken arguments as to
16 the merits of the contentions and used them in disposing of
17 them.

18 As to the other environmental issues, we think the
19 arguments that apply are the ones about the holes in the
20 ship. If you look at Joint Exhibit 2.C and 2.E, we have in
21 our brief those arguments, I don't need to repeat them here,
22 as to what holes there are in the analysis. Our position is
23 that you ought to fix them. You can't just say the ship is
24 sound with all these holes in it, but you've got to fix the
25 analysis so that you have a full consideration of the issues.

1 To do otherwise would, as the Union of Concerned Scientists
2 case says, I think quoted by the Commission in the Federal
3 Register where it's discussing 2.758, "make a mockery of the
4 Act." We don't think that should be done.

5 Thank you very much.

6 MR. BAXTER: Good morning. Before I address
7 Mr. Eddleman's argument, I have just a few opening remarks.

8 It was our proposal that the Licensing Board divide
9 this proceeding into major phases, recognizing the large
10 volume of issues before it, and the fact that on some issues
11 information was available to try parts of the case early. We
12 were also anxious to get this Board's review of as much of
13 this proceeding as early as possible, so that any errors could
14 be corrected.

15 Nevertheless, there is some danger inherent in
16 looking at only a piece of the proceeding in isolation. And
17 without implying at all that I lack total confidence in the
18 quality and merits of the Licensing Board's decision, I think
19 it's important to try to recognize what that Board has been
20 faced with over the last three years in reaching the decisions
21 that we're talking about here today.

22 While there are quite a number of environmental
23 rulings that have been appealed by the Intervenors, there are
24 many more that were not. Over 500 contentions have been
25 proposed for adjudication in this proceeding; the bulk by

1 Mr. Eddleman, who represents himself.

2 In his original petition of May 1982, several
3 hundred pages in length, he proposed well over 100
4 contentions. And while not a lawyer, Mr. Eddleman is
5 experienced in administrative regulatory proceedings at both
6 the federal and state level, and appears to be involved in
7 them almost continually.

8 I urge you to try and read that petition to
9 appreciate the job that the Licensing Board faced. I find
10 that it takes a diligent and almost clairvoyant pathfinder to
11 wind one's way through that maze and make sense of much of it.

12 Now, there are no numerical limits about how many
13 contentions one can propose in an NRC proceeding, but when an
14 intervenor chooses to advance a handful of concerns about
15 which they are genuinely interested, but instead decide to
16 rely on a scatter shot approach, I believe that adherence to
17 regulations and procedural requirements is a must.

18 For example, boards are often inclined to overlook
19 procedural lapses and go to the merits on appeal. But here,
20 when Intervenor below have failed to provide this Licensing
21 Board with the presentations it deserved to decide the issues
22 at the time, I don't believe the appeal should be taken
23 seriously.

24 In 1982, the Licensing Board had substantial effort
25 to grapple with all of the proposed contentions before it.

1 Applicant and Staff written responses to the proposed
2 contentions were available prior to the special prehearing
3 conference, and during two days of oral argument, Intervenor
4 were given the opportunity to respond to those proposed
5 contentions. Because Mr. Eddleman had more than could be
6 addressed within that time, he was given the opportunity to
7 file a written submission after the prehearing conference on
8 any contentions to which he wanted to reply to the Applicants
9 and Staff.

10 After the prehearing conference order Intervenor
11 were given yet another opportunity, this time to object to any
12 of the rulings in the prehearing conference order. So when we
13 mentioned in our brief the numerous occasions on which matters
14 under appeal here were not the subject of objections filed to
15 that order or to a post-hearing submission by Mr. Eddleman, I
16 think it deserves particular weight in the light of the volume
17 of rulings that the Licensing Board had before it.

18 Turning to Mr. Eddleman's argument on his 2.758
19 petition to waive the need for power rule, he quotes the
20 Commission's August 1981 original notice on that proposed
21 rule, but ignores the fact that when the rule was adopted in
22 March 1982 the Commission further addressed the observation
23 about what it takes to waive this rule and confirmed that
24 indeed, they intended the regular standard of Section 2.758 to
25 apply to this rule as it does for all others.

1 And while the Commission found that Mr. Lovins'
2 articles were not documented well, they also found that there
3 was substantial evidence to the contrary and to the fact that
4 nuclear power plants, when constructed, are going to be more
5 economical to operate than existing fossile fueled-generation,
6 a matter which Mr. Eddleman has confirmed both in his petition
7 and again today.

8 The fact that Units 2, 3 and 4 of the Shearon Harris
9 plant have been cancelled only serves to support that in the
10 real world we don't need NEPA to make our economic decisions
11 for us; that uneconomical and unneeded plants will not be
12 built. But Shearon Harris Unit 1 is substantially complete at
13 this point, and whether anyone says they would like to do it
14 over again, they are not going to have that opportunity.

15 The biggest problem in Mr. Eddleman's petition, as I
16 view it, continues to be the question that was focused upon
17 here today during his argument, and that is where is the
18 baseload capacity. I think I heard him answer today that he
19 did not assume that 3500 megawatts of CP&L coal plants
20 remain.

21 But as I quote him at page 55 of our brief from his
22 affidavit which purported to summarize the entire petition,
23 "True baseload will only be about 3600 megawatts, CP&L's
24 existing capacity is over 5000 megawatts for baseload and
25 includes 3500 megawatts of baseload coal plants that will

1 still be around in the year 2000; thus, there is no baseload
2 for the Harris units to meet."

3 He proceeded to go ahead and try to establish that
4 his alternative eliminates the need for Harris capacity as a
5 peaking unit, a purpose for which we have never proposed its
6 use, and then having shown that there is not a need for this
7 fictional peak load unit, he turns around and applies the same
8 alternatives, as I understand it, to show that if we're in the
9 business of replacing existing fossile fuel capacity, his
10 alternative would save even more money than the Harris unit
11 would.

12 As we have pointed out, it's clear that the most
13 economical combination here would be the Harris units and his
14 alternative, which is an option that Mr. Eddleman has not
15 addressed.

16 So we did not choose to try and respond to
17 Dr. Reeve's affidavits on the merits because we were
18 convinced, as the Licensing Board ultimately found, that
19 Mr. Eddleman simply has not addressed the basis which
20 underlies this rule, which is that existing nuclear plants
21 constructed are going to be cheaper to operate than coal-fired
22 plants; a conclusion which I think Mr. Eddleman has confirmed
23 several times.

24 Turning to the Titanic for a moment, I would say
25 that I guess the boat here would have to be the Staff's

1 Environmental Impact Statement, because that is the ultimate
2 tool this agency is judged by in terms of its compliance with
3 the National Environmental Policy Act. I think we've had some
4 alleged holes here. The holes on the Intervenor's side, from
5 their view, being inadequacies in terms of the depth of
6 discussion of several issues in that EIS.

7 What we've done in the hearing, though, is through
8 extensive analysis presented by many experts, shown that there
9 aren't holes in that boat.

10 The underlying theme which I think goes through all
11 of the Intervenor's brief on appeal here is that no
12 uncertainty can be countenanced under NEPA, and that worst
13 case assumptions must always be used. And in their selective
14 attack, of course, they have ignored how many conservatisms
15 actually were employed by the witnesses in doing their
16 analyses to show that the Staff's EIS contained inadequate
17 discussion of these matters.

18 And they have pointed to no case law that I am aware
19 of which shows that when you're trying to assess the
20 foreseeable impacts of a proposed major federal action, you
21 must pile conservatism on top of conservatism and analyze to
22 death every possible uncertainty. In a way, that's actually
23 what we've accomplished here already, and in spite of the
24 different approaches taken by Staff and Applicant witnesses to
25 the various issues that were tried, they have come out with

1 essentially consistent results.

2 None of us, of course, are going to take issue with
3 Mr. Eddleman that death is not pleasant. But what the
4 overwhelming weight of the record shows is that the health
5 effects from the coal particulate emissions attributable to
6 Shearon Harris' portion of the uranium fuel cycle are going to
7 be essentially nil.

8 JUDGE MOORE: Counsel, why were the health effects
9 in an operating and licensing proceeding permitted to be
10 litigated at all? The health effects of the S-3 Table? Don't
11 the regulations as they now stand only permit significant new
12 material to be litigated as far as the Environmental Impact
13 Statement, and shouldn't have all this been litigated at the
14 construction permit stage, if it was going to be litigated at
15 all?

16 MR. BAXTER: Mr. Eddleman was not a participant to
17 the construction permit stage. The reason it is litigated is
18 because, as I recall, there's a footnote to Table S-3 which
19 specifically says that while the numerical values for the
20 emissions are fixed, that one is allowed to litigate the
21 health effects.

22 JUDGE MOORE: That's correct. But it doesn't say
23 they can be litigated at the operating license stage
24 exclusively, and that footnote doesn't do anything to alter
25 the substance of the regulations which say that the

1 Environmental Impact Statement, essentially the Draft
2 Environmental Impact Statement, at the CP stage is one entity,
3 and at the operating license stage all that is going to be
4 permitted are significant changes that have come about that
5 weren't initially taken into consideration.

6 Now, all of this was available to be litigated at
7 the CP stage. Logically, it would seem to me that's where it
8 belonged, long before the bricks and mortar began to go up.

9 Do the regulations permit health effects to be
10 litigated at the OL stage?

11 MR. BAXTER: Well, I think your description of the
12 standard is probably appropriate. We did not attempt in the
13 pleading stage -- and I feel a little silly trying to defend
14 having had a hearing that maybe wasn't necessary -- but we did
15 not attempt to put the Intervenor's to the test of
16 demonstrating that there was new information not previously
17 available at the CP stage, which should give rise to hearing
18 this again.

19 I think that some of the witnesses probably did use
20 information that wasn't available in 1976 and 1977 when the
21 construction permit hearing was being held.

22 JUDGE MOORE: The S-3 Table was promulgated in 1973,
23 summer of --

24 MR. BAXTER: It was around then.

25 JUDGE MOORE: So it was in existence before the CP

1 was issued. But it occurred to us, in going through all this,
2 whether this was an exercise perhaps in futility if, as
3 we are reading the Commission's regulations -- and we may well
4 have read them mistakenly in going over them in preparing for
5 this argument -- but we're curious as to whether they
6 preclude, in effect, litigating this type of thing now at the
7 operating license stage.

8 MR. BAXTER: Well, I don't see anything in the
9 regulations specifically to prohibit, that we have pointed to
10 case law which says that if things were examined by an agency
11 once at the construction permit stage and there has not been a
12 significant new development or change in information, that it
13 need not be examined again. On the other hand, the Commission
14 took the time and effort to specifically carve out need for
15 power and alternative energy sources and passed a rule saying
16 you don't have to consider that; at least by implication
17 they're leaving open much of the rest of the cost-benefit.

18 JUDGE MOORE: But the health effects are at least
19 implicit in the original Environmental Impact Statement at the
20 CP stage, are they not?

21 MR. BAXTER: Yes, they are.

22 JUDGE MOORE: And so if they haven't changed, or
23 significantly changed, wouldn't that preclude looking at them
24 again at the OL stage?

25 MR. BAXTER: I think it would if someone had not

1 made the demonstration here. But that is a test we did not
2 put the Intervenor to, and we now have a record which I think
3 amply supports what --

4 JUDGE MOORE: Oh, you have a record.

5 [Laughter.]

6 MR. BAXTER: I really have no further comments. I
7 think that we've addressed the rest of Mr. Eddleman's appeal
8 adequately in our brief, and I've tried to respond to what he
9 said.

10 JUDGE WILBER: I would like to ask some questions on
11 the S-4 that may not be directly related to the issue, but it
12 may be close, too.

13 You have made a commitment in an affidavit to honor
14 the S-4 table, as I recall, for the shipment of fuel from
15 Brunswick and Robinson?

16 MR. BAXTER: That's correct.

17 JUDGE WILBER: How is that commitment going to be --
18 is it going to be in the technical specifications of these
19 plants, or is it just going to be in the microfiche files
20 somewhere, or how is it going to live through the years when
21 you're going to ship it?

22 MR. BAXTER: I know of no plans right now to legally
23 codify that commitment. It's my understanding that given that
24 most plants have their spent fuel transportation assessed on
25 the basis of that table and are required to put forth in their

1 environmental reports a separate analysis when the shipment is
2 going to fall outside those parameters, that it's sort of
3 become almost an unwritten standard in the industry for people
4 to follow, that they attempt to insure that their shipments
5 comply with the values and assumptions that underlie that
6 table.

7 But there is no --

8 JUDGE MOORE: We get nervous when you say unwritten
9 standard.

10 [Laughter.]

11 JUDGE GOTCHY: The bottom line in S-4 as I read it
12 is seven man rem a year combined population exposure as well
13 as transportation workers. Is that what you are committing to
14 meet with the transportation of -- I guess basically, it's the
15 storage of the Robinson and Brunswick fuel to Harris, plus the
16 storage of the Harris fuel, and the shipment of all three
17 fuels to their final resting place, wherever that may be, a
18 repository, fuel reprocessing plant. Is that what you're
19 saying?

20 MR. BAXTER: Well, we are asking for permission to
21 store spent fuel from both Robinson and Brunswick at the
22 Harris plants.

23 JUDGE GOTCHY: Yes.

24 MR. BAXTER: And ultimately, that may be done to
25 some extent. What we're talking about -- I can't list all the

1 parameters for you from Table S-4 without going back to
2 counsel table, but we're talking about the underlying
3 documentation that has assumptions about the number of
4 shipments that are made per year and the volume, et cetera.

5 And what we're saying is that any shipments that are
6 made from Robinson and Brunswick to Shearon Harris would be
7 kept within the limitations of those underlying assumptions
8 and parameters.

9 JUDGE GOTCHY: Let me ask you a question there. I
10 went back and looked at the Robinson FES and that incorporates
11 Table S-4. You look at the Brunswick FES, though, and it
12 doesn't incorporate Table S-4. There is a Staff analysis that
13 comes up with about .8 man rem per year per unit for the
14 transportation workers, and about .6 man rem per year per unit
15 for the general public.

16 Do you think you can still live within those? I
17 mean, personally, I don't care and I don't think S-4 cares how
18 many shipments you make and what the volume is and that sort
19 of thing. I think the better line there is does it impact on
20 the public and the transportation workers, and to me, that's
21 tied to the man rem number. That's the bottom line.

22 And I'm interested in knowing if you're going to
23 meet that bottom line.

24 MR. BAXTER: That is what the commitment is, and I
25 recognize -- I don't think S-4 had been adopted at the time of

1 the Brunswick Environmental Impact Statement.

2 JUDGE GOTCHY: It was.

3 MR. BAXTER: It was?

4 JUDGE GOTCHY: Some of the assumptions are the
5 same. Now, WASH-1238, which was the basis for that rule, has
6 all these assumptions spelled out, and a lot of the numbers
7 that are in Brunswick incorporated those directly. For rad
8 waste shipment, for example, and for fresh, unirradiated fuel;
9 basically those same assumptions. The big departure was in
10 the spent fuel shipments and the number -- and they were a
11 combination of truck and rail. And they added up -- I mean,
12 there was a completely independent site-specific assessment
13 for Brunswick units that I hadn't seen before. I'd only seen
14 S-4 just included in the statement in saying well, that's it,
15 and not getting to any detail.

16 And I was just wondering, you know, Brunswick is
17 about a factor of 5 less than what you have for Robinson per
18 unit. And when you get that fuel at Harris -- say you're
19 allowed to do that and you take that fuel to Harris and you're
20 storing all three sets of fuel, and now you've got to ship the
21 fuel from Harris to wherever they're going. And are you going
22 to be bound within that 7 man rem for the Harris unit?

23 I'm sure that the S-4 discussions for Robinson and
24 Brunswick cover shipment from those plants to Harris. I just
25 can't see any problem with that. What I'm concerned about is

1 when you get it all there and you ship it somewhere else, are
2 you going to commit now to keep the exposures within that 7
3 man rem? Then you haven't committed to a thing.

4 MR. BAXTER: Yes, we have committed to -- these
5 contentions go to the transportation of the spent fuel from
6 Robinson and Brunswick to Shearon Harris plant. Now, that may
7 not be your concern, Dr. Gotchy, but that is what the
8 Intervenors have raised, and that's what our commitment went
9 to. We have not addressed what the shipments from Shearon
10 Harris would be, although I would submit to you that even if
11 they are some reasonable multiple of Table S-4, we are still
12 going to be talking about insignificant impacts and no impact
13 on the cost-benefit balance.

14 JUDGE GOTCHY: So you're saying then that -- I
15 believe one of your arguments was you were talking about a
16 two-legged shipment, so you're going to include the man rem
17 for the transshipment of the Robinson and Brunswick fuel from
18 Harris to wherever it's going as part of the assessments for
19 Robinson and Brunswick, not part of Harris. Is that right?

20 MR. BAXTER: Yes.

21 JUDGE GOTCHY: All right. I'll ask you one more
22 time, then, if in this transshipment scheme with two legs for
23 Brunswick, if you're going to be able to meet the man rem
24 numbers that are specified in the Brunswick FES by the Staff.
25 If you accept the Staff estimate still as being valid for your

1 purposes.

2 MR. BAXTER: I don't think I have an answer to that
3 question. Our commitment here was to meet the S-4 values, and
4 I accept your assessment that that's higher than what the
5 Brunswick FES said. And if so, our commitment is not to meet
6 the values in the Brunswick FES, but rather, the current Table
7 S-4 parameters.

8 JUDGE GOTCHY: But isn't part of your argument that
9 the Commission has already considered Brunswick, and the only
10 consideration we have there is the Staff FES, isn't it?

11 MR. BAXTER: That's true. The Commission now has a
12 regulation which codifies these impacts, and I don't think
13 that NEPA requires that every impact evaluated be cast in
14 stone for the entire 40 years of the plant and that no change
15 is permissible. We are required to notify the NRC, I believe,
16 of significant changes in operation that affect the
17 environment, but I don't think we're prohibited from making
18 changes which do that.

19 JUDGE GOTCHY: I have a few more questions I would
20 like to ask you just for purposes of clarification.

21 At page 23 of your brief you suggest that, and I
22 quote, "all of the 1154 metric tons per year of coal
23 particulates at issue here are trapped within a 50-mile radius
24 of the coal plant site." And you go on from there, and that's
25 the end of the quote.

1 Now, as I understand Dr. Hamilton's model that he
2 used there, he had a cost of release source of 3.6 times 10 to
3 the minus 7 micrograms per second, and the only trapping
4 that's really done there is by an atmospheric lid that's
5 assumed for morning and night. Isn't that correct? I mean,
6 there's no trapping at the 50-mile boundary, per se, of those
7 releases; they just keep right on going with whatever the wind
8 speed is. The wind speed just determines the time it takes
9 for them to get to that 50-mile boundary.

10 You're not telling me the 1154 metric tons are
11 dumped into that 50-mile volume and kept there all year?

12 MR. BAXTER: That's my understanding of what he did.

13 JUDGE GOTCHY: I don't think you're right.

14 MR. BAXTER: I'm sorry Dr. Hamilton isn't here to
15 speak for himself.

16 JUDGE GOTCHY: At page 25 of your brief -- and
17 again, this is related to Eddleman Contention 8.F.1 -- you
18 cite Dr. Habager's opinion that, "Because the health effects
19 at the outer boundary of the 50-mile radius are virtually
20 negligible, they would expect effects further away from the
21 coal plants to be even less."

22 Now that seems to be a reasonable deduction to me,
23 but wasn't Dr. Habager's expert prepared testimony limited to
24 quantifying the particulate releases, concentrations,
25 exposures and not health effects?

1 MR. BAXTER: That's correct.

2 JUDGE GOTCHY: What kind of probative value should
3 we give to his opinion then on health effects? Or do you have
4 a cite maybe from Dr. Ozkaynak, who I think was the expert on
5 health effects, that says the same thing?

6 MR. BAXTER: I don't have one available here. They
7 were sitting on a panel together.

8 JUDGE GOTCHY: Yes, I understand. I noticed later
9 on when Dr. Ozkaynak agreed with Dr. Habager he said so, and
10 in this particular section -- I read the transcripts -- he was
11 just silent. I couldn't see if he agreed or disagreed.

12 MR. BAXTER: Since we are talking, though, about the
13 particulate concentrations diminishing out beyond that range,
14 I can't imagine that Dr. Ozkaynak would have a different
15 opinion about the health effects diminishing as well.

16 JUDGE GOTCHY: Well, I don't know if I could imagine
17 that either, but the fact of the matter is I couldn't find
18 anything in the record which really got to Dr. Ozkaynak saying
19 that there were no health effects beyond 50 miles.

20 One other question I had in this same contention --
21 and basically I agree that individual risk is going to decline
22 with distance from the point source; that's obvious. The
23 thing that I am concerned about is what evidence you can cite
24 to show that the cumulative population risk from particulates
25 beyond 50 miles is less than the cumulative risk within 50

1 miles. Do you understand what I'm asking?

2 MS. BAUSER: Are you talking about the cumulative
3 risk for the population including the 50 miles? The
4 U.S. population including the 50 miles?

5 JUDGE GOTCHY: You could do it that way.

6 MS. BAUSER: And your question is why is that less
7 than the cumulative within the 50-mile range?

8 JUDGE GOTCHY: The argument has been made here
9 before us that we don't have to worry about population risk
10 beyond 50 miles because the individual risk is diminishing to
11 almost nothing beyond 50 miles. And I am asking you --
12 there's 1.75 million people within 50 miles and there's 250
13 million people beyond 50 miles; how can you -- can you cite me
14 anything in this record which shows that the risk to the rest
15 of the population in the United States is less than that of
16 the risk to the population within 50 miles?

17 MS. BAUSER: I think that Dr. Hamilton's long-range
18 transport calculation, which is what he called a qualitative
19 assessment as opposed to a quantitative, assessed the
20 U.S. population dose and then compared that to what is a
21 known standard for assuming risk to that population -- 55
22 micrograms per cubic meter.

23 And he was way -- what he ended up with was a number
24 under 1, it was .01 something I believe.

25 JUDGE GOTCHY: As I recall -- did he give ranges for

1 the 50-mile population, and ranges for the U.S. population
2 which includes the 50-mile population?

3 MS. BAUSER: Yes, sir.

4 JUDGE GOTCHY: And isn't there exactly a factor of 2
5 difference between the ranges of the upper and lower bounds
6 for the 50-mile and the U.S. population? So what you are
7 saying is that the impact beyond 50 miles must be about equal
8 to the impact within 50 miles.

9 MS. BAUSER: Well, that is the cumulative impact.

10 JUDGE GOTCHY: That's right, that's what we're
11 talking about.

12 MS. BAUSER: Yes. Not the individual impact,
13 though.

14 JUDGE GOTCHY: The reason I'm concerned about the
15 argument is, you know, if you assume that just because the
16 concentration from a point source is declining to zero, almost
17 to zero at some distance, that you don't forget that that is
18 being accumulated, as Mr. Eddleman tried to make in his cross
19 examination, that that is on top of an ambient concentration
20 which comes from all the other point sources in the world
21 really. And if that ambient standard is high enough, even
22 though the concentrations may be small they are going to
23 represent -- as long as they are over the damage threshold,
24 they will represent some real risk.

25 MS. BAUSER: Well, I believe that's why Dr. Hamilton

1 went ahead and did his long-range analysis even though he knew
2 what the Staff's position was which is when you have got the
3 kind of levels you have at the perimeter of the 50 miles, it
4 doesn't make any sense to do that analysis. He wanted to see
5 what kind of number you're going to get that you are going to
6 have to add to your ambient level.

7 And when you are talking about .01 kind of number,
8 it doesn't amount to anything.

9 JUDGE GOTCHY: But Dr. Hamilton has been asking
10 estimates of the impact on the U.S. population for years and
11 years and years; I have been reading his stuff for seven or
12 eight years. So he must think there is something out there or
13 he wouldn't continue to do that.

14 I realize that's not a part of this record, but --

15 MS. BAUSER: Well, sir, I think you would say that
16 there is something out there but it is not associated with
17 Table S-3 elements of coal plants.

18 JUDGE GOTCHY: All right.

19 I asked Mr. Eddleman earlier about the continued
20 operation -- he makes an assumption on continued operation of
21 the baseload coal-fired plants in your system through the year
22 -- I believe in page 55 of your brief, it is through the year
23 2014.

24 Are there publicly available plans that we can refer
25 to or something in the record which discusses the Applicant's

1 plans for displacing baseload coal-fired plants with Harris
2 capacity? Is there anything in the record?

3 MR. BAXTER: No, we did not address the merits of
4 Mr. Eddleman's alternative because we felt he didn't even
5 address the purpose for the underlying rule. There are, of
6 course, recent forecasts and expansion plan approvals by the
7 North Carolina Utilities Commission that shows that this plant
8 is going to be needed when it comes online to keep adequate
9 reserve margins, let alone the substitution for existing
10 coal-fired plants. But that is not in the record and is not
11 submitted as part of our response.

12 JUDGE GOTCHY: Thank you.

13 JUDGE MOORE: Mr. Baxter, I have one question. In
14 your brief in responding to the Intervenor's claim that the
15 FES underestimates by some 4000 percent the radiological dose
16 calculations in a health-benefit balance. And you have a
17 statement on page 19 of your brief that essentially says that
18 these are the annualized -- the way it's been figured is on an
19 annual basis. And you say, "To the extent costs increase by
20 4000 percent, benefits do as well."

21 What benefits past the 40-year life of a plant are
22 there?

23 MR. BAXTER: No, we're just talking about
24 multiplying by 40 here. I interpret the 4000 percent to be
25 their complaint that the annual doses have not been expressed

1 on a 40-year basis. And we have just said if you're going to
2 express the doses on a 40-year basis, you'd have to express
3 the benefits on a 40-year basis as well.

4 Then we go on to analyze the residual risk from an
5 additional 100 years of post-operational doses, and that's a
6 separate matter.

7 JUDGE MOORE: Thank you.

8 MR. BAXTER: Thank you.

9 MS. MOORE: May it please the Board, my name is
10 Janice Moore and I represent the Staff. It's the Staff's
11 position in this proceeding that all of the Licensing Board's
12 rulings, which are the subject of this appeal, should be
13 affirmed.

14 Intervenors' appeal could be divided into three
15 major areas. Mr. Eddleman has focused on specific aspects of
16 each of those areas, and I will deal with those as well as
17 discussing some of the areas in general.

18 The first area concerns the hearing issues, the
19 environmental issues which were raised and litigated in the
20 hearings. Their first general argument was that the Licensing
21 Board's decision should not be limited to the matters placed
22 in controversy by the parties. And it's the Staff's position
23 that such an argument flies in the face of the Commission's
24 regulations in 2.760(a) and is without merit.

25 As far as the individual contentions are concerned,

1 Mr. Eddleman made the general statement in his argument today
2 that these contentions, the litigation of these contentions,
3 turned up holes in the Staff's analysis and that these holes
4 have to be fixed.

5 With regard to Contention 2.E which concerned the
6 attachment of radionuclides to coal fly ash, the Intervenors
7 argued that due to what they called deficiencies brought out
8 under cross examination in the Applicant's analysis, the Board
9 did not possess enough technical information to make its
10 decision on this contention.

11 The Board agreed with Intervenors that certain facts
12 had not been predicted with exactitude, such as the particular
13 size and concentration of particulate matter around the Harris
14 facility, and that the deposition rate for lung deposition
15 varies.

16 However, the Board pointed out that even with 100
17 percent deposition of iodines and particulate in the lungs,
18 the dose estimate to the maximally exposed individuals'
19 thyroid would increase only by a factor of one-third, and
20 therefore, the Board found the uncertainties created by the
21 issues raised by Intervenors were insignificant. And
22 therefore, they found that the Staff's dose estimates in the
23 FES had not been seriously underestimated.

24 And therefore, Intervenors' argument ignores the
25 evidence of record, and the Licensing Board's decision on the

1 matter should be affirmed.

2 With regard to Contention 2.C, which concerned
3 whether the FES should take account of life of plant risk or
4 risk on an annual basis, the Licensing Board concluded that
5 what the Staff did was adequate for the purposes for which it
6 was intended and was not misleading. And they concluded this
7 based on the testimony of the Staff and Applicant's witnesses.

8 The Intervenors also raised the point that they
9 considered certain risks were left out of the Staff's and
10 Applicant's analysis, such as the risk of genetic effects or
11 the risk to fetuses. However, both of these were covered.
12 The risk to fetuses was discussed by Applicants on cross
13 examination, and the genetic effects from 40 years of
14 operation were computed by the Staff in its direct testimony.
15 Therefore, the Licensing Board's decision on this contention
16 as well is amply supported by the record and should be
17 affirmed.

18 With regard to Contention 8.F.1, Mr. Eddleman's
19 principal argument, as he reiterated it today, seems to be
20 that you have to consider all environmental impacts no matter
21 how small. And he objected to the Licensing Board's
22 limitation of the consideration of health effects to a
23 distance of 50 miles surrounding the emission source.

24 As the Licensing Board pointed out, this could be
25 considered a worst case analysis if one considers that the

1 concentration of particulates is all held, for analytical
2 purposes, within 50 miles, since the concentration would be
3 higher and therefore the potential health effects would also
4 be higher.

5 It is true that the Staff did agree that particles
6 do not stop at 50 miles. However, the Staff did testify,
7 number one, that they believed that the effects beyond 50
8 miles would be negligible, and two, that the models for
9 predicting long-range transports involve many uncertainties.
10 And they did not believe that it was either necessary or
11 appropriate to go beyond 50 miles to discuss the health
12 effects.

13 Mr. Eddleman also raises the argument that the Board
14 did not use an up-to-date damage function. Rather, what the
15 Board was saying in its decision was not criticizing the use
16 of that 2.31 damage function, but rather, the way in which the
17 Intervenor used it which was to apply it to the total mass of
18 suspended particulates rather than just to fine particulates,
19 which is what the damage function relates to. And fine
20 particulates are only a portion of the total suspended
21 particulates.

22 The second area of the Intervenor's appeal
23 concerns the rejection of certain contentions, and
24 Mr. Eddleman focused in his argument today on those
25 contentions concerning the shipment of spent fuel from

1 Brunswick and Robinson to Harris.

2 The Licensing Board rejected these contentions on
3 the grounds that Table S-4 would encompass these shipments and
4 that the environmental impacts of transportation from
5 Brunswick and Robinson had previously been considered.

6 Intervenor's seem to argue on appeal that Table S-4
7 implies a destination for the fuel from a particular facility
8 to a reprocessing plant. However, that destination is not set
9 forth in Table S-4, and it's the Staff's position that it
10 applies merely to shipments to and from a reactor and not just
11 to shipments to a reprocessing plant.

12 JUDGE GOTCHY: Was that true at the time the
13 operating, or the construction permit, was granted?

14 MS. MOORE: For Harris?

15 JUDGE GOTCHY: Yes.

16 MS. MOORE: I believe that at the time the
17 construction permit was granted there was some language in
18 Table S-4 concerning reprocessing plants, but that language
19 has since been removed.

20 JUDGE GOTCHY: In 1984, as I recall.

21 MS. MOORE: I believe that's correct.

22 JUDGE WILBER: Well, was the request for fuel
23 storage from Brunswick and Robinson in the construction
24 application, or was that an amendment that came in with the OL
25 application?

1 MS. MOORE: To my knowledge, -- and I honestly
2 cannot say whether it's in the CP application, but the only
3 one I am aware of is the request in the OL application for
4 authority to ship from Brunswick and Robinson to Harris.

5 JUDGE WILBER: Did the Staff make an assessment of
6 the receipt and storage of this fuel in the environmental
7 assessment?

8 MS. MOORE: Of the Harris facility? What they
9 stated was that shipments from Harris would comply with S-4.

10 JUDGE WILBER: No, I'm interested in the shipments
11 from Brunswick and Robinson to Harris. Did they assess the
12 receipt at Harris and the storage at Harris?

13 MS. MOORE: I do not believe they did. I may be
14 incorrect at that, but a look at the FES did not point out
15 specifically the storage at Harris of Brunswick and Robinson
16 fuel. However, they would look at the spent fuel pool to make
17 sure that it had adequate capability to store the number of
18 fuel assemblies it was requested to store.

19 The final category of issues that Mr. Eddleman
20 raised concerned his 2.758 petition, and he focused
21 principally on that petition today. The arguments which he
22 made today do not change the Staff's position that
23 Mr. Eddleman has failed to show any special circumstances
24 which would require a waiver of need for power or alternative
25 energy source rules.

1 The petition, as the Staff reads it, discusses an
2 alternative which assumes the present baseload capacity, and
3 therefore, it does not address one of the underpinnings of the
4 Commission's rule precluding the need for power and that is
5 that Harris would be used as a substitute for baseload
6 capacity.

7 In addition, he does not show anything unique about
8 the Harris project which would, for example, preclude such
9 substitution. Mr. Eddleman stated that Units 2, 3 and 4 had
10 been cancelled, as one what he called a special circumstance,
11 and also that he has demonstrated that there is an
12 environmentally and economically superior alternative to
13 Harris.

14 However, what he did not show was that the Harris
15 situation, the Harris service area or project is so unique
16 that the same achievement could not be applicable to any other
17 nuclear project. That this alternative could not be applied
18 somewhere else. And again, he has not shown that Harris could
19 not be substituted for baseload capacity.

20 In addition, the alternative is discussed in the
21 petition in terms of reducing peak load, and it is discussed
22 in the affidavits in terms of reducing peak load. Therefore,
23 it has never been discussed whether this alternative could, in
24 fact, substitute as a baseload generating source for less
25 economic -- pardon me, -- less economic energy sources.

1 Therefore, the Staff's position on the denial of the
2 2.758 petition remains intact, and the petition should be
3 denied.

4 I will return just briefly to some of the areas
5 raised in the brief, although they were not raised in the
6 argument today by Mr. Eddleman, and that is the rejection of
7 the contentions by the Licensing Board. Mr. Eddleman did not
8 deal with them. We have adequately discussed them in our
9 brief.

10 I would just mention one as an example -- he
11 discusses ocean dumping and claims that the Licensing Board
12 went to the merits of that contention to reject it. In fact,
13 the Licensing Board looked at the contention in a way in which
14 to determine whether it related to the proposal of the
15 Applicant. And it determined that it did not; that no ocean
16 dumping was contemplated.

17 Therefore, the Licensing Board, in looking to
18 determine if a particular contention relates to the proposal
19 before it, is not going to the merits of the contention but
20 determining whether that contention has adequate basis.

21 There are a number of issues raised in
22 Mr. Eddleman's brief and responded to by the Staff in the
23 Staff's brief, and I think they are adequately responded to
24 and I would not repeat my argument on each of those issues
25 here.

1 JUDGE MOORE: Counsel, I would like to ask you the
2 same question I asked applicant's counsel. In the
3 Commission's regulations for filing the supplement to the
4 Final Environmental Impact Statement, the operating license
5 proceeding, the regulations say that the supplement will only
6 cover matters which differ from or which reflect significant
7 new information concerning matters discussed in the Final
8 Environmental Impact Statement.

9 Aren't the health effects discussed at the CP stage
10 in the Environmental Impact Statement? And if so, why then
11 can health effects be litigated at all at the OL stage?

12 MS. MOORE: I believe they were discussed. Once
13 again, I would have to go back and look at the CP stage FES,
14 but I would imagine that they were discussed at that time.

15 JUDGE MOORE: Well, they are at least implicit in
16 the document.

17 MS. MOORE: Yes. And I would agree that there is
18 doubt as to whether it should have been litigated in an
19 operating license proceeding absent any changed information.
20 Now, I will say that the Staff did use some very current
21 information in assessing the health effects from Table S-3, as
22 far as the coal particulates were concerned, and it was
23 information that was probably not available at the time of the
24 CP stage.

25 However, I think the only answer I can honestly give

1 to that question is that we do not argue that they should be
2 precluded, and the Licensing Board did not have that argument
3 before it.

4 JUDGE WILBER: May I ask some more on the S-4 issue,
5 it's the commitments I think I asked the Applicant about. Is
6 the Staff in any way going to codify these commitments in the
7 Brunswick or Robinson documents? I see commitments and I
8 wonder how do we know about those, let's say, 30 years from
9 now.

10 MS. MOORE: The Applicant's commitment I believe is
11 mentioned in the Licensing Board's decision. The Staff has
12 not at this point made a determination to put such a
13 commitment in the Brunswick or Robinson licenses, to my
14 knowledge. The commitment is in writing, it is in, as I said,
15 the Licensing Board's decision, and the Applicants have made
16 the commitment in various papers which have been considered
17 before the Commission's adjudicatory tribunals.

18 JUDGE WILBER: But these commitments are in Shearon
19 Harris files and not in the Brunswick and Robinson files. Is
20 this correct? This is where I am coming up with a little
21 disconnect here.

22 MS. MOORE: I believe that is correct. To my
23 knowledge, they haven't been put into either the Brunswick or
24 Robinson FSAR or licenses. Perhaps the Applicants would be
25 better able to answer whether they have submitted an FSAR

1 amendment for Brunswick.

2 Robinson already claimed in the FES, and states,
3 that the impacts of shipping fuel will fall within WASH-1238,
4 which was the base document for Table S-4. Brunswick has the
5 FES that does not state that. So I would Brunswick is the
6 more critical facility from that standpoint. And I honestly
7 do not know.

8 JUDGE GOTCHY: Ms. Moore, I just have a question.
9 What is the Staff's position on what the Applicant has
10 committed to here? The purpose of Table S-4, as I read it, is
11 to provide some kind of a generic impact assessment of some
12 activities, and the bottom line in the S-4 table as I read it
13 is the 4 man rem limit to transportation workers, and the 3
14 man rem limit to the general population.

15 What is the Staff's position on that? Is it the
16 Staff's understanding that the Applicant would commit to meet
17 all of the transshipments of fuel from Brunswick and Robinson,
18 and the final shipments to wherever they are going, a
19 repository or a reprocessing plant, and maintain those within
20 the total 7 man rem figure that is listed in Table S-4?

21 MS. MOORE: It was the Staff's understanding that
22 Applicant's commitment related to the shipment of spent fuel
23 from Brunswick and Robinson to Harris, and that those impacts
24 would be consistent with Table S-4.

25 JUDGE GOTCHY: In what way? Table S-4 doesn't

1 address how many shipments are going to be made by rail or
2 truck or barge; it gives an estimate of, as I understand it,
3 the total impact from shipping unirradiated, fresh fuel,
4 irradiated fuel and radioactive waste.

5 MS. MOORE: It was the Staff's understanding that
6 they would limit the number of shipments in a way which would
7 cause the environmental impacts listed in Table S-4 to be
8 complied with.

9 JUDGE GOTCHY: That would be my interpretation
10 also. But as I recall, the Applicant's counsel said that that
11 was not what they had committed to.

12 MS. MOORE: I believe Applicant's counsel was
13 concerned -- and I hesitate; if I misquote him I hope that I
14 will be corrected -- he was talking about shipments from
15 Brunswick to Harris and then from Harris to the ultimate
16 repository. And I understood him to say that the commitment
17 concerned the shipments from Brunswick to Harris and that was
18 all.

19 I would briefly summarize the Staff's argument in
20 this proceeding to say that with respect to the hearing issues
21 in this proceeding, the Licensing Board's rulings are amply
22 supported by the hearing record, and that the basis for each
23 ruling is clearly articulated.

24 And with respect to all the issues raised on this
25 appeal, the Licensing Board's rulings articulate their basis,

1 take account of the Intervenor's positions and deal with them
2 thoroughly and carefully. And for all of these reasons, the
3 Licensing Board's decisions thus far in this proceeding, which
4 are the subject of this appeal, should be affirmed. Thank
5 you.

6 JUDGE MOORE: Mr. Eddleman, do you have any
7 rebuttal?

8 MR. EDDLEMAN: Yes, sir.

9 Let me try to go through these from where Ms. Moore
10 left off back to the beginning. First, as regards the
11 Contention 8.F.1 on the health effects, I think you will find
12 that in raising issues in my original petition, I stated that
13 the environmental issues were based on new information coming
14 forward. And the basis of Contention 8.F.1 as it was admitted
15 was information that became available after the CP was
16 issued.

17 The Table S-3 amounts of particulates and other
18 things that go out are certainly there from when Table S-3 was
19 adopted. But the health effects information was new. I think
20 that's ample basis to litigate it. Indeed, I would say that
21 if you had new and updated health effects information beyond
22 what was available at the CP stage, regardless of what was
23 available then, that you could litigate on that basis. All
24 you've got to do is present the issue with basis and
25 specificity.

1 Now, the Staff seems to argue again about baseload
2 capacity. Question: Could the Harris alternative substitute
3 for baseload. The answer is it obviously can. If you look,
4 it relies heavily on thermal storage which gives you, in
5 effect, 24 hour operation, the same as a baseload plant.
6 Indeed, better than a baseload plant because it's highly
7 unlikely that all your thermal storage is going to fail at the
8 same time. Whereas, one little glitch in your baseload plant,
9 nuclear or coal, can take it out of operation.

10 JUDGE GOTCHY: You're not worried about the radon
11 coming back out of those storage areas?

12 MR. EDDLEMAN: The radon effects are real, and I
13 think we took them into account. We wouldn't be putting any
14 additional radon into them. What you'd be doing, in effect,
15 is moving air through them.

16 JUDGE GOTCHY: That's correct. But you'd be
17 bringing radon out of the soil into the house that wouldn't be
18 there if you weren't using some kind of a storage area with --
19 underground storage.

20 MR. EDDLEMAN: Not out of the soil. The storage
21 area would be sealed off. The radon that I'm referring to
22 would come out of actually the rock media. Now, of course you
23 could avoid that by --

24 JUDGE GOTCHY: In the storage area that's storing
25 the energy.

1 MR. EDDLEMAN: That's right. You could avoid that
2 by using water storage, and I think I did discuss that. I'm
3 not absolutely certain. But that I'm not worried about in the
4 sense that I think it's covered, not in the sense that it's
5 not a real health effect that has to be taken into account.

6 JUDGE GOTCHY: I don't remember the water storage.
7 I remember the underground storage, and that popped into my
8 head because it seems to be getting a lot of press these days.

9 MR. EDDLEMAN: Right. I think the answer to that is
10 that you basically seal against the external sources of
11 radon. And as to the internal sources, I think if you select
12 your rocks properly you could get that down to the level that
13 you would need to have. As far as I know, Dr. Reeves has not
14 encountered that as a problem.

15 Now, the other thing I wanted to deal with here --
16 well, let me finish the baseload -- is that efficient
17 appliances, because the appliances kick on and off at various
18 times in the day and night. They also are equivalently able
19 to be baseload. If you have a more efficient refrigerator,
20 more efficient water heating --. Also, by the way, displacing
21 water heating does displacement of baseload directly and that
22 is done through these thermal storage systems and alternative
23 firing. So yes, you are able to displace baseload.

24 Now, the other thing I want to try to really be
25 clear on is the question, do I assume that the coal plants

1 exist. I assume they exist; they're there. I'm not going to
2 tear down any coal plants. But I don't assume they have to
3 run. I assume that they can be displaced, and the question is
4 do you displace them with Shearon Harris or do you displace
5 them with the alternative.

6 What I've shown is that you can displace more
7 kilowatt hours with the alternative and save more money.
8 That's what I'm getting at. I have explicitly addressed the
9 thing that the Applicants and Staff keep saying that I
10 haven't.

11 Now as to 8.F.1, the particulates held within 50
12 miles as a worst case might be so if the particulates never
13 left the 50-mile radius. But I believe if you will look at
14 Dr. Hamilton's testimony, he said that they were being carried
15 out with the ambient winds. So you're, in effect, taking
16 those particulates someplace, and the evidence in the record
17 is clear that wherever a particle comes from, whatever its
18 effect is, it is. And that is cited in my brief in detail so
19 I don't think I have to go into that anymore.

20 Now as to Table S-4, I want to clear up one thing.
21 The allegation was that we'd raised only the shipment of fuel
22 to Harris from Brunswick and Robinson. What I at least was
23 attempting to raise was that when you do that, you do get a
24 second shipment coming out, at least. In other words, you
25 ship once from Brunswick or Robinson to Harris, then you ship

1 another time from Harris to someplace else, some ultimate
2 resting place, we hope. And that is an environmental impact.
3 The Board didn't allow us to litigate it.

4 Now, if the Board had said you have to fix the
5 Environmental Impact Statement to take this into account, then
6 maybe you could say they disposed of the issue, but I don't
7 think they actually dealt with it.

8 Now, Mr. Baxter stated in regard to the question of
9 whether there was anything in the record on use of Shearon
10 Harris to displace coal capacity, there wasn't anything in
11 this record. I submit if you check the public record before
12 the North Carolina Utilities Commission, you'll be very hard
13 pressed to find it. I'm not familiar with anything in those
14 records that says they're going to use Harris to displace coal
15 capacity.

16 However, I know you have to consider it for the
17 purpose of 2.758, and I have considered it. One other thing
18 he said, though, was that the North Carolina Commission found
19 the Harris plant was needed for reserve margins. That's
20 capacity. That's the reason why I had to take care of the
21 capacity problem in the 2.758 petition. If you can displace
22 more capacity than Harris, then finding that Harris is going
23 to -- that you're going to need 9000 megawatts -- if you can
24 take 1800 megawatts off the peak, then you don't need it for
25 capacity purposes. That's the point of my argument on that,

1 as to the capacity or peaking need for Harris.

2 The argument about using it to displace energy in a
3 coal plant or otherwise is a separate argument.

4 Now, with regard to the question of Applicant's
5 commitments, one of the things the Intervenor's have tried to
6 challenge in this in general, in this proceeding, is whether
7 Applicants are going to really be committed to these
8 commitments; what's going to hold them to it. So I think that
9 you've raised some very good questions about that, and we
10 would certainly endorse having a commitment actually written
11 into the licenses of the various plants regarding the spent
12 fuel transportation issue. We're not waiving the idea of
13 litigating it but saying that is something we think should be
14 done also.

15 The discussion by the health effects witnesses, when
16 Mr. Baxter was asked about that, I had invited the panel
17 members of the Staff panel whenever they wanted to speak up on
18 something to do so, and I think you'll see through the record
19 that they did so fairly often, and sometimes without
20 invitation, sometimes I would invite them specifically to
21 comment.

22 Now, the argument about the alleged holes in this
23 Titanic which is alleged to be the EIS, I would say that it's
24 also the environmental decisions generally. If there were
25 shown no holes, then why did the Board find them? We cite

1 them in our brief.

2 Now, Mr. Baxter also claimed that Intervenor demand
3 no uncertainty. That's not true. We recognize the
4 uncertainty and say that you should take the whole range of it
5 into account. If you look at my proposed findings, I propose
6 zero on one end of the range and an upper end where I thought
7 the upper end should be. That's what I think full
8 consideration is. You can't exclude either one. If you do,
9 you're not giving full consideration, and that is our
10 argument.

11 Now again, the first point that Mr. Baxter made
12 about 2.758 was he said there's clear evidence that nuclear
13 plants have economic advantages. And indeed, if you'll look
14 at the cite that the Commission gave in adopting the need for
15 power rule, they cite some reports that show the economic
16 advantages of operation. But those are the numbers -- those
17 economic advantages are the numbers that I used to compare my
18 alternative to. So this argument is unavailing.

19 Mr. Baxter also suggested that the presentations by
20 the Intervenor to the Board below were not perhaps what that
21 Board deserved. Believe me, the Intervenor would have loved
22 to have given them better presentations than we did, but I
23 would point out the burden of proof is on the Applicants, not
24 on us. So there's no way to apply that argument to this case.

25 He also suggested that various Intervenor,

1 including myself, were not genuinely interested in the issues
2 raised. I would submit that where there are a vast number of
3 possible issues, all of which are felt to be of importance,
4 and Intervenor fully has the right to raise them, we are not
5 arguing that the Board did not do the right thing because it
6 had too many issues before it, but rather that there are
7 specific deficiencies in what the Board below did. And that's
8 what we would ask you to correct here.

9 It's clear from the Applicant's own brief -- I think
10 it's page 6, the standard of review, -- that this Board has
11 the authority to correct mistakes based on the record, based
12 on the law. This is what we ask you to do.

13 I want to make one final point. The less efficient
14 coal plant. It's sometimes felt that these coal plants would
15 actually pollute more than a more efficient coal plant. But
16 if you'll look, and it's available in the public record of the
17 North Carolina Department of Natural Resources and Community
18 Development, you will find that the limitations on particulate
19 output for some of CP&L's old coal plants are as low or lower
20 than the limits for the corresponding -- pardon me, for the
21 not corresponding at all, but baseload units at Roxboro.

22 So that that assumption is not necessarily correct.

23 Thank you very much.

24 JUDGE GOTCHY: I had a couple questions and you sat
25 down before I had a chance to ask them, with regard to some of

1 the parts of your appeal, the Joint Contention 2.E and 2.C.

2 As I read your brief, it appears to me that your
3 only real specific disagreement with the Board's decision on
4 2.E, which is the radionuclides attached to fly ash issue,
5 seems to go to the issue of the thyroid dose calculations as a
6 critical organ. And the section you cite in the PID at page
7 29 is in the middle of the discussion on dose to thyroid
8 gland. Is that what you're appealing?

9 MR. EDDLEMAN: I believe so. Mr. Runkle wrote that
10 part of the brief.

11 JUDGE GOTCHY: Does that mean that you no longer are
12 challenging the other Board findings, for example, dose via
13 the food chain pathway, which is one of the things that was
14 litigated.

15 MR. EDDLEMAN: Only to the extent that it's not
16 adequately supported in the record. Only to the extent that
17 there were holes shot in it on cross.

18 JUDGE GOTCHY: It's not even mentioned in the
19 brief. There's one page cite to the brief, page 29 of the
20 Partial Initial Decision, and that only deals with this one
21 aspect.

22 MR. EDDLEMAN: We would have to go with the brief on
23 that.

24 JUDGE GOTCHY: All right.

25 The question regarding -- as I understand it, that

1 particular part, the dose to the thyroid gland, is due
2 essentially completely to radioiodine and tritium; in fact,
3 about half and half, from the Applicant's testimony. Would
4 you agree with that?

5 MR. EDDLEMAN: I agree that's what they testified.

6 JUDGE GOTCHY: Do you argue that their record does
7 not establish that tritium inhalation doses are essentially
8 unaffected by the fine particulates in the air?

9 MR. EDDLEMAN: I think that they did not establish
10 that the tritium would not adhere to the particulates.

11 JUDGE GOTCHY: I don't think there's any question
12 that some would adhere; it's just a question of whether it
13 really affects the dose. In other words, you've got what,
14 80,000 times as many water molecules in the air at any given
15 time as you would have tritium molecules, and it's not
16 addressed in your brief but it kind of implies that if there's
17 an adsorption of some water vapor on particles in the air,
18 that whatever tritium is adsorbed is going to be pretty well
19 diluted by the normal water vapor in the atmosphere.

20 MR. EDDLEMAN: Well, I think there's two factors
21 you'd have to look at there. The first is that since the
22 tritium is coming out close to the source of the particulates,
23 the tritium concentration at the point where they are admitted
24 is higher.

25 JUDGE GOTCHY: Now which particulates are you

1 talking about? These are coal particulates from some plant
2 that's 30 or 50 or 100 miles away, right?

3 MR. EDDLEMAN: Well, from anywhere.

4 JUDGE GOTCHY: Not the radioactive particulates that
5 are coming out with the tritium.

6 MR. EDDLEMAN: That's right. But there's an ambient
7 concentration of these particulates coming by in the air.

8 JUDGE GOTCHY: Right.

9 MR. EDDLEMAN: Now, the concentration of tritium at
10 the point where it passes the plant is higher. So what we're
11 saying is that you --

12 JUDGE GOTCHY: Wait a minute. The tritium is coming
13 from the plant; it's not part of the ambient environment.

14 MR. EDDLEMAN: That's right. In other words, here
15 come particulates with maybe some water vapor adhering to
16 them.

17 JUDGE GOTCHY: This is after the tritium leaves the
18 plant.

19 MR. EDDLEMAN: No. Let me start over again, because
20 I want to make clear what I'm trying to say.

21 Here comes air moving past the plant with some coal
22 particulates in it from other sources. The tritium source is
23 the plant, so that's where that tritium concentration peaks.
24 Tritium will obviously have a much greater chance to adhere to
25 the particulates as they come by the plant. The question is

1 will that come back into equilibrium with the concentration of
2 tritium in the whole environment by the time those
3 particulates get to the exposed individuals. I don't think
4 they proved that.

5 The second point is that the particulates, by coming
6 into the body and staying in the lung where there's a
7 tremendous amount of exchange going on, chemical exchange,
8 would provide a more efficient mechanism for bringing the
9 tritium into the body.

10 JUDGE GOTCHY: But didn't the Staff assume that 75
11 percent of all the particulates, which include the tritium,
12 were deposited in the lung?

13 MR. EDDLEMAN: I think they did assume that in one
14 of their calculations.

15 JUDGE GOTCHY: You can't get more than 100 percent.
16 Do you concede that?

17 MR. EDDLEMAN: Yes. Very certainly.

18 JUDGE GOTCHY: All right. So what we're talking
19 about then is what was referred to as increasing the dose by a
20 third.

21 MR. EDDLEMAN: But they didn't figure as to whether
22 the concentration of tritium on the particulates would be
23 higher. That's what I was getting at in the first point.

24 JUDGE GOTCHY: It's just that the tritium can't be
25 two places at the same time. If it's not a particulate it's

1 not in the air. You're breathing some volume of air that
2 contains particulates. And it doesn't seem to make any
3 difference to me whether the tritium is on the particulates or
4 next to the particulates, if it's being inhaled in that given
5 volume of air.

6 MR. EDDLEMAN: That's correct. And what I'm saying
7 is that if the particulates, though, are carrying a higher
8 concentration of tritium than the equilibrium concentration of
9 tritium in the water vapor, then you have a more efficient
10 mechanism of getting that tritium into the body. That's the
11 argument I'm making.

12 JUDGE GOTCHY: All right.

13 With regard to your Contention 2.C, in your brief at
14 pages 11 and 12 you claim the Staff underestimates the health
15 risks by 4000 percent, and this was mentioned earlier by I
16 think Mr. Moore. Didn't the Staff testify that all you need
17 to do is multiply that annualized figure by 40 and that would
18 give you your 40-year assessment?

19 MR. EDDLEMAN: Over the lifetime of the plant.

20 JUDGE GOTCHY: Why isn't that adequate for NEPA?

21 MR. EDDLEMAN: It would be if you actually did the
22 multiplication and then added in the effects after the plant
23 operation ceases.

24 JUDGE GOTCHY: Okay, I'll get to that. But if you
25 take this 40-year period now, if you take the annualized risk

1 and multiply it by 40, that's pretty simple to do. I mean, a
2 grade school child could do that.

3 MR. EDDLEMAN: Absolutely, but the --

4 JUDGE GOTCHY: And the Staff testified that all you
5 have to do is do that.

6 MR. EDDLEMAN: But the use of the annual numbers in
7 the report would give the impression to someone that you're
8 dealing with much smaller impacts than the cumulative impact
9 that you are. You're not licensing the plant to operate for
10 one year; you're licensing it to operate for its lifetime.

11 JUDGE GOTCHY: Okay, but do you understand that when
12 a board makes a decision, and the Staff has testified and they
13 make a decision that modifies the FES, that that stands as a
14 modified FES? I mean, the FES as it now exists is the FES as
15 submitted by the Staff and as modified by the Board decision.

16 MR. EDDLEMAN: Okay, by the Board decision, not just
17 by the evidence. So if the Board actually took it up and said
18 you have to multiply by 40 or --

19 JUDGE GOTCHY: They did, didn't they?

20 MR. EDDLEMAN: I'm not absolutely certain they did.

21 JUDGE GOTCHY: I think they did.

22 MR. EDDLEMAN: I don't have the decision right in
23 front of me, but I'll accept that.

24 JUDGE GOTCHY: Do you remember that Staff witness
25 Dr. Brannigan provided a 40-year estimate of dose and risk to

1 the maximally exposed hypothetical individual who would be at
2 the highest concentration point downwind from the plant, and
3 that he would be there for his entire life, eating homegrown
4 food which would have any radionuclides coming along with it
5 on them. And do you remember that?

6 MR. EDDLEMAN: Yes.

7 JUDGE GOTCHY: Do you remember that the dose he
8 estimated was like 200 millirems for this kind of a person?

9 MR. EDDLEMAN: I believe that's correct.

10 JUDGE GOTCHY: I believe that corresponds to
11 something like 5 percent of the natural background radiation
12 exposure over that same 40-year period.

13 MR. EDDLEMAN: That sounds right.

14 JUDGE GOTCHY: Didn't Dr. Brannigan also conclude
15 that the maximized dose would correlate with an added lifetime
16 cancer mortality risk of about 3 times 10 to the minus 5th?

17 MR. EDDLEMAN: I believe that's the number he used.
18 We wouldn't endorse the number, but that's how he calculated
19 it.

20 JUDGE GOTCHY: Well, we could get to the numbers but
21 I don't think we're going to have time to do that today. But
22 the point I'm trying to make is that he testified the current
23 spontaneous cancer mortality rate is about 20 percent in the
24 population, and you've got this risk now that's 3 times 10 to
25 the minus 5, and you're going to get this increase about 20

1 percent, that that represent an incredibly small increase in
2 the spontaneous rate. Would you agree with that?

3 MR. EDDLEMAN: It is for that individual, obviously.

4 JUDGE GOTCHY: Well, this is the maximum individual
5 in that whole population.

6 MR. EDDLEMAN: Right, and that incorporates
7 conservatisms.

8 JUDGE GOTCHY: Everybody else is less.

9 MR. EDDLEMAN: That's right. Everybody is less, but
10 there's a lot of everybody elses. And the other thing is, to
11 respond to the 20 percent spontaneous incidence, the plant
12 does not reduce that spontaneous incidence. That's there
13 regardless.

14 JUDGE GOTCHY: Of course.

15 MR. EDDLEMAN: I don't think it's legitimate to say
16 well, the plant has less impact than the spontaneous
17 incidence. If that were true then I could, for example, say
18 that since Hitler killed 12 million people in his gas
19 chambers, then it's perfectly legitimate for me to go out and
20 shoot 12 people, and that's only 10 to the minus 6th of what
21 Hitler did.

22 JUDGE GOTCHY: I don't think that that is a valid
23 comparison, but getting to the 50-mile population dose, I
24 think Dr. Brannigan also testified that the average risk would
25 be something like 1/500 of this already incredibly small

1 number to the maximum individual.

2 Now why, for purposes of NEPA, don't those risks
3 establish a reasonable upper bound risk to the population and
4 to the maximum hypothetical individual?

5 MR. EDDLEMAN: If they're calculated correctly, they
6 would.

7 JUDGE GOTCHY: All right. And you're arguing they
8 were not?

9 MR. EDDLEMAN: I'm not sure what was raised in the
10 brief. I'm trying to take up Mr. Runkle's part of it here.

11 JUDGE GOTCHY: I see.

12 MR. EDDLEMAN: But I'm saying that given that the
13 calculations were correct, then it would establish a
14 reasonable upper limit.

15 JUDGE GOTCHY: I think also in the brief you argued
16 that the Staff failed to consider effects after the plant
17 ceased operation. You just mentioned it a few minutes ago in
18 answering another question I had. Do you recall that Staff
19 witness Brannigan estimated that -- or testified that the
20 annual dose commitment is that received by a person during the
21 actual year of plant operation, plus the cumulative dose from
22 any radioactivity remaining in his body for the rest of his
23 life from that year of exposure, and that that commitment was
24 done over a 50-year period beyond that. So now you're talking
25 about 50 years for each year.

1 So if you've got 40 years and 50 years beyond each
2 one, you are encompassing approximately a 90-year period. Is
3 that right?

4 MR. EDDLEMAN: That's right.

5 JUDGE GOTCHY: Why doesn't that cover the average
6 person's dose from birth to death?

7 MR. EDDLEMAN: It does obviously, but there are
8 other persons being born and going through life, and some of
9 the nuclides are remaining. Staff didn't consider that. We
10 have argued that they should have gone beyond 100 years.

11 JUDGE GOTCHY: I think they assumed a stable --
12 well, they actually had a growing population. But when they
13 do the assessment they take the population estimate sometime
14 in the future and use that, and that is a growing population.
15 It is increased from the one that's alive now, and I believe
16 it may be the 20th year of operation that they pick as an
17 average point.

18 MR. EDDLEMAN: I think they chose the midpoint in
19 one of them and one of the others might have been the year
20 2020.

21 JUDGE GOTCHY: But why aren't those adequate for
22 NEPA?

23 MR. EDDLEMAN: If the estimates are calculated
24 correctly, --

25 JUDGE GOTCHY: If you assume the population stays --

1 you know, it's the same population for the whole 40 years, and
2 they assume this population sometime in the future, which is
3 obviously going to overestimate what it is now and
4 underestimate what it is later on by some unknown amount.

5 MR. EDDLEMAN: Right. But the question we're
6 raising is the number of years, not the population. If you
7 take the number of years on out -- some of the nuclides have
8 half-lives and would be available. In other words, the
9 nuclides that are in people's bodies are not the only nuclides
10 that are on the loose from the plant.

11 JUDGE GOTCHY: Yes, but when those people die they
12 take their nuclides with them to the grave.

13 MR. EDDLEMAN: Well, yes, unless they're cremated or
14 whatever. But nevertheless, the people do not go around like
15 little vacuum cleaners and suck up all the nuclides that the
16 plant has emitted into the environment within 50 miles.
17 Therefore, there are some of the rest of them on the loose;
18 they are not inside people and could not be carried to the
19 grave even if that grave were a totally tight repository.

20 JUDGE GOTCHY: I'll grant you the record is --
21 there's not a lot of information on that. But as I recall,
22 there was some discussions about, for example, radionuclides
23 going into waterways and being bound in sediments and that
24 sort of thing, and essentially being gone from the human
25 biosphere. And the same thing is true, I think you would

1 readily admit, when you have material deposited on the
2 ground. If it's on a plant and it doesn't get eaten right
3 away, rain will eventually carry it down into the soil and,
4 you know, at some point down there it becomes part of the
5 lithosphere and it's no longer part of the biosphere.

6 MR. EDDLEMAN: Well, it might be carried into
7 groundwater and pulled up into somebody's well and so on.

8 JUDGE GOTCHY: I guess if you wait long enough
9 that's a possibility.

10 MR. EDDLEMAN: You can't just say that the
11 radionuclides all go away except those that get into the
12 humans, though, or into the plants. For example, if I grow a
13 vegetable and I don't eat it and it's got some nuclides in it,
14 I toss it on my compost heap, it goes back into the garden.

15 JUDGE GOTCHY: Most farmers I think just plow it
16 under, don't they?

17 MR. EDDLEMAN: Yes, and then that's ground in which
18 the next crop gets raised, if they have a next crop.

19 JUDGE GOTCHY: But most of the dose -- well, you
20 didn't get into it here but I think if you'll look at the
21 Staff models for calculating that, most of the dose really
22 comes from deposition rather than uptake I think through
23 plants.

24 MR. EDDLEMAN: That's the way they do it.

25 JUDGE GOTCHY: yes.

1 JUDGE MOORE: Thank you, Mr. Eddleman.

2 We will take the case under advisement.

3 [Whereupon, at 11:45 a.m., the oral argument was
4 concluded.]

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1 CERTIFICATE OF OFFICIAL REPORTER

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5 This is to certify that the attached proceedings
6 before the United States Nuclear Regulatory Commission in the
7 matter of: CAROLINA POWER & LIGHT COMPANY AND NORTH CAROLINA
8 MUNICIPAL POWER AGENCY (Shearon Harris Nuclear
Power Plant)

9 Name of Proceeding: Oral Argument

10
11 Docket No.: 50-400-OL

50-401-OL

12 Place: Bethesda, Maryland

13 Date: Wednesday, August 28, 1985

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

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19 (Signature)

(Typed Name of Reporter) Suzanne B. Young

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