

Tera

NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF:

ATOMIC POWER COMPANY

(D. Anle-McGuire)

Docket No. 70-2623

Place: Charlotte, North Carolina

Date: August 1979

3358 - 1700
Pages

680037

Telephone:
(202) 347-3700

ACE - FEDERAL REPORTERS, INC.

Official Reporters

444 North Capitol Street
Washington, D.C. 20001

7908150 022

NATIONWIDE COVERAGE - DAILY

Loc
arr
631

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the matter of: :

DUKE POWER COMPANY : Docket No. 70-2623

Amendment to Materials License :
 SNM-1773 For Onense Nuclear Station :
 spent Fuel Transportation and Storage :
 at McGuire Nuclear Station) :

Fourth Floor Board Room,
 Education Building,
 701 East Second Street,
 Charlotte, North Carolina.

Wednesday, 3 August 1979.

The hearing in the above-entitled matter was
 reconvened, pursuant to adjournment, at 8:30 a.m.

BEFORE:

MARSHALL E. HILLER, Esq., Chairman,
 Atomic Safety and Licensing Board.

DR. EMMETH A. LUBBEK, Member.

DR. CADET H. HAND, Member.

APPEARANCES:

On behalf of the Applicant:

J. MICHAEL McGARRY, III, Esq.,
 Debevoise & Liberman,
 1200 Seventeenth Street, N.W.,
 Washington, D. C.

WILLIAM LARRY PORTER, Esq.,
 Associate General Counsel,
 Duke Power Company,
 Charlotte, North Carolina.

686038

POOR ORIGINAL

In behalf of the NRC Regulatory Staff:

WILLIAM S. RITCHIE, Esq.,
 WILLIAM K. HOFFLING, Esq.,

Office of the Executive Legal Director,
 United States Nuclear Regulatory Commission,
 Washington, D. C. 20555.

In behalf of the State of South Carolina:

WILLIAM P. NELSON, Esq.,
 Assistant Attorney General,
 Office of the Attorney General,
 State of South Carolina,
 200 Bull Street,
 Columbia, South Carolina 29201.

In behalf of Intervenor Natural Resources Defense
 Council:

ANTHONY E. ROISMAN, Esq.,
 Natural Resources Defense Council,
 1915 - 15th Street, N.W.,
 Washington, D. C.

On behalf of Intervenor Carolina Environmental
 Study Group:

JESSE RILEY, Charlotte, North Carolina.

886039

POOR ORIGINAL

C O N T E N T S

<u>Witnesses</u>	<u>Direct</u>	<u>Cross</u>	<u>Redirect</u>	<u>Recross</u>
John P. Roberts)		3361	3437	3447
Harrel A. Nash)		3462		
R. Daniel Glenn)				
Brett S. Spitalny)				
(Continued)				
Brett S. Spitalny			3512	3513
Mlayton Pittiglio)	3522	3526		
Harrel A. Nash)				

<u>Exhibits</u>	<u>Iden.</u>
Board 10 Starostecki ltr. to Jacobs, 7/12/78	3397
Staff 25 Duke diagram of Oconee pool	3401
Staff 26-A Nash testimony	3519
Staff 26-B Add'l Nash testimony	3520
Staff 27-A Pittiglio testimony	3522
Staff 27-B Add'l Pittiglio testimony	3522

POOR ORIGINAL

686040

P R O C E E D I N G S

CHAIRMAN MILLER: Are we ready to proceed?

Whereupon,

JOHN P. ROBERTS,

DARREL A. NASH,

R. DANIEL GLENN,

and

BRETT S. SPITALNY

resumed the stand on behalf of the NRC Regulatory Staff and, having been previously duly sworn, were examined and testified further as follows:

CHAIRMAN MILLER: Mr. Riley, I believe it is your turn.

CROSS-EXAMINATION (Continued)

BY MR. RILEY:

Q When we left off last night we were talking about the Stone and Webster pool. Have you, since that discussion, calculated the center-to-center spacing that Oconee fuel assemblies would have in the area of the Stone and Webster pool?

A (Witness Roberts) No, I have not.

I think at the end of our discussion last night when I was running through the calculator we came up with-- You wanted to, I think, determine the number of assemblies in the pool, and I said, well, one quick way it could be done

686041

POOR ORIGINAL

WRS/002 1 was to take the 1150 metric tons and divide by .45 metric tons
2 per assembly, and that gave you, as I calculated, about 2555
3 assemblies would fit into the pool.

4 Q I checked your calculation and I agree.

5 Now based on the pool area, can you use that number
6 to find out the area per assembly?

7 A I guess if I go through and if I have the dimensions
8 here and one of these-- Let me check and see if I have the
9 dimensions and I may be able to do that.

10 Q Would you like to do that so you can come back with
11 it after a recess, please. What we want to know is the center-
12 to-center distance because what we're trying to determine
13 is whether it's a high-density stainless steel rack situation
14 or poison rack situation, or what-have-you. That obviously
15 is going to bear on the cost per assembly.

16 CHAIRMAN MILLER: Does the witness agree that there
17 is a link to the assertions? We might as well find out where
18 we're in agreement or where we're not, Mr. Riley, to see
19 whether it's a meaningful exercise.

20 WITNESS ROBERTS: I would say that it will not
21 necessarily give you an accurate figure because -- You know,
22 on a first cut, if you make assumptions that you can simply
23 say there is so much space and I can put these in such-and-
24 such a packing and I can assume I have the full area of the
25 pool, then I can make the assumption that -- the cost value

686042

POOR ORIGINAL

1 that Mr. Riley is assuming.

2 That may not be the case if you go through the full
3 review. For example, there is the gate. You'd have to leave
4 some spacing at that end, presumably.

5 The things I'm thinking of are some of the proposed--
6 And this is not....Let me see if I can explain this.

7 One of the things that we have looked at in ISPSI
8 design, and this is not in Part 72, one of the considerations
9 has been leaving enough space in the racking and so forth
10 that in the event of a Class 9 situation, that air cooling
11 might actually, for the age fuel we're talking about, be
12 effective in cooling the fuel. That is not even in, ad-
13 mittedly, in the Reg. Guide.

14 CHAIRMAN MILLER: This is Class 9?

15 WITNESS ROBERTS: Yes.

16 CHAIRMAN MILLER: To what extent do you normally
17 consider Class 9 as being probable?

18 WITNESS ROBERTS: It's not. It's not a credible
19 accident.

20 CHAIRMAN MILLER: When aren't we talking about
21 peripheral matters there? Can't we get a more central posi-
22 tion rather than peripheral matters and either way, come out
23 with some kind of reasonable conclusion that will be both
24 felt to the staff in using their expertise, and as the
25 proposition that Mr. Riley's interested in?

686043

POOR ORIGINAL

WRE/eb: 1 WITNESS ROBERTS: I think so. I'm willing to go
2 ahead and calculate on that basis, having just expressed kind
3 of the caveats I have that, you know, this is maybe not as
4 optimum as we see, but I don't know that it will make more
5 than perhaps a few percent difference one way or another,
6 shall we say.

7 CHAIRMAN MILLER: All right.

8 WITNESS ROBERTS: Is that satisfactory?

9 CHAIRMAN MILLER: Is that acceptable?

10 MR. RILEY: Yes. We're talking about a factor of
11 two difference so a few percent error will not be a problem.

12 CHAIRMAN MILLER: We'll go on that basis then.

13 BY MR. RILEY:

14 Q Mr. Spitalny, referring to your Exhibit 19-C again,
15 page 7, in the middle of the body of print-- Do you have it?

16 A (Witness Spitalny) Yes.

17 CHAIRMAN MILLER: What page, Mr. Riley?

18 MR. RILEY: Page 7.

19 CHAIRMAN MILLER: Thank you.

20 BY MR. RILEY:

21 Q Does the sentence that reads:

22 "In general, the use of neutron ab-
23 sorbing (poison) racks is an accepted practice."

24 What I want to ask you about is has Staff already
25 licensed some fuel pools for poison racks?

WRB/eb5 1 A (Witness Spitalny) Yes, certainly. Yes.

2 Q Are any poison racks actually in place?

3 A Are any in place?

4 Q In fuel pools?

5 A Yes.

6 Q Are any currently holding spent fuel assemblies?

7 A Yes.

8 Q Mr. Nash, we neglected you yesterday, but I have a
9 few questions for you this morning.

10 Referring to your most recently filed testimony....

11 Mr. Nash, I was about to commit an error by
12 examining you on testimony that hasn't been introduced, and
13 I've been saved by Mr. Roisman.

14 If you'll just give me a moment, please?

15 (Pause.)

16 Mr. Spitalny, I have here a copy of a certificate
17 of compliance in connection with the cask. It's the cask
18 under discussion here. It's USA6698B.

19 On page 370-- You do not have the document avail-
20 able to you, do you?

21 A I do not have one in front of me, no.

22 Q All right.

23 This is the document.

24 (Handing document to the witness.)

25 On page 370--

680045

WRB/ab6 1 MR. MC GARRY: Mr. Riley, I'm sorry. Could you
2 please identify the document?

3 MR. RILEY: Yes. Mr. McGarry, it is the certifi-
4 cate of compliance. It's in respect to your Applicant's
5 cask. The certificate number is 6698.

6 BY MR. RILEY:

7 Q On the last page of that document which is num-
8 bered 370, under Item 19 there's an expiration date given as
9 November 30, 1979.

10 Would you tell us what we can anticipate after that
11 expiration date in view of the present status of the cask,
12 which perhaps I should define?

13 Seven existing casks are presently in non-
14 compliance.

15 A (Witness Spitalny) I would like to clarify one
16 area. The design of the casks are not in non-compliance with
17 the certificate. The construction of the cask is what is
18 being evaluated. It has been found that one of the seven
19 you're discussing is still in construction and has not been
20 put into use.

21 Three of the six that are in use do meet the re-
22 quirements of the certificate of compliance.

23 Three of the casks do not.

24 Q May I interrupt a moment, Mr. Spitalny?

25 Could you give us the status of Duke's casks with

WRB/eb 1 respect to the three that do and the three that don't?

2 A It is my understanding that one of Duke's casks
3 does not meet the certificate as a result of construction
4 problems, and one does. Duke presently has two of the NSF
5 casks.

6 The Staff has not taken any position yet as to what
7 they're going to do. Presently they have a number of paths
8 that they are looking at. There has not been a final commit-
9 ment by that particular branch that's responsible for licensing
10 those casks.

11 I view the expiration date of the certificate in
12 November of 1979 as independent of the situation the cask is
13 in presently. The certificate can be renewed without any
14 problem.

15 The problem area is that the casks, some of the
16 casks may not meet the certificate so I believe that they are
17 independent problems.

18 I haven't looked at the date of your certificates.
19 I don't know if it has actually been updated since that one.
20 I believe the latest revision is Number 8 possibly.

21 Q Well, the date on it is an application going back
22 to October 6, 1972.

23 A Do you have a revision number?

24 Q Yes, Revision Number 8.

25 A I believe that's the current one.

686047

POOR ORIGINAL

WRB/ab6 1 Again, as the time approaches for the expiration
2 of that certificate, it will be adjusted.

3 The paths that are being looked at: First of all,
4 first of all, it will be up to NAC at this time, Nuclear
5 Assurance Corporation, to apply for the renewal of that cer-
6 tificate which is not a difficult task, but because of the
7 situation that we have presently, there are just different
8 routes that are being looked at as to what we can do.

9 Q Now does the certification process involve the
10 actual design specifics of the cask as well as the meeting of
11 certain shielding requirements?

12 A Yes. I would say that I'm not an expert in the
13 construction or the qualifications -- the certifications that
14 the casks have to go through. I'm generally familiar with
15 it and I might be able to respond to your questions, but it is
16 handled in a different area at NRC than my own.

17 Q You are familiar with the cask to the extent that
18 you know that the outer steel member which is 1-1/4 inches
19 thick is in two sections with one portion telescoping inside
20 another of larger diameter?

21 Would it be helpful if I gave you a drawing of the
22 cask?

23 A I would like to see it.

24 MR. RILEY: Would the members of the Board wish to
25 see copies of this?

WFB/ b9 1

CHAIRMAN MILLER: The Board would want one if you have an extra one.

(Documents distributed.)

MR. WILSON: Is this the same diagram that was earlier introduced as CESC Number 1?

MR. RILEY: That's right.

MR. WILSON: I believe we have that.

MR. MC GARRY: May I have a copy?

MR. RILEY: Surely.

BY MR. RILEY:

Q If you will refer then to this drawing, Mr. Spitalny, you will see that in the lower half, roughly one-third from the lower side of the drawing there's a change in diameter of the heaviest member shown, the heaviest cylindrical member. And you can see that the smaller member telescopes into the larger member.

Do you follow what I'm saying?

A (Witness Spitalny) Yes, I see that.

Q Well, since this is a construction detail, is it conceivable --

MR. KETCHEN: Objection, Mr. Chairman. This is not relevant to the direct; relevancy and repetitiveness. We've been through this with another panel about this cask and we're getting into it again. It seems like we've spent a lot of time on this exhibit. I think the Intervenor has had a chance

658049

WRB/eb10
1 on this and I don't think he should repeat it again.

2 CHAIRMAN MILLER: Mr. Riley, hasn't this been gone
3 over with the panel which purported to have the expertise
4 necessary to answer cask questions? Is my memory incorrect on
5 that?

6 MR. RILEY: This is a foundation, Mr. Chairman.
7 What I am directed toward is a question of when the casks will
8 first be available to the Applicant.

9 CHAIRMAN MILLER: Be available?

10 MR. RILEY: That's right. And what I'm trying to
11 determine is whether or not there is going to be a certifica-
12 tion problem due to what I believe is a structural defect
13 that has caused three of the seven casks to not be in com-
14 pliance.

15 It seems reasonable that certification would make
16 some changes in cask design to see that that doesn't happen in
17 the future.

18 Obviously one of the two casks of Duke which not in
19 compliance is going to have to be brought into compliance. All
20 of this affects the schedule for transshipment, and that's the
21 context in which I wish to raise this.

22 CHAIRMAN MILLER: We don't quite see what the
23 schedule necessarily has to do with the material issue I sup-
24 pose, Mr. Riley.

25 MR. RILEY: It's the date at which casks will be

688050

1 available for transshipment. And if casks were not available
2 for the next five years, it's obvious that the only alterna-
3 tive would be onsite storage.

4 CHAIRMAN MILLER: Well, it's obvious that the alter-
5 native of transshipment would not be available.

6 MR. RILEY: That's right. And it's in that sense
7 that I want to pursue this.

8 CHAIRMAN MILLER: We're not certain whether this is
9 the panel from which to get that information if you're going
10 into the technical aspects. If you're going into certifica-
11 tion we have permitted you to ask those questions. We're
12 concerned that you're getting into other areas.

13 MR. RILEY: I don't wish to stress the technical
14 aspect. I just want to ask Mr. Spitalny if what appears to
15 be the feature in the cask which accounts for non-compliance
16 is as I identified, if it might not cause the certification
17 process to be impeded.

18 CHAIRMAN MILLER: All right, you may ask that ques-
19 tion.

20 BY MR. RILEY:

21 Q To try to put this into straightforward questions,
22 Mr. Spitalny, isn't it true that at present Duke has no casks
23 available for transshipment?

24 A (Witness Spitalny) Duke does not have any casks
25 at present that they presently own that are available for

WRE/eb12 1 transshipment. There are a number of other casks which they
2 can either purchase or lease for transshipment.

3 Q Right.

4 Now that means that for them to be able to trans-
5 ship they will either need to secure other certificated casks
6 or make repairs to one of their casks and wait for that time
7 where both casks again are certificated?

8 A I believe Duke is in a position where they're wait-
9 ing for some action from the Staff to determine exactly what
10 Duke has to do to put their casks back into complying with
11 the certificate.

12 Q All right.

13 Are you able to tell us what those action by the
14 Staff will be, and how long it may take for them to be taken?

15 A I'm familiar with a number of actions, but they
16 have not been presented publicly, and I don't know if there
17 are any legal implications at all. I think I would have to
18 ask my Counsel if I can mention it.

19 MR. RILEY: Mr. Chairman, will you please advise me
20 on this?

21 CHAIRMAN MILLER: Am I the Counsel?

22 MR. RILEY: No, sir, you're not.

23 CHAIRMAN MILLER: Well, I didn't think so.

24 MR. RILEY: I said advise me --

25 CHAIRMAN MILLER: Oh.

POOR ORIGINAL

086052

1 MR. RILEY: -- on how to proceed.

2 CHAIRMAN MILLER: Well, ask the question.

3 WITNESS SPITALNY: Is I may ask a question of my
4 Counsel?

5 CHAIRMAN MILLER: Whom do you deem your Counsel to
6 be?

7 WITNESS SPITALNY: Mr. Roefling, I believe.

8 CHAIRMAN MILLER: Fine. You may ask him.

9 We're not going to start this day out with more
10 secrets, are we?

11 (Witness Spitalny conferring with Counsel.)

12 WITNESS ROBERTS: If it is of any value, at this
13 time I probably could give an approximate figure for the one --

14 CHAIRMAN MILLER: You probably could. I think
15 we'll have it straightened out momentarily.

16 MR. KETCHEN: Mr. Chairman, while we're having
17 this little interlude, I said I would pass out the piece of
18 Dr. Nash's testimony with his corrections on it, and last
19 night I neglected to do so. I'll get that passed out some
20 time today.

21 CHAIRMAN MILLER: Fine. I'm sure we'll have another
22 interval shortly and you can pass it out at that time.

23 MR. KETCHEN: I don't have it yet, though.

24 CHAIRMAN MILLER: Well, when you get it and we
25 have an interval, then you may pass it out.

TRB/eb14 1 Are you able to answer the question, Mr. Spitalny?

2 WITNESS SPITALNY: Yes, I am.

3 CHAIRMAN MILLER: Do you recall the question?

4 WITNESS SPITALNY: Yes, I believe the question was
5 what are the paths that the Staff is looking at.

6 BY MR. RILEY:

7 Q And what is the probable schedule?

8 A (Witness Spitalny) And what is the probable
9 schedule.

10 One of the paths that are being evaluated is the
11 possibility of putting the three casks which meet the certi-
12 ficate back into service. The certificate would be modified
13 to reflect a maximum thermal value of 2.5 Kw. The present
14 value is 11.5 Kw.

15 The reason for that is to limit the thermal stress
16 on the cask. That is one of the options available.

17 A second option available is putting the three casks
18 that meet the certificate back in service after the completion
19 of a buckling analysis which is being performed by Nuclear
20 Assurance Corporation which will be evaluated by the Staff.
21 This is to take into consideration any possible bowing or
22 sagging of the cask that has been evidenced in the three that
23 do not meet the certificate.

24 At the completion of that evaluation we can possi-
25 bly put the three back in and issue instructions to leave the

688054

WFS/ebli 1 other three off the road, or possibly correct the other three
2 and put them back on the road.

3 A third path would be to not take any action and
4 wait for the evaluation of this buckling analysis, correct the
5 three that are -- that do not meet the compliance, and if they
6 are able to be corrected, put them all back in at that time.
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

wrb/aqbl 1 With regard to schedules, the option of the
2 2.5kw presently is being held up as a result of a QA
3 inspection which was done last week at the two companies which
4 manufacture the NSF-4 casks. The two companies being
5 Stern and Rogers and the other EXCELCO.

6 We're waiting for a full report as a result of
7 that QA inspection to determine whether or not the 2.5kw
8 route may be chosen. If the QA inspection report shows
9 deviations which are able to be cleared up and are not
10 considered significant, it is possible to put these casks
11 back out on the road within a month.

12 As far as if there is a problem with the QA
13 report, we will have to deal with those problems when we
14 see what they are.

15 The option of putting the three back on the road
16 after a buckling analysis it's difficult to put a time
17 schedule on. I have heard times as great as one year.

18 The analysis that is being done is a pretty
19 in-depth thorough analysis and it's going to take quite a
20 length of time to perform it.

21 The option of waiting and putting all of them
22 back on the road would obviously take more than that option
23 of putting the three. They would have to wait for the
24 analysis to be done and also for the corrections to be made.

25 Basically that's the position.

1
wrb/agb2
2 Q Mr. Spitalny, was not one of the concerns with
3 regard to the deficient casks a shielding deficiency due to
4 the smaller thickness of lead in one region of the cask?

5 A That's how the deficiency was determined. I
6 don't know that --

7 Q Did that shielding deficiency result in exceeding
8 over certain parts of the cask the permissible radiation
9 levels using the newest fuel for the permissible use of that
10 certification?

11 A I'm not sure what the exact readings were. All
12 I know is that when they took a scan of the cask, there was
13 a disparity in the scan that revealed something in the middle
14 of the cask.

15 And when they took a look at it, they realized
16 that there had been a change in the structure there -- not
17 a change, it was basically a copper plate that was put in as
18 a band to increase the shielding in one area. That is
19 what has prompted the action that is presently happening.

20 Q Do you know if that copper plate was inside the
21 neutron shield or at the surface of the neutron shield?

22 MR. MC GARRY: Mr. Chairman, I'll object to that
23 question. It seems like we're now getting into the structural
24 integrity of the cask as opposed to the cask availability
25 issue.

686057

MR. RILEY: Mr. Chairman, I was trying to get at

POOR ORIGINAL

1 the corrigibility of the defective casks, how readily can they
2 be brought up to par.

3 CHAIRMAN MILLER: Well your inquiry is based upon
4 the time factor, I presume, is it not, the time within which
5 a cask or casks can be made available as a realistic matter,
6 is that the thrust of your examination?

7 MR. RILEY: Right.

8 CHAIRMAN MILLER: We don't, as you know, want
9 to get into the technicalities of the casks which have been
10 gone into previously by witnesses whose competence I think
11 it was. Now can you avoid that and still get into the
12 time questions that we have been permitting you?

13 MR. RILEY: What I'm trying to do is get an
14 informed estimate of how long it will take to correct the
15 deficiencies.

16 CHAIRMAN MILLER: Well, can you find out if these
17 witnesses can tell you or not? If they can, I'm sure they
18 will, if they can't we'll just have to take it that way.

19 WITNESS SPITALNY: To my knowledge, the Staff
20 doesn't know the length of time presently. They are not
21 sure what the corrective action is going to be, so they have
22 no way of putting a time on it.

23 MR. RILEY: All right.

24 BY MR. RILEY:

25 Q Have you made a study to determine what casks are

686058
POOR ORIGINAL

rb/agba 1 actually available to the Applicant and in what time frame
2 the Applicant, if it sought to obtain these, would be able
3 to obtain them?

4 A (Witness Spitalny) I have not made a study, no.
5 I'm aware the casks are available, the problem is one of
6 the Applicants.

7 Q Are you aware of the status of these casks?
8 Are they rental casks, in part, privately owned casks,
9 in part, what is the status?

10 A I do not know the details. Some are privately
11 owned, some are leased.

12 Q And do you know the population of available casks
13 that would be suitable for this spent fuel?

14 A I believe I do, and I believe that's in the
15 record.

16 Q Could you give us an order of magnitude, then,
17 to recall the record? I, too, believe it is in the record
18 but in the present context it would be helpful.

19 A The cask which is most similar to that of the
20 NSF-4 cask is an NLI 1/2 cask, which is National Lab
21 Industries. There are five of those casks which are pre-
22 sently authorized for use.

23 There is Transnuclear Corporation, I believe,
24 which has a cask which is called TN-8. It's also a truck
25 cask. And there are two of those presently available. Two

1 of those are presently under construction, and I do not know
2 the dates when they are expected to be completed.

3 General Electric has a rail cask designated the
4 IF-300 of which there are four presently available.

5 CHAIRMAN MILLER: Pardon me, did you say a rail
6 cask?

7 WITNESS SPITALNY: A rail cask, yes.

8 CHAIRMAN MILLER: All four of them?

9 WITNESS SPITALNY: Yes.

10 BY MR. RILEY:

11 Q In this context I think we can confine our
12 discussion to truck casks.

13 A (Witness Spitalny) Fine. If it's truck casks,
14 we limit ourselves to the NSF-4, the NLI 1/2 and the TN-8.

15 Q You mentioned there are three casks under
16 construction, one NSF and one, I've forgotten the designation,
17 and the one you just referred to. Have those casks been
18 contracted for, have they been sold?

19 A I do not know the specifics.

20 Q In other words, you do not know the market supply
21 of suitable casks for this purpose?

22 A I have not researched that.

23 It is my understanding that Duke has, on occasion,
24 used an NLI 1/2. I don't know where they got it from, but
25 apparently they were able to get one.

wrb/ab6 1 Q Is it your testimony that you do not know of the
2 available seven casks which are privately owned and which
3 are available as rental casks?

4 A The available seven, the number you're referring
5 to, the five NLI plus two?

6 Q Right.

7 A I do not know their locations.

8 Q Addressing the panel generally because I'm not
9 sure which of you wishes to respond here, you are familiar --
10 and this is a bit of foundation -- with the studies conducted
11 by the Department of Energy in which a no longer certificated
12 group of casks, two I believe is the total, were involved in
13 a series of high velocity collisions; two, as I recall,
14 against a concrete barrier, and I think in another case a
15 locomotive running into the side and so forth. Are all
16 members of the panel familiar with that test?

17 A (Witness Nash) I am not.

18 Q Mr. Glenn?

19 A (Witness Glenn) I'm aware of those tests but
20 I'm not familiar with them.

21 Q Have you read the Sandia report on the subject?

22 A I have not had a chance to read that report yet,
23 no.

24 Q Mr. Spitalny, have you familiarity?

25 A (Witness Spitalny) I have a general familiarity

1 with it. I have not read the Sandia report.

2 Q All right.

3 Mr. Roberts?

4 A (Witness Roberts) I happen to have seen the film
5 that DOE has produced showing the tests in progress.

6 A (Witness Spitalny) I've also seen the film.

7 Q Does your testimony make reference to those tests?

8 A (Witness Glenn) The testimony of the transporta-
9 tion panel did, and the person that was responsible for that
10 testimony was Dr. Hodge, who is not on this panel.

11 Q Mr. Glenn, as the writer of the first draft of
12 the EIA, I realize there are problems. What do you see as
13 your responsibilities with respect to assertive content?

14 A I'm sorry, I don't --

15 MR. KETCHEN: I object, Mr. Chairman. I think
16 the question is confusing. I don't understand it either.

17 CHAIRMAN MILLER: What's the question, Mr. Riley?
18 What do you understand to be their responsibility with regard
19 to what?

20 MR. RILEY: Assertive content.

21 CHAIRMAN MILLER: Assertive content? I gather
22 they don't understand what you mean by assertive content.

23 BY MR. RILEY:

24 Q Conclusions drawn not necessarily by yourself,
25 in other words, conclusions that you could examine the basis

1 for and then come to your own conclusion with respect to
2 acceptability.

3 I'm saying did you take items of a conclusory
4 nature and transfer them directly to the report without
5 making your own critique of them?

6 CHAIRMAN MILLER: That's what you would like to
7 have the panel answer?

8 MR. RILEY: Primarily Mr. Glenn at the moment.

9 WITNESS GLEN: I've evaluated various applicable
10 reports that pertain to this subject and, based on those
11 reports, I did summarize what they said. Those were reports
12 that are generally accepted within the industry for this type
13 of thing.

14 BY MR. RILEY:

15 Q Your criterion is general acceptance?

16 A (Witness Glenn) These were DOE reports and
17 NRC reports that are available, yes.

18 Q Right. But that was general acceptance within
19 the industry, that was your criterion?

20 A Yes, I think that's what I testified to when
21 this transportation question was brought up with the other
22 panel.

23 Q Did you reject any conclusions that were present
24 in that type of documentation that would pertain to your EIA?

25 A I cannot say that I specifically rejected any.

wrb/agb9 1 I may have chosen one report over another on the same subject,
2 but I didn't do it because I rejected one report.

3 Q All right.

4 In regard to the tasks, it is in the Staff's
5 testimony that tasks were subjected to a series of severe
6 impacts. I can't find the reference, but will unless you're
7 satisfied that that's a true statement.

8 MR. KETCHEN: Objection, Mr. Chairman, we're just
9 far beyond the scope of this panel's testimony. We're talking
10 about -- I know Mr. Riley likes to talk about other things
11 but those people were here. These people have a fairly broad
12 scope on the alternatives, but I think we're just far on the
13 periphery of what's in their testimony. If he wants to ask
14 directly about it, I think it's appropriate, but he never
15 gets to the point.

16 CHAIRMAN MILLER: The point seems to be his
17 cross-examination of those members of the panel who have
18 testified as being responsible for the drafting, at least
19 initially, of the Environmental Impact Appraisal. He's
20 asking what they based it on. You have the draftsmen here,
21 and so we can't really say that it is not relevant because
22 it is relevant.

23 You may proceed.

24 WITNESS GLENN: In this interlude, I kind of
25 lost track of your question.

1 CHAIRMAN MILLER: Restate it.

2 BY MR. RILEY:

3 Q To save time and my having to go through papers,
4 I said would you agree that as part of your testimony
5 including the EIA, that the series of tests spoke to impact
6 resistance or integrity of the casks.

7 A (Witness Glenn) The series of tests alluded to
8 in the EIA are those that are contained in the Code of
9 Federal Regulations relating to drop tests, immersion tests
10 and subjection to a fire.

11 In the EIA, I did not specifically allude to
12 the tests that were conducted by Sandia. The only place that
13 those were discussed was in the testimony that was brought
14 in earlier and Dr. Hodge was responsible for that.

15 Q All right.

16 His conclusion was that these casks that are
17 being used in the present proceeding were very unlikely to
18 be breached in any credible transportation accident, is that
19 correct?

20 A That's correct.

21 Q And his conclusion was based on the Sandia studies
22 we've been referring to, is that correct?

23 CHAIRMAN MILLER: Now Mr. Riley, I think you are
24 getting beyond the environmental studies for which these
25 gentlemen are responsible. You're now going into matters that

686065

rb/agbll 1 were the subject of testimony by others. You had the benefit
2 of examination, or I believe Mr. Blum did at that time.
3 But now I do believe you're getting beyond the scope that
4 you should legitimately examine into.

5 MR. RILEY: Mr. Chairman, may I indicate my line
6 and find out whether it's agreeable or not?

7 CHAIRMAN MILLER: Surely.

8 MR. RILEY: Probabilistic analyses have been made
9 of the validity of drawing a conclusion for a large number
10 of cask transport events based on a series of four experi-
11 ments. And probabilistic studies show that there's a very
12 high chance where if a cask would breach in one of 100
13 accidents, of having the first four tests come out success-
14 fully.

15 Now I think this is a perfectly legitimate
16 criterion for the conclusion and should have been borne
17 in mind by the people who cited that conclusion and used
18 it in their report.

19 CHAIRMAN MILLER: That may be true, but the
20 witnesses to whom you should have addressed that question,
21 if it wasn't done, would be those who were testifying based
22 upon the Sandia studies and other studies and then the
23 evidence, the inferences that flow are available to you in
24 motions to strike and all that.

25 The question here, you see, is these witnesses

1
rb/agbl2 2 are testifying as to what they did, what they considered,
3 how they evaluated and matters that appear in the Environmental
4 Impact Appraisal that they did. Okay.

5 But you're going beyond that now, you're going
6 beyond what -- and it puts you beyond the purview of what we
7 see as reasonable examination of this panel.

8 MR. RILEY: And basically there is no great
9 burden on the people who draft the report to examine the
10 bases for conclusions of works they've relied on.

11 CHAIRMAN MILLER: That may well be but that's a
12 matter of argument. This is what you will urge when you,
13 at the appropriate time, make motions or you can address the
14 Board concerning the adequacy or alleged inadequacy of the
15 resultant product, but not now.

16 Please proceed.
17
18
19
20
21
22
23
24
25

C WRB/wbl 1 MR. RILEY: One final question in this general
2 area, if I may, Mr. Chairman.

3 CHAIRMAN MILLER: You may.

4 BY MR. RILEY:

5 Q Subsequent to the first phase of this hearing
6 in which witnesses did testify in this area, has any one of
7 you further pursued questions that we agree may not be
8 raised at this point, to provide yourself assurance with
9 respect to the correctness of the conclusions you assert?

10 MR. MC GARRY: I'm going to object to the ques-
11 tion. I think it's premised upon the matter you just ruled
12 upon.

13 CHAIRMAN MILLER: Not quite, I believe,
14 Mr. McGarry. He's asking whether subsequent to that testi-
15 mony, which we have ruled upon, these witnesses did anything
16 to verify or otherwise take it into account. And I take it
17 probably a yes or no answer would be indicated, followed up
18 if there is some development.

19 Is that the thrust of your question?

20 MR. RILEY: That's right.

21 CHAIRMAN MILLER: You can answer that.

22 WITNESS GLENN: I would like to answer No. And
23 then I would like to say something with regard to that.

24 CHAIRMAN MILLER: Go ahead.

25 WITNESS GLENN: The acceptability of the cask is

1 not based upon the Sandia study. Those were just tests that
2 were done to show that the casks could withstand those things
3 and to verify computer models of the deformation of the cask.
4 And those tests did verify that the computer studies were
5 accurate.

6 CHAIRMAN MILLER: Are you familiar with those
7 computer studies?

8 WITNESS GLENN: No, I'm not.

9 CHAIRMAN MILLER: Did you take them into con-
10 sideration in preparing the document?

11 WITNESS GLENN: No, I did not.

12 MR. RILEY: Mr. Chairman, might we move to strike
13 that response as being beyond the purview of the question?

14 CHAIRMAN MILLER: You can if you want to. Are
15 you sure you want to?

16 MR. RILEY: I don't want to strike the first
17 part of his response.

18 CHAIRMAN MILLER: If you want to claim it as not
19 being responsive I'll grant your motion.

20 MR. RILEY: * Simply the terminal part of the
21 answer, not the first part.

22 CHAIRMAN MILLER: I'm not going to split it up.
23 You will have to disclaim it or not disclaim it. You'd
24 better stop and think whether you really want to disclaim it.

25 MR. RILEY: I have, sir. We're not disclaiming it.

WRB/wb3 1 MR. ROISMAN: Mr. Chairman, may I just ask a
2 question? Why is it not proper to strike the additional part
3 of the answer that the witness gave which was outside the
4 scope of what you said the cross-examination could get into
5 and leave the "No" there? If his explanation had explained
6 the "No" in a way that was relevant, obviously the explana-
7 tion and the "No" would be hooked together.

8 As I understood Mr. Riley's motion it was because
9 the explanation was irrelevant to the question, and he wanted
10 to strike the explanation and leave the "No."

11 CHAIRMAN MILLER: In fairness, we told the
12 witness, we asked him in effect to give a yes or no answer
13 with the implicit assurance that he could explain it. Now
14 we're not going to be unfair and extract the "No" and then
15 say we're going to cut off the explanation.

16 Now if you want to do something about the
17 explanation I've given you the opportunity on responsiveness.
18 But we think it should go together as a package because it's a
19 pre-arrangement we have made with the witnesses to try to get
20 short responsive answers.

21 BY MR. RILEY:

22 Q Mr. Spitalny, what is your response?

23 A (Witness Spitalny) No, I have not done anything
24 further, other than just keeping up with what has happened
25 with the NFS-4 cask.

1 Q Mr. Roberts?

2 A (Witness Roberts) No.

3 If it's appropriate, Mr. Chairman, I did run
4 through that calculation and I come up with about 12 inches.

5 CHAIRMAN MILLER: That's the answer to the
6 question you propounded earlier, I think, Mr. Riley.

7 MR. RILEY: That's right.

8 BY MR. RILEY:

9 Q Would you give me that, please, Mr. Roberts,
10 the area that you used in your calculation?

11 A (Witness Roberts) Okay. What I did was kind of
12 round the area upward here because I come up with essentially
13 an iterative situation where the area is equal to the number
14 of assemblies times x^2 of the area per assembly. I don't
15 know the number of assemblies, theoretically, and I don't
16 know the area per assembly, which I'm trying to determine;
17 effectively I'm trying to determine 12 inches.

18 So I looked up at our previous discussion
19 where we've come up to about 2500 assemblies, and it turns
20 out that the area of the pool is about 2500 square feet, so
21 then I would say -- all right: that's 2500 and 2500 gives
22 me $1x^2$ equals 1. That's about what they're apart for each
23 assembly.

24 Q All right.

25 The area of 2500 square feet to which you make

686071
POOR ORIGINAL

RB/wb5 1 reference, is it explicitly indicated in the Stone and
2 Webster proposal?

3 A No. I said I rounded up.

4 What I did was, looking at the numbers here
5 I've got available in this July 12th letter, the length of
6 the bay and the width of the bay, I subtracted the width of
7 the thickness of the wall, the pool wall, and I came up with
8 a total area of approximately 2500 feet. Now I rounded up.

9 Q Would you give us, please, the length and the
10 width?

11 A Okay. The length I got, I subtracted from 92
12 I subtracted 16 to get 76, and 48 minus 16, I got 32. I
13 multiplied those and got 2432. And then looking up-- As I
14 say, when I got this iterative equation I looked up and I
15 said, Okay, that's approximately 2500, I've got approximately
16 2500 assemblies, the spacing is about a foot apart.

17 Q With respect to your correction factor of 16,
18 would you give us the dimensional components?

19 A That's the width of the pool below the grade--
20 The thickness of the pool wall below grade is 8 feet, so I
21 took off 8 feet at each end; okay?

22 Q Do Stone and Webster explicitly give 8 feet as
23 the pool wall thickness?

24 A Yes; below grade.

25 Q And do they explicitly indicate that their 92x48

WRB/abl 1 dimension is the out dimension of the pool, as opposed to the
Els wbs 2 inner dimension, which would be the functional dimension?

3 A What I've got here is that the fuel pool bay is
4 92 feet long by 48 feet wide. And then...Let me take a look
5 at this.

6 (Pause.)

7 It says the exterior walls-- What I've got here
8 are exterior walls of the pool bay are 6 feet thick below
9 grade, and 8 feet thick from grade to elevation-- I'm sorry.

10 It appears to me that I could add 2 feet at each.
11 That would be 80 by 36. I think I misread that. Let's see
12 what I get here.

13 Okay. I would get in that case instead of 2400,
14 I'd get about 2880, and so I would wind up with 2880 equals
15 again this iterative nx^2 and I think in that case it's
16 probably going to give me closer to 13 inches than 12.

17 DR. LUEBKE: May I interrupt here?

18 This Stone and Webster proposal, I'm a little
19 puzzled. If it is a product they are ready to sell somebody,
20 why --

21 WITNESS ROBERTS: No, it's not.

22 DR. LUEBKE: -- is there so much mystery about it?

23 WITNESS ROBERTS: Well, I guess I should say this:

24 As far as I know-- I shouldn't say No, it's not
25 because I know Stone and Webster has talked to people in the

NRB/ab2 1 industry. As far as I know, they have not sold the particular
2 design.

3 DR. LUEBKE: So they really haven't come down to
4 the nitty-gritty of the detail that is being solicited --

5 WITNESS ROBERTS: What's correct.

6 DR. LUEBKE: -- in the papers you have before you?

7 WITNESS ROBERTS: Yeah. And that's kind of why
8 I'm a little--

9 You know, I revealed my answer to you, Mr. Riley,
10 not to evade the situation. It's just that, you know, I don't
11 think-- As I was saying, I'm not sure that we're right now
12 that accurate.

13 But I think for purposes of the question you've
14 asked, I think this answer is about as good as I can give you.

15 BY MR. RILEY:

16 Q Then in your judgment, Mr. Roberts, when an en-
17 gineering firm makes a proposal with regard to a fuel pool,
18 what they describe is the outside dimension of the fuel pool
19 wall rather than the inside dimensions of the functional
20 space?

21 A (Witness Roberts) All I can give you, Mr. Riley,
22 is what I've got. All I can give you is what I've got, either
23 in my memory or as I say, in this document. And you know, it's
24 on the basis of that and from my recollection, you know, I
25 think these are the dimensions the best I can give them to you.

WRB/ab3 1 Q There's no problem with respect to the dimensions,
2 Mr. Roberts. The question is that of interpretation and the
3 correction factors applied.

4 If no correction factor were applied and the
5 92 x 48 --

6 A My recollection is that --

7 Q I haven't finished my question, Mr. Roberts.

8 A I'm sorry.

9 Q If the functional dimensions of the bay are 92 x 48
10 -- this is a hypothetical -- would you agree then that the
11 area as 4416 square feet?

12 A If I multiply it out I presume we would get about
13 that figure, yes. But to the best of my recollection, that
14 is not the case.

15 To the best of my recollection the case is as I've
16 done it. I'm sorzy that I was a couple of feet off there
17 because I mentally subtracted-- I read the 3 as being below
18 rather than 6 when I was sitting here looking at it.

19 But to the best of my recollection, you know, it
20 is not what you're saying, that it is the entire thing through
21 the building.

22 Q Is it your testimony then that the answer you've
23 given involves two elements. One is material in the Stone
24 and Webster letter and the other is your interpretation there-
25 of?

RB/eb4

1 A This is a letter --

2 Q May I ask for a yes or no answer?

3 A No.

4 Q Then will you amplify and explain your answer?

5 A Okay.

6 What I'm looking at is a letter that was sent to
7 Stone and Webster on July 12, '78, indicating that we approved
8 the conceptual design of the pool. And in that letter we
9 indicate the dimensions that I have talked about.

10 That, and my recollection is that the length of
11 the pool was about 3 feet long. That's the best I can do.
12 I'm sorry.

13 Q Let's try for another yes or no.

14 A All right.

15 Q That is, is there an element of interpretation in
16 your response?

17 A Yes.

18 CHAIRMAN MILLER: Pardon me. Was that letter you
19 referred to in evidence or marked as an exhibit? Is that the
20 letter dated January 12, 1979, to Mr. Jacobs?

21 WITNESS ROBERTS: No, sir, this is an earlier
22 letter, July 12, '78.

23 CHAIRMAN MILLER: Let's have it marked for identi-
24 fication if we're going to be referring to it.

25 Mr. Riley, do you care to mark it?

686076

WRB/eb5 1 Does the Staff want to mark it? Do you want it
2 marked as a Board exhibit? We simply want it identified for
3 the record since it's been referred to by both yourself and
4 by the witness.

5 What is your pleasure?

6 MR. RILEY: As a non-legal person, Mr. Chairman,
7 I'm at a loss as to the proper procedure.

8 CHAIRMAN MILLER: I've offered you alternatives.

9 All right. Let the record show that the letter
10 on the letterhead apparently of United States Nuclear Regula-
11 tory Commission dated July 12, 1978, at the top upper left
12 "Project M-1," to Mr. S. P. Jacobs, and so forth, signed by
13 Richard W. Sterostecki, Chief, Fuel Reprocessing Recycle
14 Branch, and so forth--

15 Is this the letter with attachments you were
16 referring to, Mr. Roberts?

17 WITNESS ROBERTS: Yes, sir.

18 CHAIRMAN MILLER: Let that be marked as Board
19 Exhibit for identification Number 10.

20 (Whereupon, the document
21 referred to was marked
22 as Board Exhibit 10
23 for identification.)

24 CHAIRMAN MILLER: You may go ahead.
25

d Bloer
ndon fls.

1 MR. RILEY: Mr. Chairman, when will it be the
2 Board's pleasure to declare a morning recess?

3 CHAIRMAN MILLER: Would you like one now? All
4 right, we'll take about ten minutes or so.

5 (Recess.)

6 CHAIRMAN MILLER: All right, Mr. Riley, are you
7 ready to proceed?

8 MR. RILEY: Yes, sir.

9 BY MR. RILEY:

10 Q Mr. Glenn, you took responsibility in your earlier
11 testimony for some dosage calculations.

12 I don't want to open up this whole matter and go
13 into it again, but I believe Mr. Blum, with the consent of
14 the Chairman, provided a little bit of followup in this
15 area.

16 I want to ask you your definition of "conservative"
17 in the context of radiation exposure from a spent fuel cask.
18 Is a conservative estimate one that will tend to the high
19 side of the dose, or tend to the low side of the dose?

20 A (Witness Glenn) It would tend to overestimate the
21 dose.

22 Q Now, we already have in the record that your
23 assumption was that the passengers in a vehicle in a delay
24 situation would be nine feet -- nearest passenger -- nine
25 feet from the side of the -- from the edge of the trailer.

1 Is that correct?

2 A That was correct.

3 Q Now, in your experience of being held up in
4 traffic tie-ups, do you think it's realistic to use as large
5 a number as nine feet? Do you think it's conservative?

6 A That one term may not be considered conservative.
7 It may be considered what I thought was more realistic than
8 trying to get more vehicles closer to the truck.

9 The overall calculation, though, is, I feel,
10 conservative.

11 Q What was your last phrase, please?

12 A The overall calculation, though, I feel was
13 conservative. The other assumption is taken into account.

14 Q All right. Well, we're looking at this little
15 piece. Would you characterize this bit as non-conservative?

16 MR. MC GARRY: Excuse me. May I just have a
17 clarification of the record? Are we talking about a traffic
18 jam?

19 MR. RILEY: That's correct.

20 MR. MC GARRY: I would object, then, to the line
21 of questioning.

22 Mr. Blum, prior counsel for CESH, questioned Mr.
23 Glenn on the traffic jam scenario, beginning at page 2871.
24 My objection goes to the fact that this is repetitive cross-
25 examination.

1 CHAIRMAN MILLER: It was covered, to my recollection,
2 as well as the transcript citation, Mr. Riley.

3 MR. RILEY: That is correct, Mr. Chairman. However,
4 I - -

5 CHAIRMAN MILLER: In that event there's no
6 necessity to redo it. You have the benefit of the record.

7 MR. RILEY: Not in response to the question that
8 I was asking.

9 CHAIRMAN MILLER: Pardon me?

10 MR. RILEY: Not in response to the question that I
11 asked. In other words, what I'm seeking to establish is that
12 certain parts of Mr. Glenn's assumptions were non-conservative.
13 His general conclusion in the testimony is the assumptions
14 were conservative, and it raises doubt that this is consist-
15 antly the case.

16 CHAIRMAN MILLER: Yes, but he's already testified
17 to that, including the present testimony. It's repetition
18 rather than relevance that we're looking at.

19 MR. RILEY: I'm having a little problem, Mr.
20 Chairman. I thought that at one page of the transcript there
21 was a colloquy between you and Mr. Blum in which Mr. Blum
22 tried to leave the door open for me to pursue further these
23 matters.

24 The fact that he asked some questions of Mr. Glenn
25 in this area would preclude me from any followup:

1 CHAIRMAN MILLER: Well, insofar as it's been
2 covered, yes. We spent quite a bit of time already on the
3 subject.

4 MR. MC GARRY: Mr. Chairman, if I may read into
5 the record -- well, not read into the record, but identify
6 the page in the record, it's at page 2876 and 2877, and Mr.
7 Blum did, indeed, leave the door open for Mr. Riley, but he
8 said that he didn't think that Mr. Riley's examination would
9 be very lengthy.

10 I think the record speaks for itself on the matter
11 of time the examination has taken thus far.

12 Chairman Miller also -- yourself -- said, "We're
13 not precluding you..." meaning Mr. Riley. "We wouldn't want
14 to have repetition."

15 CHAIRMAN MILLER: I'd be surprised if I hadn't
16 said that. And we are getting repetition, Mr. Riley.

17 So why don't you move on to matters that have
18 not been covered, because you already have your record.

19 MR. RILEY: Mr. Chairman, not really wishing to be
20 obstinate --

21 CHAIRMAN MILLER: Is the one who said, "I'll never
22 surrender," surrendering?

23 What's your problem?

24 MR. RILEY: Well, it's the definition of repetition.
25 And if I ask questions of Mr. Glenn with the same thrust that

1 Mr. Blum did, it would appear to me to be repetitious.

2 On the other hand, if I go into areas that Mr. Blum
3 did, the same general category, it would seem to me not to be
4 repetitious but to be enlarging the record in that area.

5 That's what I'm seeking to do.

6 CHAIRMAN MILLER: The record doesn't need enlarging.

7 To the extent that you require it for your own
8 purposes, and to the extent that it's relevant, it's already
9 in. Now, there's no point in doing it over and over and over
10 again with other witnesses and other panels.

11 MR. RILEY: I certainly agree. All I'm saying is
12 if I have what we would agree is new matter in that area,
13 would that be considered repetitious?

14 CHAIRMAN MILLER: Well, if it's new matter, by
15 definition it would not be repetitious. But you'd better be
16 sure that the new matter is new matter.

17 MR. ROISMAN: Excuse me. Mr. Chairman, may I
18 attempt to shed some light on this?

19 CHAIRMAN MILLER: Yes.

20 MR. ROISMAN: The questions that deal with the
21 issue that Mr. Riley is now raising start basically at page
22 2871.

23 In the middle of them, Mr. Ketchen . . . well,
24 let's see, about 2872, we all begin to show a little of the
25 strain of the length of those hearings. It was at the end of

1 the second week, if you'll remember.

2 At 2872 we start wondering about whether Hondas have
3 radioactive shocks on them.

4 Your comment, and mine, about coming from Japan.

5 Then Mr. Blum trying valiently to get back to the
6 point.

7 Then Mr. Ketchen, at 2873, jumping in. Mr. Blum
8 saying, "Let me finish the question." You saying, "Objection
9 sustained."

10 And then, as you know, a sneeze from the King is
11 the equivalent of pneumonia for the rest of us, "Do you think
12 about another ten minutes or so, Mr. Blum?"

13 In short, it seems to me that this very phase of
14 the cross-examination was conducted under extreme time pressures,
15 and that unless Mr. Riley is asking basically the very same
16 questions again, it doesn't seem to me unreasonable to let
17 him ask questions. There are only 2-1/2 pages in the
18 transcript that deal with this.

19 CHAIRMAN MILLER: Well, that's true. I accept
20 your connotation that we were all probably weary by that time,
21 and we undoubtedly were.

22 But on the other hand, the Board is looking also
23 at the significance of the information. NOW, we've covered
24 vehicles, whether they're Japanese design or make or others,
25 alongside and in front of or in back, and there's a point of

wel 7

1 diminishing returns on its usefulness in decision making.

2 I suppose that's really what I'm getting at.

3 Now, if Mr. Riley has something he considers truly
4 new -- and we don't mean the vehicles and the traffic jam or
5 the non traffic jam, because we've been through that essentially--
6 if you've got something new, yes, we certainly would entertain
7 it. But it better really be new.

8 MR. ROISMAN: May I just say something to Mr. Riley?

9 CHAIRMAN MILLER: Yes.

10 (Mr. Roisman and Mr. Riley conferring.)

11 MR. RILEY: Mr. Chairman, may I give a bit of
12 foundation as to where I'm going, so I can get guidance?

13 CHAIRMAN MILLER: All right.

14 MR. RILEY: What I sought to show was that through-
15 out Mr. Glenn's assumptions dosages were not conservative.
16 These range all the way from the routine situation to the
17 worst accident situation.

18 I agree that if we're talking about the difference
19 in dose between one foot and nine feet, we would all tend to
20 say, yes, that's a pretty minimal dose even at one foot. So
21 it was non-conservative, so what?

22 But the place I'm moving toward is the most severe
23 accident.

24 CHAIRMAN MILLER: The what?

25 MR. RILEY: The most severe accident. And what I

656084

1 would like to demonstrate --

2 CHAIRMAN MILLER: Why don't you move right there?

3 MR. RILEY: Very good.

4 MR. ROISMAN: Excuse me. Mr. Chairman, may I
5 approach the bench for one moment on something I just would
6 rather not have on the record? It has nothing to do with the
7 hearing.

8 (Mr. Roisman at the Bench.)

9 CHAIRMAN MILLER: Let the record show that counsel
10 had an inquiry of the Chair that had no relationship to the
11 case, or the handling of it in any fashion.

12 All right, Mr. Riley, you may proceed.

13 BY MR. RILEY:

14 Q Mr. Glenn, I have in my hand Sandia Report 771927.
15 Now, it's mostly known, because it supplies the basis for the
16 Commission's actions with respect to sabotage. But that's
17 not the purpose I have in mind here.

18 It also has a discussion on accident severity.

19 Do you have that document available to you?

20 A (Witness Glenn) I do not, and I'm not familiar
21 with it, either.

22 Q The publication date on the document is May, 1978.
23 This would be considerably before the publication date of
24 the EIA, is that correct?

25 A Yes.

1 Q Chapter 4 of that document is, "Impacts from
2 Transportation Accidents Involving Radioactive Materials in
3 Urban Areas."

4 Would you consider that a relevant document to the
5 preparation of your EIA?

6 MR. KETCHEN: Objection. Is it my understanding,
7 the witness said he was not familiar with the document?

8 WITNESS GLENN: Yes.

9 MR. KETCHEN: The objection would be, how could he
10 answer questions about the value of --

11 CHAIRMAN MILLER: Well, I think the witness will
12 tell us that. The question is whether a document, which is
13 now being shown to him, which has been identified previously
14 by other witnesses, whether or not it reasonably should have
15 been taken into consideration.

16 Whether the witness is familiar with it or not,
17 I think he can tell us his own knowledge on that score, as
18 can any of the other witnesses.

19 MR. KETCHEN: Well, then, I would like maybe to
20 ask the Board for a direction to the witness -- it is a
21 pretty lengthy document. It looks like about an inch and a
22 half, to me. I'd like the witness to be able to understand
23 that before he answers he's entitled to fully examine that
24 document, and I would believe he's entitled to some time to
25 look at the document. But just a quick glance at it --

Vol 10

1 CHAIRMAN MILLER: Well, if this document has a
2 significance, and it apparently has been referred to in the
3 record, and if you're going to tell me that your witness is
4 now going to be required to read that document and study it
5 in order to come to an informed opinion as to whether or not
6 it should be considered, I suggest the record is not going to
7 be the way you want it to wind up. That document is not an
8 unknown quantity.

9 MR. KETCHEN: Well, not to the record, but maybe
10 to this witness.

11 CHAIRMAN MILLER: Well, in that event, that's an
12 aspect that's certainly within the scope of cross-examination.

13 MR. KETCHEN: Well, we'll see how it goes.

14 WITNESS GLENN: Based on the -- and based only --
15 on the title of Chapter 4, it would seem to be a relevant
16 document.

17 However, there are a great number of relative
18 documents.

19 CHAIRMAN MILLER: Relevant documents?

20 WITNESS GLENN: Relevant -- excuse me -- thank you.
21 -- relevant documents available, and in my review I have to
22 look mainly at titles a lot of times to determine if I want
23 to use a document or not, and a document that relates to
24 sabotage was something that I just didn't consider relevant
25 during my literature search.

686087

wal 11

1 CHAIRMAN MILLER: I think that's a fair answer to
2 a fair question.

3 BY MR. RILEY:

4 Q Mr. Spitalny, were you familiar with the document?

5 A (Witness Spitalny) I am familiar with the existence
6 of the document. I have leafed through it, but not read it
7 in its entirety.

8 Q Have you looked at the table of contents?

9 A Yes, I have.

10 Q Did you know that Chapter 4 dealt with accidents
11 in an urban area?

12 A I was aware that the document spoke to that, not
13 specifically Chapter 4.

14 Q Would you then consider it relevant material to
15 call to Mr. Glenn's attention in the preparation of the EIA?

16 A That document was addressed by the Staff in --

17 CHAIRMAN MILLER: Wait a minute. First of all,
18 would you regard it as being relevant to being called to the
19 attention of Mr. Glenn?

20 WITNESS SPITALNY: It could be considered relevant,
21 yes.

22 MR. GLENN: Excuse me. Could I draw your
23 attention to something? It says on page 33, under Section
24 6.1, "More severe accident conditions could happen." It
25 goes on to relate that their probability of occurrence is

656088

vol 12

1 smaller.

2 I have not said that the accident that I have
3 described here is the most severe accident that could occur.
4 I've included it as the benchmark for a person to be able to
5 look at what an accident of this severity would entail, and
6 what the consequences of that accident would be.

7 I will agree that a more severe accident could
8 occur -- excuse me, I want to rephrase that. That you could
9 postulate a more severe accident, one with higher consequences
10 than what I have, and I think I have stated that in the EIA.

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

586089

1/2 wel/agb
1 Q Was it your testimony earlier, Mr. Glenn --
2 Strike that.

3 Is the universe of events in regard to the type
4 of accident we're considering very, very small, minimal?

5 A All of the transportation accidents, the probabili-
6 ties of them occurring is.

7 Q I said the universe of events on which one bases
8 a probability calculation. If the term is not familiar to
9 you, I'll try to use different language.

10 A It would be helpful to me if you would phrase
11 your questions without the use of --

12 Q Statistical jargon?

13 A Well \$50 words, for lack of a better term.

14 Q That was called two-bit words when I was a kid.

15 A There's been a lot of inflation.

16 CHAIRMAN MILLER. All right. Use simple language
17 so that even the Board can understand.

18 BY MR. RILEY:

19 Q When we talk about actuarial findings, it's based
20 on a large number of events. And in regard to a common
21 illustration, 50,000 annual motor deaths, we know how many
22 drivers there are, what the chances of one of us as a driver
23 being killed in a year is based on experience. We find from
24 year to year that this experience does not change very much.
25 We can say that this sort of a statistic is a reliable

1 statistic. This total number of drivers and accidents in the
2 United States is the universe of events in that context.

3 Now if we saw the accident record for something
4 like 30 minutes in the year, that would be a small sampling
5 of that universe of events.

6 My question to you, Mr. Glenn, is do we have a
7 large sample on which to base probability calculations of
8 the sort that you've relied on in your earlier statement?

9 A (Witness Glenn) Yes.

10 Q Please explain.

11 A These are based on accident rates for the
12 transportation industry, for trucking in general. We're
13 postulating what the probability of an accident occurring
14 will be, not the probability of what the consequences of that
15 accident will be. What we're saying is what's the probability
16 of the truck being involved in an accident that will produce
17 the fire. That's my understanding of it.

18 Q Can you state with assurance, Mr. Glenn, that
19 that accident history is comparable to the sort of load
20 we have here which is a load that -- is the tractor just
21 at about most state limits for load?

22 A These are questions that could be answered more
23 readily by Dr. Hodge, and these are questions that were asked
24 of Dr. Hodge in previous testimony, I believe.

25 Q You have a background that includes a course in

wel/agb3
1 mechanics and physics?

2 A I've had courses in physics, in mechanical physics,
3 yes.

4 Q Would you agree that the momentum and the capacity
5 for damage is greater for a 25 ton container than for a 2500
6 pound load traveling at the same speed?

7 A Yes.

8 May I state also that you'll find that most trucks
9 traveling the highways today, there are a great number that
10 will carry loads to their capacity that they're allowed to
11 carry. And if you will notice in the newspapers recently,
12 there's been a great controversy about allowing them to carry
13 even more.

14 Q Do accident statistics also include empty trucks?

15 A I do not know.

16 Q You've said that for the population of all truck
17 transport that we do have a good data base?

18 A Yes.

19 Q How about the data base for transport of spent
20 fuel assemblies?

21 A This is outside the area of my expertise and has
22 been answered by Dr. Hodge previously.

23 Q Is your knowledge of probability such that you
24 can relate when a forecast incident will occur in relation to
25 the probability assigned for that class of incident?

1
1 A I know that if you assign a probability of 1 in
2 a million, it doesn't tell you when the first one is going to
3 occur. It could occur tomorrow.

4 Q Would you restate what you had in your curriculum
5 vitae as your place of employment, Mr. Glenn?

6 A I'm employed by Battelle Northwest Labs in
7 Richland, Washington.

8 Q Are you familiar with the testimony that the
9 Applicant introduced by Dr. Garrick?

10 A I have stated before that I am not.

11 Q Do you know that he relied on a Pacific Northwest
12 Laboratories' report for releases in hypothetical accidents
13 involving this type of cask?

14 MR. MC GARRY: Objection, Mr. Chairman.

15 CHAIRMAN MILLER: Sustained.

16 MR. RILEY: I really don't wish to burden you,
17 Mr. Chairman, but --

18 CHAIRMAN MILLER: It's no burden. If he doesn't
19 know, he doesn't know. So go on assuming he does know.

20 BY MR. RILEY:

21 Q Are you familiar with a release study for cask
22 accidents performed in your laboratory?

23 A (Witness Glenn) (Pause.)

24 Q -- under contract with the NRC?

25 A I would have to have more information on what

1 that was before I could answer.

2 I'd like to state for the record that Battelle
3 employs more than three people. It employs --

4 CHAIRMAN MILLER: Let's not volunteer. Remember,
5 I've instructed all witnesses, you're not advocates. You'll
6 answer the questions, but as far as intellectual integrity
7 goes, you're neutral.

8 So let him ask the questions, or other counsel
9 ask you questions.

10 Mr. Riley, what is your question?

11 MR. RILEY: I'm seeking the paper to give him a
12 precise question.

13 CHAIRMAN MILLER: All right.

14 Is that question really necessary? I mean I
15 wouldn't want you to take the time if you're getting to
16 something that --

17 MR. RILEY: I have it here now.

18 CHAIRMAN MILLER: All right. Go ahead.

19 BY MR. RILEY:

20 Q The document in question is one with which you
21 were not familiar.

22 (Document handed to the witness.)

23 MR. KETCHEN: Excuse me, Mr. Chairman. I'm
24 confused.

25 CHAIRMAN MILLER: He's seeking the page number of

wel 3

1 an exhibit which I understand has been introduced into
2 evidence. We'll find out in a moment what it is.

3 MR. KETCHEN: Thank you. I'm just confused.
4 It's not the Garrick testimony, but something else. Okay.

5 BY MR. RILEY:

6 Q Are you familiar with reference A2 in this
7 document, page A43, of "Risk Analysis of Transporting Ocone
8 Spent Nuclear Fuel to McGuire Nuclear Station", coded
9 PLG-0102, which reads:

10 "An assessment of the risk of transporting spent
11 nuclear fuel by truck, PNL-2588, November 1978, Pacific
12 Northwest Laboratory."

13 A (Witness Glenn reading document.)

14 I believe I have a copy of that document in my
15 library. I don't remember specifically referring to it in
16 doing this study.

17 MR. KETCHEN: Excuse me, Mr. Chairman. I don't
18 want to interrupt, but just for the record, for my later
19 review of the record, Mr. Riley asked about reference A2 of
20 "this document." Could we get what "this document" was, so
21 I can find it sometime later?

22 CHAIRMAN MILLER: Yes, could you identify that
23 more precisely?

24 MR. RILEY: I read the document's title into the
25 record, Mr. Chairman.

688035

POOR ORIGINAL

1 MR. MC GARRY: It's Applicant's Exhibit 11, Mr.
2 Chairman.

3 CHAIRMAN MILLER: And what page was Mr. Riley
4 referring to?

5 MR. RILEY: Page A2.

6 CHAIRMAN MILLER: Thank you.

7 BY MR. RILEY:

8 Q Would this then be in the category of literature
9 in the area of relevance to the EIA that you made a decision
10 not to utilize?

11 A (Witness Glenn) I can't say that I made a
12 conscious decision not to utilize it.

13 Q Did you examine it in relevant part?

14 A I remember reading the document once.

15 Q Do you know how the releases for given categories
16 published therein compare to those that you used in the EIA?

17 A No, I don't.

18 Q Mr. Spitalny, are you familiar with the document?

19 A (Witness Spitalny) No, I am not.

20 Q Mr. Spitalny, in pursuing this phase of the work,
21 analysis of releases during an accident, what was your
22 procedure? Did you rely on the contracted person -- in this
23 case, Mr. Glenn -- to provide the relevant references in his
24 area of expertise?

25 A I relied on Mr. Glenn to provide the analysis.

686058

POOR ORIGINAL

wel 5

1 The analysis at that time was then given to the transportation
2 branch in the NRC, and they were given time to evaluate it,
3 and concurred in what Mr. Glenn had done.

4 Q Were they under any directive to check the
5 document in the sense of seeing whether or not it had used
6 all presumably valid literature resources in connection with
7 the matters it dealt with?

8 A It was understood at the beginning that Battelle
9 had a good working knowledge of the subject, and there was not
10 a need to go back at this time to reevaluate the sources that
11 they were using.

12 When it was given to the transportation branch,
13 specifically Dr. Hodge, who evaluated it, he also has a good
14 working knowledge of numerous documents that speak to the
15 subject. And from his source of knowledge, he is able to
16 assess the work that was done by Mr. Glenn.

17 Q Could you explain to us, if it is in your
18 province to do so, why Mr. Glenn did not make reference to
19 in-house work at the Battelle Lab?

20 MR. MC GARRY: I'll object to that.

21 CHAIRMAN MILLER: Objection sustained.

22 BY MR. RILEY:

23 Q Mr. Glenn, can you explain to us why you did not
24 make use of in-house work at Battelle Lab?

25 A (Witness Glenn) At the time, I felt it was better

586057

1 to use documentation that had been prepared for NRC, and the
 2 numbers that were in their documentation, specifically NUREG
 3 0170, and in the older document, WASH 1238, that were
 4 government documents.

5 Q In the scientific and technical community, Mr.
 6 Glenn, is it not usually deemed advisable to have in hand the
 7 most current information in making a study and drawing
 8 conclusions?

9 A That is correct.

10 Q Did you have in mind -- no, strike that.
 11 This is a sheet from that document. It's Table
 12 A4.

13 CHAIRMAN MILLER: From which document?

14 MR. RILEY: The Pacific Northwest document that
 15 was just introduced as an exhibit -- no, I'm sorry, sir --
 16 it's the document that Mr. McGarry identified for us.
 17 Applicant's document.

18 MR. KETCHEN: Applicant's Number 11.

19 CHAIRMAN MILLER: Thank you.

20 BY MR. RILEY:

21 Q Would you please provide the title of the table?

22 A (Witness Glenn) "Release Definitions" with an
 23 asterisk. The asterisk says, "Based on Table 9.3, Reference
 24 2A." "A2", excuse me.

25 Q My question is: Did you have in mind the content

JEL/edi
Els wals

1 of that table at the time you decided not to make use of
2 this material in the EIA?

3 A Would you refresh my memory? What document did
4 you say this was out of?

5 Q This is the document I showed you, oh, two or
6 three minutes ago.

7 A The reference that you showed me, or the actual
8 document?

9 Q I did not show you the actual document, the docu-
10 ment that referred to. I showed you the reference.

11 MR. MC GARRY: Just so the record is clear,
12 Mr. Riley, the document you've handed Dr. Glenn is the
13 Applicant's Exhibit 11. Is that correct?

14 MR. RILEY: Page A-4 of Applicant's 11.

15 MR. MC GARRY: And are you submitted that what
16 is contained on page A-4 of Applicant's 11 is indeed taken
17 straight from the Battelle study? Is that the point?

18 MR. RILEY: It is alleged to be.

19 CHAIRMAN MILLER: Is there any question about it,
20 Mr. McGarry?

21 MR. MC GARRY: No, that was just for clarification,
22 Mr. Chairman.

23 MR. WILSON: If we might, Mr. Chairman, I believe
24 we've got a little confusion on the reference to it. I
25 believe it's Table A-4 on page A-3.

686099

POOR ORIGINAL

WEL/ab2 1 Am I correct, Mr. Glenn? Is that what you're
2 looking at?

3 WITNESS GLENN: Right.

4 CHAIRMAN MILLER: What is it again?

5 WITNESS GLENN: Table A-1 on page A-6.

6 CHAIRMAN MILLER: Thank you.

7 WITNESS GLENN: Yes, I would have had this for
8 my use.

9 BY MR. RILEY:

10 Q My question was: Did you have it in mind at the
11 time that the EIA was still unpublished?

12 A (Witness Glenn) No, I did not.

13 Q You did not have an awareness of its content
14 at the time the EIA came out?

15 MR. MC GARRY: I'll object.

16 WITNESS GLENN: You asked two different questions
17 to me.

18 MR. RILEY: I'm sorry.

19 CHAIRMAN MILLER: What's the pending question?

20 MR. RILEY: I'm sorry, "pending" in this con-
21 text means --

22 CHAIRMAN MILLER: Your pending question, the
23 one that you're propounding that has not been answered.

24 MR. MC GARRY: Mr. Chairman, maybe I can step in.
25 I think Mr. Riley asked a question about whether or not

856100

POOR ORIGINAL

WEL/eb3 1 Dr. Glenn considered this document in preparation of the EIA.
2 He responded he had not.

3 And then I objected to the next question. It
4 would seem to me to be really the same question. Again I
5 think Mr. Riley is just confirming that fact. That was the
6 nature of my point.

7 CHAIRMAN MILLER: I thought it was a slightly
8 different question as I heard it.

9 What is your present question?

10 MR. RILEY: Well, if I may submit a new question?

11 CHAIRMAN MILLER: All right. Consider the other
12 one withdrawn then, and it will be rephrased. Go ahead.

13 BY MR. RILEY:

14 Q At some point in the process in which you still
15 could have introduced this material as an addendum to the
16 EIA, were you aware of the content of this table?

17 A (Witness Glenn) I was not specifically aware of
18 the content of that table.

19 To add to that, at the time that these scenarios
20 were selected for these accidents the lab that I worked for
21 had received a preemptory priority and it took us two weeks
22 to figure out what "preemptory priority" was.

23 What that means is that you drop everything else
24 and go to work on another job. This was a commercial waste
25 management document that we had.

686101

POOR ORIGINAL

EL/ab4 1 The accident scenarios that are actually used here
2 were derived from that document. They were not referenced
3 here as being out of that document because that document had
4 not been published and I couldn't reference it. However,
5 these accident scenarios were developed by the people who
6 did these studies that you're referring to in part, and I've
7 gone back and checked what they had done and been able to go
8 back and calculate the origin of the source terms that they
9 used and was able to confirm that I agreed with them, and I
Landon 20 then used them.

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

POOR ORIGINAL

686102

1 Q Mr. Glenn, in reference to what you just stated,
2 what was your procedure for checking and confirming the num-
3 bers that you did rely on in the unpublished report?

4 A I verified what release fractions they used, and
5 I can further state that I did a great deal of that work my-
6 self. I was responsible for doing on that report much of what
7 I'd done on this report. And I was responsible to make sure
8 that I concurred with what was being done.

9 Q When you say that you "verified" a release rate
10 fraction, was this a numerical calculation based on certain
11 assumptions?

12 A Yes, it was.

13 Q Did you do any experimental work with respect to
14 empirically measureable releases under experimental situa-
15 tions?

16 A No.

17 MR. RILEY: May I have a few moments? I think I'm
18 about to finish.

19 CHAIRMAN MILLER: Very well.

20 (Pause.)

21 BY MR. RILEY:

22 Q Mr. Glenn, I'm referring to what I believe is
23 Exhibit Number 6, which was originally submitted on May 10th
24 or under the date of May 10th as the affidavit of C. Vernon
25 Hodge and R. Daniel Glenn, and changed subsequently to your

686103
POOR ORIGINAL

EL/sb2

testimony.

Would you please refer to that document page 7,
under "Conclusion"?

A (Witness Glenn) I don't believe I have a copy of
that up here with me right now.

MR. RILEY: Could I ask Mr. Hoefling to furnish
you with a copy?

(Document handed to the witness.)

WITNESS GLENN: What page?

BY MR. RILEY:

Q Page 7.

A (Witness Glenn) Okay.

Q Is it correct that in your testimony in the EIA
there are a number of tables giving numerical values of dose?

A That's correct.

Q Referring to the top part of the page you say:

"The population dose estimates in Table
1 are orders of magnitude smaller than this estimate."

Can you explain why you used that language, using
the word "estimates"?

MR. MC GARRY: Mr. Chairman, I'm going to object to
that question. This document, Staff Exhibit 6, was the subject
of cross-examination in the June hearings. At that time,
Mr. Blum conducted that cross-examination and not on the last
day of the hearing, of the June hearings. On the last day

POOR ORIGINAL

686104

WEL/ab3 1 of the June hearings, Mr. Blum was cross-examining this panel,
2 of which Dr. Glenn was a member, relating to the alternatives.
3 so I submit that the time for accidents and exposures has
4 passed. This indeed is repetitious, or a second bite at the
5 apple.

6 The fact that Dr. Glenn happens to be also on this
7 panel should not provide Mr. Riley with an opportunity to
8 cross-examine him in that regard.

9 MR. RILEY: Mr. Chairman, may I respond?

10 CHAIRMAN MILLER: Yes.

11 MR. RILEY: My only concern here is with the con-
12 clusions reached and with I think a point that was not estab-
13 lished in the earlier cross-examination and that is that the
14 table in the particular exhibit has a number of column head-
15 ings such as Individual Dose, Individual/Group Dose, Fraction
16 of Background Dose. But nowhere is the whole additive effect
17 put together.

18 And Mr. Glenn's statement is quite correct that --
19 well, I should say quite defensible, that the estimates are
20 orders of magnitude smaller than this estimate, or that he
21 does not deal with the sum of the estimates which would be
22 the total dosage to which the population would be exposed.

23 And it's simply to get into the record the fact
24 that he did not give an integrated value of all the dosages
25 associated with the options.

686105

POOR ORIGINAL

EL/eb5

CHAIRMAN MILLER: How many questions do you intend to ask?

MR. RILEY: At most, four.

CHAIRMAN MILLER: I'll give you three.

MR. RILEY: Thank you.

CHAIRMAN MILLER: You may answer.

For the record, it may well be that you're correct. I don't have the transcript in mind. If so, we would grant leave for these three questions, Mr. McGarry.

Go ahead.

BY MR. RILEY:

Q Have you my previous question in mind, Mr. Glenn, or would you like me to repeat it?

A (Witness Glenn) Please repeat it.

Q It was why, in the sentence that I read, did you use the words "population dose estimates" -- plural -- rather than singular?

A Because it used-- It's the sum of various estimates to come up with an estimate of, in this case, dose from non-accident situations.

Q Why did you not sum up, in the interest of a conservative number, the estimated population or integral of such dose effects as a basis for your conclusion?

A Those doses would not have been significant because in order to include them in this table, I would have had to

686106

1 have multiplied the dose recorded there times the probability
2 of that accident occurring in any one year in order to add it
3 up. And when we include probability in the table I think
4 you would find that they would not add significantly to the
5 numbers that we come up with.

6 Q In the first sentence under "Conclusion" which
7 reads:

8 "We conclude that the routine exposures
9 from these proposed shipments would not be unacceptably
10 large."

11 Why did you use the phrase, "not be unacceptably
12 large," rather than the phrase, "would be acceptably small?"

13 A You'd have to ask Dr. Hodge. He's responsible for
14 drafting that. And I think, as I explain in previous testimony
15 that Dr. Hodge and I had some trouble getting together to go
16 over testimony because of our separation distance. And Dr.
17 Hodge wrote this, and in reading it I could find no reason in
18 my mind to change it.

19 CHAIRMAN MILLER: Do the two terms have any dif-
20 ferences as you --

21 WITNESS GLENN: In my mind they do not.

22 CHAIRMAN MILLER: They're identical?

23 WITNESS GLENN: One is to state it positively and
24 one is to state it negatively.

25 CHAIRMAN MILLER: But there's no difference in the

POOR ORIGINAL

686107

6
WEL/eb

result.

WITNESS GLENN: (Shaking head negatively.)

MR. RILEY: That will be all.

CHAIRMAN MILLER: Thank you, Mr. Riley.

Who wishes to examine?

WITNESS GLENN: May I request a recess?

CHAIRMAN MILLER: Yes, you may. I was going to
declare one anyway.

(Recess.)

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

POOR ORIGINAL

RBlocm 1
ls Landon
wbl 2

CHAIRMAN MILLER: We'll be on the record.

We'd like to conclude the cross-examination of the panel. Dr. Glenn is ill and not feeling well, and I would like to request that whatever cross-examination may involve him be handled first so we can excuse me.

Who's next on cross-examination?

MR. MC GARRY: I have about three questions, and they're all for Mr. Spitalny.

CHAIRMAN MILLER: All right. Who else has cross-examination? Do you have any more, Mr. Roisman?

MR. ROISMAN: No. -- Well, let me qualify that. I did want Mr. Spitalny to give an answer. It doesn't involve Mr. Glenn.

CHAIRMAN MILLER: I just wanted to find out about Mr. Glenn.

MR. ROISMAN: Let me just explain.

Immediately after the conclusion of the last hearing I filed a Freedom of Information Act request with the NRC to obtain copies of the draft documents prepared by Mr. Glenn and Mr. Spitalny going to the question of alternatives. They were unable to have copies of those for me to look at available until after last Friday in Washington. My secretary went down and looked at them and put on air express and they'll be here some time this afternoon.

I have no way of knowing whether they will warrant any

886109

POOR ORIGINAL

VRB/wbl 1 additional cross-examination at all. They are several
2 drafts of the Alternatives section of the Environmental
3 Impact Appraisal.

4 So there is a possibility, but it is not one
5 that I can do anything about until late in the day today or
6 tomorrow, in any event, dealing with that one subject. Other
7 than that I don't have any other questions.

8 CHAIRMAN MILLER: What about the Staff?
9 Does the Staff have any questions of Mr. Glenn?

10 MR. KETCHEN: No.

11 MR. WILSON: I just have one question for --
12 probably Mr. Spitalny would be the most appropriate individual
13 to answer.

14 BY MR. WILSON:

15 Q Mr. Spitalny, is there anyone on this panel,
16 or yourself as a member of it, who can offer testimony at
17 this time regarding the cask field inspections?

18 A (Witness Spitalny) We will supply an individual,
19 and the individual is here, who can respond to that. But
20 he's not a member of the panel.

21 Q Will you identify that individual?

22 A It's Mr. Bill McNeil, and he is sitting here.

23 MR. WILSON: Thank you. That's all I have.

24 CHAIRMAN MILLER: Then we will excuse Dr. Glenn.

25 WITNESS GLENN: Thank you very much. 686110

(Witness Glenn excused)

POOR ORIGINAL

1 CHAIRMAN MILLER: The examination of the balance
2 of the panel will continue. Who's next? Mr. McGarry?

3 MR. MC GARRY: Thank you, Mr. Chairman.

4 BY MR. MC GARRY:

5 Q Mr. Spitalny, on cross-examination yesterday
6 there was discussion of the date when poison racks can be
7 installed without transportation to another site. We're
8 talking about Oconee. And I believe the date you gave was
9 May 1982.

10 Subsequent to that discussion there was another
11 discussion that focused on the need to start off-site
12 shipping to maintain full core reserve and no reracking, and
13 the same May 1982 date was given. And I'm somewhat confused.

14 Am I correct, the same May 1982 date applies to
15 both scenarios?

16 Do you want me to start with the first one again?

17 MR. ROISMAN: How about getting the transcript
18 references? I can give him one because I've gotten that
19 far in looking at the transcript.

20 The second one was an answer to Dr. Luebke's
21 question near the end of the day yesterday.

22 3132 of yesterday's transcript is the first time
23 Mr. Spitalny answered the question. And then I believe,
24 Dr. Luebke, you asked him to clarify it later in the day.

25 CHAIRMAN MILLER: Well, let's refer to the 3132

686111
POOR ORIGINAL

WRS/wbi 1 citation and see if Mr. Spitalny has in mind the two dates,
2 or the dates of the two events.

3 BY MR. MC GARRY:

4 Q Perhaps I could just ask the question.

5 Mr. Spitalny, what is the date when poison racks
6 can be installed at McGuire without any transshipment having
7 to take place to another site?

8 I'm sorry; did I say McGuire? I meant Oconee.

9 A (Witness Spitalny) What is the date when
10 poison racks--

11 Q When poison racks can be installed at Oconee
12 without necessitating transshipment to another site?

13 A The date that was referred to as May of 1982 was
14 the date that Oconee will be at a full core reserve limita-
15 tion. All it will have left for storage capacity is 175
16 spaces. Full core reserve is 177.

17 The date to install poison racks is dependent on
18 the available space that would be required in the pool for
19 working space. The particular schedule that Oconee is
20 faced with for discharges is one such that during the year
21 of 1981 there will be a discharge in April, another discharge
22 in May, a third discharge in June. Because of those three
23 consecutive discharges, at the end of those three discharges
24 there would not be working space to install poison racks.
25 Therefore the installation of the poison racks would have to

686112

POOR ORIGINAL

RB/wb5 1 occur prior to the three consecutive discharges which begin
2 in April of '81.

3 Q Now turning to the second question: What is the
4 date that you would place on the need to start off-site
5 shipment to maintain full core reserve at Oconee if there
6 was no reracking?

7 A If there was no poison reracking?

8 Q Correct.

9 A This I believe was a question that was asked
10 by Dr. Luebke.

11 CHAIRMAN MILLER: Which is at page 3268, I
12 think, of the transcript.

13 MR. ROISMAN: That's correct.

14 CHAIRMAN MILLER: And the next several pages,
15 in fact, you had better look at.

16 MR. ROISMAN: And the question he just asked
17 answered the one that I'd asked him to answer on page 3138.
18 So the pages and questions that deal with the question in
19 front of us are 3132, 3268 and 3138 of yesterday's transcript.

20 WITNESS SPITALNY: I don't have the transcripts
21 in front of me. However,--

22 BY MR. MC GARRY:

23 Q I believe that reflects a May 1982 date?

24 (Document handed to the witness)

25 MR. ROISMAN: This is where Dr. Luebke asks the

686113

POOR ORIGINAL

RE/wb6 1 question, and on the next couple of pages you explain the
2 answer.

3 WITNESS SPITALNY: The answer to that is, in May
4 of 1982 Oconee is at, for all practical purposes, a full
5 core reserve. They could be storing fuel until that time.

6 The next discharge after May of 1982 is scheduled
7 for September of 1982. If we were to store that discharge
8 you would not maintain a full core reserve. To accommodate
9 that discharge, which is a discharge of 72 assemblies, you
10 would have to be shipping those 72 assemblies prior to the
11 September discharge. At the rate of 1 per day it would be
12 72 working days.

13 We backed up roughly three or four months to
14 give some time in there. And I believe that's why the date
15 of May '82 came up again. The date might actually be
16 June of '82.

17 BY MR. MC GARRY:

18 Q Mr. Spitalny, how many spaces are there in the
19 Oconee Unit 3 spent fuel pool?

20 A (Witness Spitalny) 474.

21 Q And how many of those spaces are presently
22 occupied?

23 A 765, I believe, or 463.

24 Q When is the next scheduled refueling for Unit 3
25 of Oconee?

POOR ORIGINAL

686114

RB/wb7

1 A May of 1980.

2 Q When was the last refueling of Unit 3?

3 A I believe just last month. It began in May of
4 '79 and continued for the duration of about a month.

5 Q At the time of the next Oconee Unit 3 refueling
6 where will that fuel be stored?

7 A At the time Oconee Unit 3 discharges there will
8 be space in the Oconee-1 and 2 pool. It would have to be
9 moved to the Oconee-1 and 2 pool.

10 Q Mr. Spitalny, does Duke have options available
11 to it presently that would permit safe lifetime storage of
12 Oconee fuel at Oconee?

13 A Do they have options available to them? Yes,
14 they do.

15 Q Does Duke also have options available to all its
16 nuclear plants to permit system retention of spent fuel?

17 MR. ROISMAN: Objection. It's not clear what's
18 meant by "all its nuclear plants," particularly in light of
19 the--

20 CHAIRMAN MILLER: That's true. Would you define
21 it?

22 BY MR. MC GARRY:

23 Q All that are operating, those under construction
24 and those planned; specifically, Oconee, McGuire, Catawba,
25 Cherokee and Perkins.

POOR ORIGINAL
686115

1 A (Witness Spitalny) Yes, they have options.

2 Q Mr. Spitalny, discussion yesterday focussed on
3 the reason for the enlargement of the Catawba spent fuel
4 pool. And I don't have the transcript cite before me, but
5 my recollection is that you responded to a question, What
6 was the reason for the Catawba spent fuel pool enlargement?
7 The reason being, For the purpose to store Oconee fuel.

8 Do you know as a fact-- First, is that correct?

9 A That was my response.

10 Q Do you know as a fact that Oconee fuel will be
11 stored at the Catawba spent fuel pool?

12 A No. I was going to qualify that statement that I
13 made yesterday, but I didn't get back to it.

14 Q Will you qualify the statement for me?

15 A Yes.

16 From the time I've been working on this licensing
17 action it was my knowledge the intent was to store Oconee
18 and McGuire fuel at Catawba. I do not know for a fact that
19 when the Catawba pool was designed to the size that it
20 presently is designed to, the intent was for the storage of
21 Oconee and McGuire fuel. I'm saying I do not know that.
22 It may have been to store Catawba fuel for the lifetime of
23 Catawba. Subsequent actions may have resulted in the option of
24 putting Oconee and McGuire fuel in that pool.

25 MR. MC GARRY: If I may have one minute,

POOR ORIGINAL

686116

Mr. Chairman, I think those are my three or four questions.

CHAIRMAN MILLER: Yes, surely.

(Pause)

MR. MC GARRY: No further questions, Mr. Chairman.

CHAIRMAN MILLER: Thank you.

Who's next?

Mr. Wilson, have you completed your examination?

MR. WILSON: I believe we have, Mr. Chairman.

I don't think we have anything further.

CHAIRMAN MILLER: Thank you.

I guess it's the Staff's turn.

MR. KETCHEN: Mr. Chairman, I have maybe one redirect question that I would like to ask in a few minutes. What I would like to do-- The nature of my redirect will be in the nature of a couple of reports to the Board and the parties based on questions where we had to do calculations over breaks. That's the nature of my questioning.

My notes show that-- I have a note here "Reisman calculations."

REDIRECT EXAMINATION

BY MR. KETCHEN:

Q Am I correct, panel, that we have covered that now?

A (Witness Spitalny) I believe the question that was outstanding was the question I responded to Mr. McGarry on.

686117

POOR ORIGINAL

1 MR. ROISMAN: On recross I'll ask Mr. Spitalny
2 to elaborate a bit on the answer. But it is the question
3 that Mr. McGarry asked. He gave a part of the information
4 I wanted.

5 CHAIRMAN MILLER: Very well.

6 BY MR. KETCHEN:

7 Q The second point is: At some point in time you
8 were asked about your experience with the 42 or some odd--
9 whatever the number was --spent fuel pool expansion applica-
10 tions, and you were asked if you could reconstruct the in-
11 formation on which you based your conclusions.

12 I would like for you to report the process you
13 have gone through in attempting to reconstruct, or respond
14 to that request.

15 A (Witness Spitalny) I have gone through all the
16 notes and documents that I brought down here with me, and I
17 do not have those particular notes. At that time I called
18 my boss back in Washington and explained that I needed the
19 numbers, and asked him to contact the individual that I had
20 contacted, which was Richard Clark in the Division of
21 Operating Reactors, to tell Mr. Clark the nature of the request
22 and remind him of what he had supplied me, and to resupply
23 that information.

24 Mr. Clark is not in the office at all this week.

25 Then they went through my office, I understand.

656118

POOR ORIGINAL

RB/wbl 1 looking for the notes, and they did not come up with anything.

2 At that point they sent over an individual to
3 speak with Mr. Clark's boss to try and find out if anybody
4 had the information. They could not locate it.

5 They then went to the Environmental Evaluations
6 Branch and talked to the individual there who is responsible
7 for evaluating the exposure for reracks. The only table he
8 was able to produce was the table that Dr. Wehemias had
9 finished and made reference to, which were the five reracks.

10 At that point they went back to Mr. Clark's
11 supervisor and asked what the nature of that information
12 being available was, how was Clark able to come up with it.
13 And his response was that Mr. Clark had kept that file on his
14 own ever since the period of time when he had been working
15 on the reracks, and it was strictly for his information.
16 Apparently he's the one who has to furnish it, and I have
17 not been able to reconstruct it.

18 MR. ROISMAN: Mr. Chairman, we will waive the
19 usual hearsay objections to that, with the understanding that
20 Mr. Spitalny did all that one could humanly do.

21 CHAIRMAN MILLER: Yes.

22 MR. KETCHEN: Mr. Chairman, the last point I'd
23 like to raise in my questioning involves a legal point, and
24 I would like to ask a redirect question in order that we may
25 have a full record and that I may fulfill, or help the panel

686119

POOR ORIGINAL

RB/vol12 1 and myself fulfill the obligation of the Staff to make as
2 complete a record as possible. That's with respect to the
3 hypothetical question which was raised yesterday at transcript
4 3306 and the surrounding discussion and testimony.

5 The question was asked, I objected, and you,
6 Mr. Chairman -- I didn't get a chance to state the basis for
7 my objection. The reason I would like to state it now is
8 to make sure that I have preserved my record.

9 My basis was that I thought it was an inappropri-
10 ate hypothetical question.

11 We went on, and the sense of my understanding of
12 your statements in ruling was that the Board also thought
13 it was an inappropriate hypothetical question. But in
5.250 14 reviewing the record it wasn't clear to me that I had pre-
15 served my record, and I wanted to do that.

16 So, with that discussion, I will go on with the
17 redirect question. And that's the problem I'm having. After
18 that ruling, or the sense of the ruling that I heard, other
19 questions were asked which beat around the inappropriate
20 hypothetical question and were responded to by Mr. Spitalny,
21 and those questions had to do with, Do you know -- or questions
22 in the sense of, Do you know of any methodologies or any
23 applications, or any situations where this type of process
24 had been undertaken. And the sense of it, as I understood
25 the record, and understand the record, Mr. Spitalny's answers

POOR ORIGINAL
686120

B/wbl3 1 were in the negative.

2 At this point in time I would like to ask him
3 if he would like to change his response to that question
4 or in any way explain his response to that line of question-
5 ing. And that's the question.

6 MR. ROISMAN: Could we have an identification of
7 what precisely is the testimony Mr. Spitalny is being asked
8 to change or explain? What lines and what pages?

9 CHAIRMAN MILLER: Yes.

10 MR. KETCHEN: The problem is, it goes on for a
11 number of pages.

12 MR. ROISMAN: Is it to find out whether or not
13 he is now going to explain, or change his answer as to whether
14 he had any competence to make the statement in the Environmental
15 Impact Appraisal or in his testimony that was the subject of
16 the cross-examination? That's covered on pages 3302 to 3327
17 and primarily on pages 3304-3306, 3308, 3318 to 3322, and
18 3324 to 3327.

19 Are you saying you want him to give us an answer
20 as to all of those pages, or to some particular piece.

21 MR. KETCHEN: No. The problem is that under our
22 obligations as we see them under prior cases we want to report
23 information that we have to the Board. And when we find out
24 additional information we want to be forthright in reporting
25 that information.

POOR ORIGINAL
886121

WRB/wb14 1 Mr. Spitalny answered questions -- I haven't got
2 the specific page: I can go through it -- whether he knew of
3 any of these-- He can better explain it. But whether he
4 knew of any such instances where attempts had been made at
5 breaching a spent fuel pool wall. His answer was in the
6 negative. Since that time he has learned of new information
7 which I thought, to make a complete record and to be fair to
8 the parties, that we would have him report to the Board.
9 The significance of it I think has to come out of the witness'
10 mouth.

11 CHAIRMAN MILLER: Well, why don't you ask the
12 question. I don't see, frankly, that it pertains to the
13 hypothetical question. I've read it, and my memory is the
14 same. I don't think it refer to that.

15 Go ahead and ask your question. I think you're
16 perfectly entitled to.

17
18
19
20
21
22
23
24
25
POOR ORIGINAL

Ble ebl

1 BY MR. KETCHEN:

2 Q Mr. Spitalny, since yesterday have you had con-
3 sultations with Staff members about any instances where
4 methodologies of breaching spent fuel pool walls have been
5 entertained or discussed?

6 A (Witness Spitalny) Yes, I have.

7 Q Would you elaborate on what you have learned since
8 yesterday's session?

9 CHAIRMAN MILLER: Describe the source of your infor-
10 mation. If it be conversations, where, when and with whom,
11 and the like, so we have the full picture.

12 WITNESS SPITALNY: I will. It was conversations
13 with T. Jerrell Carter, who is a member of the Staff and a
14 witness in this proceeding.

15 As it turns out, there happened to be two cases
16 in which --

17 MR. ROISMAN: Excuse me, Mr. Chairman. Before the
18 witness answers, it is now apparent that the best-evidence
19 rule should be applied. Mr. Carter is here. If that's the
20 source of the information, why don't we let Mr. Carter get up
21 on the witness stand and in the next several hours, provide
22 us with an elaboration on that question, rather than have
23 Mr. Spitalny give us his understanding?

24 CHAIRMAN MILLER: Well, it may well be. Let me
25 inquire.

POOR ORIGINAL

856123

WRS/eb2
1 Is the information which you are now testifying to
2 emanating from Mr. Carter, who will be testifying?

3 WITNESS SPITALNY: Yes, basically it is from him.

4 CHAIRMAN MILLER: If it is from him then we would --

5 WITNESS SPITALNY: I only have a reservation, or
6 it might be in terms of a qualification to compromise my
7 position of yesterday, and I don't believe it really does
8 compromise my position.

9 CHAIRMAN MILLER: I don't think that's an issue.
10 Nobody's quarrelling about --

11 You wanted to correct the record because you made
12 certain statements which you found out are not completely
13 accurate because you now have new and additional information;
14 is that it?

15 WITNESS SPITALNY: No. That's what I would like
16 to explain.

17 I do have new information, and I guess in effect
18 all my responses yesterday were not accurate, but the new
19 information does confirm some of the things I was saying.

20 CHAIRMAN MILLER: Well, our problem is this. It's
21 going to come from Mr. Carter rather than having you tell what
22 you learned from him which is hearsay, which might be per-
23 missible and it might be better to have it just from Mr. Carter

24 MR. KETCZEN: That's the substance, but it goes
25 again-- What this witness would testify is -- and I will

POOR ORIGINAL

656124

RB/ab3
1 proffer it -- is that what he has learned has not changed his
2 testimony, but it is additional facts that-- You know, in
3 trying to be forthright, we want to make sure that we get all
4 this for the record.

5 CHAIRMAN MILLER: Well, if it doesn't change his
6 testimony, then how do you have any question as to his forth-
7 rightness that you need to remedy? We're happy to entertain
8 it, but tell us what you are talking about. He doesn't seem
9 to have a problem but if you think he does, tell us. We're
10 not trying to cut you off.

11 MR. KETCHEN: I don't have a problem if the Board
12 doesn't have a problem, but I don't want somebody to be
13 coming back researching through the record six months later
14 and say, "Hey, Staff, you didn't tell us about this." And
15 we said, "Well, we didn't tell you about it because it wasn't
16 important."

17 I'm saying now here's the chance. We're telling
18 you about it. It's not important but we don't want to be hit
19 with that kind of a thing later.

20 CHAIRMAN MILLER: Important or not, you're going
21 to give us additional information which stems largely from
22 Mr. Carter. Now I think in fairness to Mr. Spitalny, if
23 this affects any answers that you've given that you want to
24 explain or modify, we'll give you a chance and you may tell us.

25 If not, then leave it to Mr. Carter to bring in

686125

POOR ORIGINAL

RE/eb4 1 any information.

2 MR. KETCHEN: I think he's done that already, so
3 we'll let it go now.

4 CHAIRMAN MILLER: Whatever you wish.

5 MR. KETCHEN: Maybe I can ask the Board or the
6 parties, do they wish to hear this or not?

7 MR. ROISMAN: I do, but I want to hear it from
8 Mr. Carter.

9 MR. KETCHEN: Okay, fine.

10 MR. ROISMAN: I'm interested to know, and I will
11 at recross ask Mr. Spicalny how happened that this one area
12 of information the Staff investigated after the hearing and they
13 didn't investigate others. But that doesn't have anything
14 to do with getting the answer.

15 WITNESS SPITALNY: If I get that question I'm
16 perfectly satisfied.

17 CHAIRMAN MILLER: Very well. We'll guarantee you
18 that question.

19 MR. KETCHEN: That's the end of my redirect. If
20 you'd like to clear up this matter right now while it's
21 fresh, well, fine.

22 CHAIRMAN MILLER: Mr. Roisman, ask your question as
23 you promised.

24 MR. ROISMAN: Very well.

686126

25
POOR ORIGINAL

WRB/eb5

RE-CROSS-EXAMINATION

1 BY MR. ROISMAN:

2 Q Mr. Spitalny, how did it happen that you obtained
3 this additional information on this question of the experience
4 with efforts to breach spent fuel pools for purposes of ex-
5 pansion?
6

7 A (Witness Spitalny) It just so happened that
8 Mr. Carter happened to be present in two meetings in which
9 breach of the spent fuel pool was discussed.

10 Q I'm sorry, I'm asking how did you happen to learn
11 of the information, not how did he happen to learn of the
12 information.

13 A Mr. Carter approached myself and Mr. Ketchen yes-
14 terday saying that he was in two meetings that discussed this
15 technique.

16 Q I see.

17 MR. ROISMAN: That's the answer to my question. I
18 just wanted to find out how he happened to learn the new
19 information.

20 CHAIRMAN MILLER: Mr. Carter told him, and this
21 afternoon hopefully we're going to hear it.

22 Does that cover the matter that was troubling you?

23 WITNESS SPITALNY: It wasn't quite the answer I
24 wanted to give, but --

25 (Laughter.)

POOR ORIGINAL

686127

RB/eb6

1 CHAIRMAN MILLER: Do you want to try again?

2 MR. ROISMAN: That's all the question I asked. I
3 wanted to know how he got it, not what he got.

4 I do have a couple of other recross questions
5 if I may.

6 CHAIRMAN MILLER: Go ahead.

7 BY MR. ROISMAN:

8 Q Directing your attention back to the question that
9 I had asked you and that Mr. McGarry asked you about the
10 installation of poison racks at Gcone if one wants to
11 install those racks in such a time frame that you would not
12 have to transship in order to permit it, I believe you testi-
13 fied that because of the schedule for discharges in April,
14 May and June of 1981 from the three plants, you would have to
15 have the installation of the poison racks in place by April
16 of 1981 because by the end of the third discharge, you
17 wouldn't have enough room left in the pools to do your
18 maneuvering for the installation of the poison racks. Is
19 that correct?

20 A (Witness Spitalny) That's right.

21 Q Is it true that you could have begun the installa-
22 tion and have some of the poison racks in but not all of
23 them by April of 1981, and be able to accommodate your dis-
24 charges and the further installation of additional poison
25 racks without transshipment?

POOR ORIGINAL

1 CHAIRMAN MILLER: Do you want that restated?

2 WITNESS SPITALNY: No, I think I understand it.
3 I'm trying to think of the process of installing the racks.

4 CHAIRMAN MILLER: Take your time on your answers.

5 WITNESS SPITALNY: That might be a possibility,
6 depending on the nature of the installation, if that can be
7 done in modules as the present racks are being done.

8 However, there would be a drawback in doing that
9 for a number of reasons. Number one, it's nice, once a
10 specific task is being undertaken, to complete that task.
11 Economically speaking, it's easier to keep on getting up
12 instead of having to keep stopping and then restarting
13 operation.

14 Number two, at the end of three discharges we will
15 have put in roughly 150 freshly discharged assemblies which
16 do two things, number one, raise the levels of the pool be-
17 cause of the age of decay, number two, raise the levels in
18 the pool because of the movement in the pool and just dis-
19 turbing the pool from this.

20 So although it might be able to be accomplished
21 the way you say it, there may be some drawbacks that should
22 be considered.

23 BY MR. ROISMAN:

24 Q So in terms of holding for a moment the magnitude
25 of either the-- And by the way, when you said "levels"

POOR ORIGINAL
658229

WRE/el:8 you're talking of levels of radiation in the pool?

A (Witness Spitalny) That's correct.

Q Putting aside for the moment the levels of radiation question and the economics question, to the best of your knowledge, although you don't know what the specific dates are, there may be a way to not have completed all of the reracking with poison racks as of April, 1981, and still not have to transship in order to finish reracking the pool with poison racks? Is that correct?

A I don't believe I said there may be a problem in completing by April of '81, if that's what you're asking.

Q No, I'm sorry, maybe I stated it wrong.

What I'm saying is that you wouldn't have to have all of the poison racks installed by April of 1981 in order to avoid having to transship if you wanted to completely rerack the Oconee pools with poison racks, the only thing is that you don't know what the dates would be, and it would require an analysis of several factors to know what that date might be?

A Yes, a couple of things would have to be considered to get it down, finite.

There is another problem that we haven't really addressed. Maybe I made an assumption here which may have been erroneous, but in our discussions we have primarily concerned ourselves with the Oconee 1 and 2 pool. If we

POOR ORIGINAL

686130

RB/abs 1 are only limiting ourself to the poison reracking in the
2 Occonee 1 and 2 pool, then I believe the discussion as we've
3 stated it is fairly accurate.

4 If we start also discussing the poison reracking
5 of the Occonee 3 pool, that may change the numbers. It may
6 also change the possibility of being able to rerack without
7 transshipment.

8 Q You mean without transshipment offsite, or with-
9 out transshipment onsite?

10 A There's definitely transshipment onsite. There
11 may be a need I believe to transship offsite also.

12 Q All right.

13 Well, now I'm really confused because I had
14 thought the context of all the questions, both mine and
15 Mr. McGarry's, had been assuming that you were going to re-
16 rack the entire site of Occonee with poison racks, what was
17 the date on which the installation would have to be com-
18 pleted or would have to be -- whichever one of these dates
19 you want to pick for a moment, when would you have to do that
20 in order to avoid transshipping.

21 Now maybe what would be a better thing to do,
22 because I take it there appear to be a lot of variables and
23 maybe you're having to think about them now for the first
24 time, would you like to postpone it again and just come
25 back and give us the answer? And if so, I will spell the

686131
POOR ORIGINAL

WRB/eb10
question out for you in sufficient detail so you can look at the pages of the transcript and see what I want to know.

A That would be fine. I would have only two alternatives, that being one.

The problem that I'm having in addressing this is that I believe that there is a problem with the Oconee 3 pool and reracking it. Because I've not been working with Duke, I'm not fully familiar with all the details, number one, in that pool, and number two, with their scheduling.

I believe that there is a problem with the Oconee 3 pool and Duke might better be able to address that. Otherwise we can break and properly address it later.

MR. ROISMAN: Let me just say, Mr. Chairman, it seems to me quite possible that these dates could be extremely important and that it would be useful to have them pinned down.

CHAIRMAN MILLER: Yes, we would like to have definite, accurate information.

MR. ROISMAN: I don't even mind if we simply wait and get it in September. I don't think they are dates which, once given, will necessitate any cross-examination. It's for the purpose of the record, much as Dr. Luebke yesterday wanted to get crystal clear on the last date on which you have to start transshipping if you were going to avoid loss of full core reserve and you didn't rerack.

686132

POOR ORIGINAL

WRB/eb11 1

BY MR. ROISMAN:

2 Q What I think would be useful to know, Mr. Spitalny,
3 now or on another day or even in another session of the hear-
4 ings is: Assuming that Duke Power wanted to put poison racks
5 into the Oconee 1, 2 and 3 pools, and assuming that it did
6 not want to transship anything offsite, what is the latest
7 date on which it could begin the poison rack installation
8 and what is the latest date on which it would have to have
9 completed the poison rack installation, assuming all along
10 that it wanted to retain one full core reserve in the entire
11 site?

12 And I have no objection if you want to incorporate
13 by reference your earlier testimony regarding -- or new
14 testimony, if that's necessary -- what you think specific
15 economic or health and safety consequences are of doing it
16 on different dates.

17 But my question to you is the latest possible date,
18 the latest legally permissible date. Okay?

19 CHAIRMAN MILLER: Do you understand the full
20 scope of the question now?

21 WITNESS SPITALNY: Yes, I do. I'll have no problem
22 responding to that after the break.

23 CHAIRMAN MILLER: What is the best method for us
24 to get as accurate an answer as possible?

25 WITNESS SPITALNY: I believe I only have possible

POOR ORIGINAL
686133

RB/eh12 1 one or two factors that are a little cloudy in my mind. If
2 I'm allowed to just ask Duke one or two questions during the
3 break, I can respond.

4 MR. ROISMAN: That's fine.

5 CHAIRMAN MILLER: Okay, let's do it that way.

6 MR. ROISMAN: I have one other question, just one
7 other recross.

8 BY MR. ROISMAN:

9 Q In answer to a question from Mr. McGarry, who
10 asked you whether or not the next discharge of spent fuel
11 from the Oconee 3 plant, whether that would require some
12 movement of spent fuel from the Oconee 3 pool to another pool,
13 I understood your answer to sound as though you were saying
14 that the fresh fuel discharged from Oconee 3 would be put
15 into the Oconee 1 and 2 pools, and I want to find out, did you
16 mean to say the fresh fuel, or did you mean to say some fuel
17 now in the Oconee 3 pool would have had to have been moved
18 to accommodate the fresh fuel?

19 A (Witness Spitalny) The latter is an accurate
20 statement. You need space to accommodate the discharge.

21 Q You were not suggesting there would be transshipping
22 between the pools with fresh fuel?

23 A No. Even the cask on site is limited to a speci-
24 fied decay period.

25 Q I wanted that clear.

886134

POOR ORIGINAL

MR. ROISMAN: Nothing further.

CHAIRMAN MILLER: Thank you.

Anything further now of the panel?

MR. RILEY: I have some recross.

BY MR. RILEY:

Q Mr. Spitalny, to your knowledge, was the present physical capacity of the Catawba spent fuel pool that for which a construction permit was originally approved?

A (Witness Spitalny) I do not know for the original construction permit.

Q Is it information that you might be able to obtain during the break? What I'm interested in is the process by which Duke arrived at a very much larger spent fuel pool for Catawba than for McGuire and Oconee, and finding out when that process initiated, and what approvals it involved.

MR. KETCHEN: Objection, Mr. Chairman.

CHAIRMAN MILLER: On what grounds?

MR. MC GARRY: Objection. The basis for my objection is it goes beyond the scope of my cross.

CHAIRMAN MILLER: I think it does go beyond the scope of the cross. It would not be recross, really, Mr. Riley. Your interrogation now is very limited to matters that came up from the cross subsequent to your own.

The objection is sustained.

MR. RILEY: That concludes what I have to ask.

686135

POOR ORIGINAL

RB/eb14

CHAIRMAN MILLER: Thank you.

Now if that information is significant you may request it of, for example, Mr. McGarry. He may be able to provide it through witnesses for you. I'm not trying to pass upon the significance of it, Mr. Riley. But we do have to conclude in a procedural way the interrogation of the panel, and we feel it has been covered.

MR. RILEY: If I may then, I would like to state my interest.

CHAIRMAN MILLER: Why don't you state it first to Mr. McGarry. This is a question, I take it, that could be answered by Duke representatives, could it not?

MR. RILEY: Or NRC representatives.

CHAIRMAN MILLER: Take it up then with the Staff. If you have a continuing problem then address the Board, but we think you may be able to get the information in a usable form by doing it that way.

Now I take it there is nothing further now of this panel. Is that correct?

MR. KETCHEN: Mr. Chairman, that completes the panel. I would like to proffer their testimony for introduction into the record and to have it bound into the record as though read at this time. I can go through a list, if you would like, of the totality of that.

There's this sort of loose end about Mr. Carter.

POOR ORIGINAL

686136

WRB/eb15 1 I don't know quite how you want to handle that. But I'm
2 moving the admission of the panel testimony in all its forms,
3 and the professional qualifications into the record at this
4 time.

5 CHAIRMAN MILLER: Perhaps you had better specify
6 then, since we've had the break in time from the original
7 testimony and the marking of the exhibits. So why don't
8 you offer the direct written testimony and the qualifications
9 that accompany it of the witnesses who comprise the panel,
10 and we'll see.

11 MR. KETCHEN: I can do it two ways, go by number
12 or just in broad numbers. Until I'm stopped I'll do it the
13 long way.

14 I am moving Number 13, which is the testimony of
15 Spittainy and Glenn.

16 MR. ROISMAN: Excuse me, Mr. Chairman. Can we
17 just shorten it and have him tell us the exhibit numbers?

18 CHAIRMAN MILLER: All right, the Staff exhibit
19 numbers.

20 MR. KETCHEN: Number 13, Number 15, Number 16-A,
21 Number 16-B, Number 17-A, Number 17-B, Number 17-C, Number
22 19-A, Number 19-B, Number 19-C, Number 19-D, Number 22.

23 That's it.

24 CHAIRMAN MILLER: All right. Let me inquire if
25 there be objections to any or all of these. Any objections

POOR ORIGINAL 88137

WRB/ek16

to the exhibits as proffered?

MR. ROISMAN: Mr. Chairman, I have an objection--
I just want to check and make sure.

I have an objection to part of 16-A, to all of
17-A on the ground that the witness has not testified on
that yet. His testimony will come up on the Cost-Benefit
panel;

To 19-A, 19-B and 19-D, and until after we've
heard the testimony from Mr. Carter, I will reserve moving
to strike the portion of the testimony dealing with the
question of the breaching of the spent fuel pool.

CHAIRMAN MILLER: All right.

MR. ROISMAN: And whenever the Board wishes, I'll
be glad to specify in detail the basis for the objection.

CHAIRMAN MILLER: All right. Which is the first
one? 16-A?

MR. ROISMAN: 16-A.

Let me just see if I'm clear about this, so that
we do not have confusion.

17-A is Mr. Nash's adoption of the cost-benefit
balance in the Environmental Impact Appraisal. He's not been
crossed on that yet. Is that right? Is that what he's doin
going to come with, along with Mr. Batiglio, on?

MR. KETCHEN: You call it a cost-benefit panel.
This panel was proffered a long time ago, and their testimony

886138
POOR ORIGINAL

WRB/eb17
1 was identified. They were here for questions. Dr. Nash was
2 offered on all this testimony, including on Contention A and
3 B, and the other piece of testimony. I've got to find it;
4 I don't have it before me. But he's there for cross and
5 the additional testimony later is, in my view, rebuttal and
6 came in later, and is a different matter. It's in response
7 to things that have come up during the cross.

8 And so he's been there, ready for cross, and I'm
9 proffering his testimony at this time.

10 MR. ROISMAN: I understand exactly what he's there
11 for. I just thought we had an understanding, and obviously
12 we did not, that Mr. Nash and Mr. Batiglio, who were address-
13 ing cost-benefit considerations, both in new testimony and
14 Mr. Nash in an old piece of testimony, would be cross-
15 examined together as a panel.

16 If Mr. Nash is to be cross-examined separately
17 on the portion of the cost-benefit analysis which constitutes
18 the Environmental Impact Appraisal, then I'm ready to cross-
19 examine him now. But I just thought it was simpler, since
20 he's got a piece of testimony that arguably has some rela-
21 tionship with this, that he and Mr. Batiglio would be cross-
22 examined together as a panel on the scheduling we had talked
23 about yesterday for when they would come up.

24 CHAIRMAN MILLER: We have no knowledge of --

25 MR. KETCHEN: I don't think that was in the

POOR ORIGINAL
058133

RB/eb.8 1 understanding that I've had. He's been sitting on the panel
2 since Day One.

3 MR. ROISMAN: It doesn't matter. I'm perfectly
4 willing to cross-examine him now. If he wants me to do it
5 while Mr. Spitalny and Mr. Roberts are sitting there, I
6 don't care.

7 CHAIRMAN MILLER: What's your pleasure?

8 MR. KETCHEN: Well, he's there. He's available.
9 He's been available for a long time. As a matter of fact,
10 he had to fly in-- I made him fly in to be here Monday.
11 He's been available for cross. I guess we should proceed.

12 CHAIRMAN MILLER: Which is Mr. Nash's testimony
13 that you are proffering?

14 MR. ROISMAN: They're proffering 17-A and 17-B,
15 but all I have an interest in cross-examining is 17-A.

16 MR. KETCHEN: 17-A, 17-B, and 17-C. C is the
17 professional qualifications.

18 CHAIRMAN MILLER: What's Exhibit 20?

19 MR. KETCHEN: Exhibit 20? I'm going to have to
20 clear that.

21 Exhibit 20 is Dr. Nehemias' testimony.

22 CHAIRMAN MILLER: Ours says Dr. Nash.

23 What is the testimony now that's being proffered
24 of Dr. Nash? 17-A, 17-B? Is that it?

25 MR. KETCHEN: And 17-C, the professional 686140

POOR ORIGINAL

PE/eb19
1 qualifications.

2 MR. ROISMAN: It's attached to 17-B.

3 CHAIRMAN MILLER: Well, it would seem simplest,
4 unless Counsel wish to do otherwise, and since Dr. Nash is
5 here, since his testimony is proffered as part of the over-
6 all offer and there has been no cross-examination, we might
7 as well proceed with cross-examination so we have the Nash
8 testimony in one piece.

9 Does anybody wish to do otherwise?

10 MR. KETCHEN: That's fine with me.

11 CHAIRMAN MILLER: Proceed.

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

POOR ORIGINAL

686141

FURTHER CROSS-EXAMINATION

1
2 BY MR. ROISMAN:

3 Q Mr. Nash, directing your attention to Staff
4 Exhibit 17A, are you in that testimony assuming responsibility
5 for a portion of the Environmental Impact Appraisal? Is that
6 the thrust of this testimony?

7 A (Witness Nash) It wasn't my understanding that
8 I, except as a member of the Staff, am assuming responsibility
9 for portions. I didn't review but a small portion of
10 the Environmental Impact Appraisal.

11 Q Did you actually write any part of the Environ-
12 mental Impact Appraisal?

13 A No, I did not.

14 Q Can you identify the portions specifically that
15 you reviewed in the Environmental Impact Appraisal?

16 A It was primarily Section 10, beginning on
17 page 57, and consists of pages 57 and 58.

18 Q And what exactly did your review consist of,
19 what did you do?

20 A I primarily looked at Table 10-1 on page 58
21 and compared this with the cost estimates that appeared in
22 other EIA's, applications for spent fuel pool enlargement
23 or increase of capacity.

24 Q What do you mean you compared it? You tried to
25 see if they were the same numbers?

POOR ORIGINAL

wrb/agh2¹

1 A Well the same ballpark numbers.

2 Q Had you compared the numbers in the other EIA's?

3 A No. I participated in one other hearing and
4 reviewed numbers appearing in there that had modified to some
5 extent numbers in the EIA and my testimony.

6 Q You mean in the other hearing?

7 A In the other hearing, yes.

8 Q But here all you really did was look at the
9 numbers in Table 10-1 and compare them to numbers that
10 appeared in comparable tables in other EIA's?

11 A Yes.

12 Q And does that mean that all you really looked at
13 was -- looking now at page 53 of the EIA and the column
14 Cost, which is the only one that has any numbers in it,
15 that you looked at the numbers 7000, 12,000, 10,000, 6000,
16 150 man-rem, 10⁸ dollars per year, 2000 and 120 man-rem,
17 that's what you looked at?

18 A Well I would say the entire page. There are
19 cost figures that go with various alternatives that are listed
20 in Column One.

21 Q But you testified that what you did was make a
22 comparison of figures, and I'm asking is that what you made
23 a comparison of, those figures?

24 A Yes. For the alternatives, yes.

25 Q Did you independently evaluate whether or not

686113

POOR ORIGINAL

1 these figures are valid for the case here, for this utility
2 with these plants?

3 A) No, not independently.

4 Q Did you attempt to evaluate, under the column
5 listed as Benefit, whether or not the narrative description
6 there was an accurate description of the benefit?

7 A Well only insofar as these benefits are dis-
8 cussed in other portions of the EIA or the implications of
9 the alternatives are discussed.

10 My understanding at the time I reviewed it was
11 that they were consistent with what's contained in the EIA.

12 Q But you didn't independently even check that
13 to look and see if they were in the other part of the EIA
14 because these are the pages you looked at, isn't that your
15 testimony?

16 A Yes.

17 Q Now, did you analyze in the first column of
18 Table 10-1 Alternatives, whether that represented the appro-
19 priate range of reasonably available alternatives? Did you
20 make any effort to reach a judgment about that?

21 A Well these are the alternatives that -- and I can't
22 say 100 percent, but these are generally the alternatives
23 that have appeared in expansion of pools generally. There
24 may be other EIA's that have other alternatives, I'm not
25 certain.

POOR ORIGINAL

836144

Q Well are you saying that you don't have an independent judgment as to whether or not the alternatives listed there represent all the reasonably available ones to this facility?

A I think that is correct. I don't have any independent judgment. It's based on partly participating in this hearing and talking with people in that area.

Q But your basis for thinking that that looks like a pretty good and complete list of alternatives is that that's what you've seen in most other EIR's dealing with these kind of spent fuel pool issues, is that correct?

A Yes.

Q Could I direct your attention to Staff Exhibit 19B, page eight, the bottom paragraph of the page. If you could get a copy of that in front of you.

(Document handed to the witness.)

A Page eight that was?

Q Page eight, the bottom paragraph.

A Starting with "The Applicant's commitment?"

Q Yes, would you just read that first sentence, please?

A To myself?

Q No, out loud.

A "The Applicant's commitment to nuclear power, coupled with the number of reactors projected to be

POOR ORIGINAL

1 on-line in the 1990's, places the Applicant in a
2 unique position available to very few utilities."

3 Q That's sufficient.

4 Now does that suggest to you that perhaps
5 utilizing experience with other utilities' EIA's might not be
6 appropriate for this unique Applicant and that there might
7 be a different range of alternatives for this Applicant?

8 A I would say yes, that the use of the word
9 "unique" indicates that general discussions may not apply.

10 Q Now according to your qualifications, cost-benefit
11 analysis is really your specialty, am I correct in that?

12 A Yes.

13 Q Is that a discipline that has a certain set of
14 rules by which one would normally conduct a cost-benefit
15 analysis for the standards that you would apply and then
16 you could, for instance, look at a cost-benefit analysis
17 so that you knew how it was done, evaluate whether it had been
18 done right or wrong?

19 A Well, there are certain -- yes, certain -- many
20 accepted practices that one would generally use or be
21 expected to use. And it may take a little bit of study
22 after a superficial cut to dig deeper to see whether the
23 analysis was adequate. There are certain things you could
24 look at rather quickly and determine whether it was acceptable.

25 Q Did you attempt to evaluate the cost-benefit

886146
POOR ORIGINAL

b/agh5 1 analysis as done in this EIA to determine whether it had been
2 done in conformity with the principles of a proper cost-
3 benefit analysis?

4 A Well yes, I did do that. Part of the -- one of the
5 things that you look for in doing a cost-benefit analysis
6 is how much effort is required to be put into it in order
7 to make a comparison or reach a decision or whatever the
8 problem may be.

9 I think I would say that this cost-benefit
10 balance, as it is entitled, is not in-depth. I think that
11 could be recognized by almost anyone. But I think it is
12 sufficient to make the comparisons that are done in this
13 chapter.

14 Q Well is part of the principles that one would
15 apply in doing a proper cost-benefit analysis include the
16 consideration of the time frame during which benefits and
17 the time frame during which costs are to be incurred?

18 A Yes.

19 Q Would that be one of the factors? I mean, for
20 instance, if you look only at the first year of some pro-
21 posed action and saw whether it was good for one year but
22 didn't look at 10 years, you might not get a full picture
23 of its costs and benefits, is that true?

24 A That's quite true. The time frame is quite
25 important.

POOR ORIGINAL

656117

1
2 Q Did you analyze the analysis conducted here to
3 see whether or not the time frame selected for evaluating
4 what the benefits and costs of each alternative would be was
5 the proper one to select?

6 A WELL I did. I think it is also true that --

7 Q I didn't hear the first part of your answer.

8 A I did look at that. I think, further, that the
9 time frame is really not specified in this section, in this
10 table.

11 And that's one of the reasons I made my earlier
12 response that the depth at which you go into the analysis
13 depends on what -- you go into something until it is suffi-
14 cient to reach a conclusion, and I think that was done here.
15 I think it was a more complex question and not so readily
16 apparent that you would have to get into the time frame dis-
17 counting when costs when benefits occurred and so forth.

18 Q Well how do you know that the range of possible
19 impacts is such that the time frame wouldn't be relevant in
20 looking just at Table 10-1, which is where you told us you
21 focused your review. How can you tell that from looking
22 at that?

23 A Well it requires perhaps a little bit more
24 information than is on the table here. But for example,
25 looking down the list of alternatives to the one which is
called "Storage at Other Nuclear Stations Owned by Duke Power,"

there's a cost there of \$2500 per assembly --

MR. MC GARRY: That's \$3000 per assembly, I believe.

WITNESS NASH: Okay. I have a red mark in here that says \$2500.

WITNESS SPITALNY: The errata sheet handed out last night --

CHAIRMAN MILLER: What does it show in that regard?

MR. ROISMAN: It shows what the witness just said, not what Mr. McGarry just said.

WITNESS SPITALNY: It changes the number from \$2000 to \$2500.

BY MR. ROISMAN:

Q Go ahead, Mr. Nash.

A (Witness Nash) I can use either figure.

Q Use the one that is the one now being used by the Staff.

A 2500. Okay.

If you compare that to the second alternative, which is storage at an ISFSI of 7000 to 12,000, in the first alternative, this is -- well first of all, it's a lower cost than storage at an independent facility. SEcondly, this is an annual or a periodic cos The cost occurs more or less at the time that the operation is done, whereas in

886119
POOR ORIGINAL

b89the c¹
2 the case of building a facility, a new facility, this is done
3 right at the beginning and the costs are all incurred right
4 at the beginning, that is, the major part of the costs.

5 And I know that if I would have gone further
6 and discounted these costs back to the present time, that that
7 would even go further toward making the cost of the
8 independent facility an even greater distance than -- or an
9 even greater value to than in the case where costs are
10 incurred through time.

11 And when you're making a comparison of those
12 costs through time, you discount them back to some common
13 point in time. So I know if I would have gone that further
14 step that it would only have reaffirmed the conclusion that
15 comparing these two alternatives the storage at another
16 facility would be lower cost.

17 CHAIRMAN MILLER: I think we'll suspend for our
18 lunch recess.

19 MR. ROISMAN: Could I ask one question related
20 to that answer?

21 CHAIRMAN MILLER: All right.

22 BY MR. ROISMAN:

23 Q The answer that you just gave me. When did you
24 do the analysis that forms the basis for that answer, just
25 now as you did it or back when you reviewed the cost-benefit
section of the Environmental Impact Appraisal?

686150

POOR ORIGINAL

rb/agbi0 1 A (Witness Nash) It's requiring me to recollect
2 what I did two or three months ago, but I'm quite certain that
3 I mentally went through something like I just described to
4 you at that time.

5 MR. ROISMAN: Thank you.

6 CHAIRMAN MILLER: We'll resume at 1:30, please.

7 (Whereupon, at 12:00 noon, the hearing in
8 the above-entitled matter was recessed, to reconvene
9 at 1:30 p.m., this same day.)

10
11 locm
12 on flws

13
14
15
16
17
18
19
20
21
22
23
24
25
POOR ORIGINAL

686151

AFTERNOON SESSION

(1:30 p.m.)

CHAIRMAN MILLER: We'll resume the evidentiary hearing. Mr. Roisman was examining, I believe.

MR. HOEFLING: Mr. Chairman, could I take up a matter with the Board?

CHAIRMAN MILLER: Yes.

MR. HOEFLING: We originally had planned to present two witnesses to respond to some questions. One was a Board question, the other was a question raised by the State of South Carolina. And one of the gentlemen who was to provide some information to the Board must leave now to attend to other Commission business which he has not been in a position to reschedule.

And we would propose that we take up the matter of the DOE emergency response teams and related questions that Dr. Luebke posed at the September session, preferably if we could set that as the first item when we reconvene on Monday morning, if that indeed is a Monday. We would propose to go forward in that fashion rather than treat that matter now, which has become very, very difficult due to a conflict in schedule.

CHAIRMAN MILLER: Any objection?

We're speaking now about making that as the first order of business of the Staff's witnesses at any rate

POOR ORIGINAL
686152

we /agb2

1 at the September 10 resumed hearing?

2 MR. HOEFLING: That's correct, Mr. Chairman.

3 CHAIRMAN MILLER: All right.

4 MR. MC GARRY: Mr. Chairman, I just have an
5 observation. Mr. Wilson isn't here, so I think I understand
6 his position. He has some schedule conflicts and we had agreed
7 at a meeting among the parties that he would go first on the
8 10th, although I think the DOE emergency response is something
9 he'd be probably interested in and I would assume also that
10 that would not take up that much time. That being the case,
11 I think it would not infringe upon Mr. Wilson's ability to
12 pursue his case.

13 CHAIRMAN MILLER: All right. Mr. Wilson isn't
14 here -- well, you can mention it to him when he comes, but
15 it would appear that --

16 MR. HOEFLING: I think that would work out well
17 if he's going to be there on Monday. And as soon as we can
18 get to Mr. Huffam and treat that question on Monday.

19 CHAIRMAN MILLER: Who is the witness now that
20 you're rescheduling?

21 MR. HOEFLING: James Huffam.

22 CHAIRMAN MILLER: Anyone else?

23 MR. HOEFLING: No, Mr. Chairman.

24 CHAIRMAN MILLER: All right. He'll be scheduled
25 for the first order of business on the 10th, and we'll

POOR ORIGINAL

886153

1 endeavor to accommodate the Staff's need in that regard and
2 Mr. Wilson's schedule.

3 Anything else?

4 All right. Mr. Roisman.

5 MR. ROISMAN: Thank you.

6 Whereupon,

7 JOHN P. ROBERTS,

8 DARREL A. NASH

9 and

10 BRETT S. SPITALNY

11 resumed the stand as witnesses on behalf of the Regulatory Staff
12 and, having been previously duly sworn, testified further
13 as follows;

14 CROSS-EXAMINATION (Resumed)

15 BY MR. ROISMAN:

16 Q Mr. Nash, during the recess we have just taken,
17 have you had occasion to talk to anyone about your testimony?

18 A (Witness Nash) I didn't talk with anyone about
19 it, no.

20 Q I think the last point that we were attempting to
21 look at was the question of whether or not at the time during
22 which the alternatives would be affected and the impacts that
23 they would cause, the pattern had not been taken into
24 account in doing this cost-benefit analysis. And I believe
25 your last set of answers dealt with your statement that they

POOR ORIGINAL

686154

WEL/abl
File agb3

had not been crucial, it had not been crucial to take them into account because of what you perceived to be the dollar differences between the alternatives.

Is that a correct summary of what you were saying?

A The dollar differences and the fact that the high dollar options also had to take place rather early in time where there's to be -- the cost would flow over a period of time.

Q Now am I correct that when you were making that statement, you were looking at-- I'm looking at Table 10-1 in the Environmental Impact Appraisal. You were looking at the second alternative, "Storage at an independent spent fuel storage installation," and the sixth alternative, "Storage at other nuclear stations owned by Duke Power." Is that correct?

A That's correct. I was looking at this table just a few moments ago, and I think I was talking about, in answers to some questions before lunch, about construction of an ISFSI, and I see now that that's the third option rather than the second.

Q Actually your analysis wouldn't have been applicable to the second, would it?

A That analysis would not have been applicable to the second one. That's correct.

Q And would you tell us the reason why?

POOR ORIGINAL

686155

VEI/eb2
1 A Well, the second alternative I think would be--
2 My understanding is that that would be a flow of costs over
3 time; that is, they'd pay a fee as they made use of the
4 facility. So it would be similar to the third one from the
5 bottom in that the flow of money would be over time rather
6 than at the beginning of the time period.

7 Q That's because in the second example the spent
8 fuel storage installation would be owned by a third party,
9 not by Duke, and the third party presumably would have made
10 the investment in it. Is that correct?

11 A Yes. This would be from the standpoint of the
12 licensee. I'm assuming now that these costs identified here
13 would be fees paid at the time the fuel was placed in the
14 facility.

15 Q Would it be possible if the person who owned that
16 independent spent fuel storage facility wanted to set the
17 cost when you paid for the fuel simply so that it was no
18 different than what the cost would have been if the entire
19 facility, to the extent that it was used by the using utility,
20 had been built by the utility itself with its own money up
21 front?

22 A Presumably the cost would be set-- If this other
23 owner wished to recover his investment, the cost would be
24 set such that the fee charged would recover his investment
25 plus interest over the life of the facility.

POOR ORIGINAL

WEL/eb3 1 So I think I'm answering. If I understand your
2 question, the answer would be yes.

3 Q All right.

4 So then are you saying you could use the second
5 example to make your point, namely that if you went to a
6 third party and they were going to take your fuel for you
7 and you just went there whenever you needed it, but they had
8 incurred front-end costs in building the facility and having
9 it available for you whenever you wanted it, and they wanted
10 to fully recover their costs, they would set the charge, or
11 could set the charge to do that, so that the cost would be
12 that much higher to accommodate the extent to which they were
13 disadvantaged by putting up the front-end cost in the
14 first place. Is that right?

15 A Yes.

16 So to that extent, the second and third alternative
17 should be comparable in analysis.

18 Q Do you know whether or not the values used in the
19 second alternative, that range of values, takes that factor
20 into account?

21 A I believe that these costs, both for alternatives
22 two and three, are costs of construction only. I don't believe
23 that either of them includes interest costs that would incur
24 over the life of the plant.

25 Q Did you actually attempt to find out, or are you

688157

POOR ORIGINAL

20/eb4 1 just looking at it now and it seems to you that they don't?

2 A Well, I think this gets a little bit into testi-
3 mony that we offered later.

4 Q You understand my problem with cross-examining you
5 now. I thought that might happen, but go ahead and answer the
6 question.

7 A So I have looked at these previous to the time that
8 you asked it, and am confident that it doesn't include those
9 financial considerations.

10 MR. KETCHEN: Mr. Chairman, let's avoid
11 Mr. Roisman's problem if we can. Let me offer to get that
12 other stuff up there now. I don't want to create any hassles.
13 Get it up there so we can --

14 MR. ROISMAN: That stuff is Mr. Pittiglio's testi-
15 mony. What I'd like to do is have these other two gentlemen
16 go off, close off that part of the panel, get Mr. Pittiglio
17 up there next to Mr. Nash, make your proffer to put in those
18 other two pieces, and --

19 CHAIRMAN MILLER: That's what I understood was
20 the original request and being declined, we proceeded this
21 way. But if we're now in agreement we'll take it.

22 MR. KETCHEN: It looks like it may be more effi-
23 cient that way.

24 MR. ROISMAN: Well, just let me ask Mr. Spitalay.

25 BY MR. ROISMAN:

POOR ORIGINAL

686158

WEL/eb3 1 Q Mr. Spitalny, there was the one open item. You
2 do not have to, as far as I'm concerned, don't have to now
3 answer the question about this poison rack installation at
4 Oconee at this point.

5 Are you ready to answer it now? Do you want to do
6 it now, or do you want to wait?

7 A (Witness Spitalny) Let me explain. It's an
8 extremely complicated calculation and I have come up with a
9 calculation which makes some assumptions. I can explain what
10 was done and why it is complicated.

11 If the numbers I come out with are satisfactory to
12 you we can leave it at that; if they are not, it may be
13 possible to do it in greater detail during the break until the
14 September hearing.

15 Q Well, why don't you tell us what it is. If it's
16 so complicated that it seems useful to have it in writing
17 in front of us to be able to ask you questions about it, we
18 can do that.

19 MR. ROISMAN: But unless the Chairman has any
20 objection, I'll let Mr. Spitalny tell us now what he's done,
21 and the assumptions, and we'll see if that's enough.

22 CHAIRMAN MILLER: You may do so.

23 WITNESS SPITALNY: Basically what happens is the
24 reracking of the Oconee 1 and 2 pool is able to be done due
25 to the type of structure that the racks -- the way they're

POOR ORIGINAL
886159

EL 806
1 actually constructed. The date which I offered earlier of
2 April '81 was an accurate figure for when you would have to
3 rereack the Oconee 1 and 2 pool.

4 BY MR. ROISMAN:

5 Q When you say "have to," have to have it completed
6 or have to have it started, or have to have --

7 A (Witness Spitalny) That was the completion date.
8 Backing up for when you'd have to start that it is basically
9 a four-month procedure to install the racks, which would get
10 you back to about January of 1981.

11 The licensing, the application end of it, and the
12 contract and procurement of the racks, if we talk about a
13 year or so we're back to a decision date of December to
14 January of 19 -- December of '79 or January of 1980.

15 The place where this gets complicated is when we
16 start to shuffle fuel back and forth between the 1 and 2
17 pool and the 3 pool. The racks in the Oconee 3 pool are
18 free-standing racks. They are basically the first design of
19 that nature, and there were a couple of conservative measures
20 taken when they were installed. Those conservative measures
21 were done due to the seismic evaluation of those racks.

22 What they entail is a channel which is composed
23 of about a 1-inch plate of metal which is bent. It's about
24 10 inches -- 1 inch thick, 10 inches deep. It runs the width
25 of the pool through the width of these racks.

886160

POOR ORIGINAL

WEL/eb7

Running the length of the pool is a rod which runs the full length of the pool, two rods actually going through the top part of the structure, and they are fastened to one end and there's a tensioner at the other end to keep the entire assembly, the entire pool almost fastened as one structure.

So because of the complications we started to get into -- there are some design areas that you have to look at just in removing the racks -- the first preference to get the racks out, because of the way they have been installed, would be to drain the pool.

Again, underwater installation of racks is a possibility as we have discussed numerous times, but because of this type of construction it becomes extremely difficult to do that.

If we were to assume that you had to drain the pool prior to the installation of poison racks, it would not be possible to drain the pool and install the racks without any shipment offsite.

During the break I evaluated it and discussed it with Duke. Doing it both by putting poison racks into the 1 and 2 pool first, and then moving the fuel that is in the Number 3 pool to the 1 and 2 pool and draining the pool, and the dates and discharges, the schedule of discharges works out that there is not enough capacity in the 1 and 2 pool

POOR ORIGINAL

WEL/ab3

to allow that.

There presently are 463 assemblies in that pool.
They can be shipped --

Q That pool? Which one?

A I'm sorry, the number 3 pool.

They can be transferred to the 1 and 2 pool roughly
at the rate of one a day, where it works out to about 30 a
month, just as an average.

Doing that, it would take almost 13 months just to
empty that pool, and during that 13 months you're still dis-
charging more fuel from the reactors. And that's why this
becomes such a complicated situation to look at.

Any way you go, trying to put poison racks in the
1 and 2 pool first, or poison racks in the number 3 pool first,
could not be done without transshipment.

The other thing to look at then obviously would
be what would be required to allow for the removing of the
existing racks using divers. It would require possibly a
seismic analysis of what happens to the racks when you break
up these rods that run the length of the pool.

It would require divers to get down and cut these
channels which run the width of the pool, so that the modules
could be removed.

Additionally the rack module-- Well, it's rather
difficult to describe. There are two rack modules which are

POOR ORIGINAL

WEL/sb9
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

6 x 8 feet I believe. The dimensions are 6 x 8. Two modules are welded together and then set down into the pool. These channels run the length of those two modules.

To pull out the modules would require actually pulling out two modules at one time which--Presently there is not a crane capable of doing that at the Oconee pool, which at least has access to all of the modules.

The other method would be to send a diver down and cut them apart and pull them up in separate pieces for which there would be a crane that would handle it, but then you have the difficulty of cutting these things.

If I can really get to your question about dates, if we assume for some reason that we are capable of sending a diver down to do that, Duke could also go out and possibly get another crane which would be capable of lifting that particular weight. It would have to be a single-failure proof crane because it would involve lifting that weight over the top of other fuel assemblies.

If we assume all these things could take place, then we can look at some dates. So I'm making that assumption now and again we can look at reracking Number 3 first, and reracking 1 and 2 first.

If we look at reracking pool Number 3 first, basically what happens is we would be limiting ourselves to the 750 assemblies which could remain in the pool Number

056163

POOR ORIGINAL

WEL/eb10 1 and 2 as a result of the stainless steel reracking that
they're presently doing. We are at 474 assemblies-- Well,
there is actually a storage of 473 assemblies in the Oconee
3 pool.

It requires moving those assemblies, or moving some
of the assemblies to allow working space. You would have to
leave a total of 192 assemblies in the -- a maximum of 192
assemblies in the pool to allow for working space.

Making these transfers, it would be possible
to be ready to cut out the racks by August of '80, 1980. The
completion date at that time would be 12 of '80, December
of 1980.

Basically going that route first we have limited
storage capacity and it would just move a lot of fuel into
the 1 and 2 pool, and the 1 and 2 pool only goes to 750 assem-
blies. What you end up with is a window in which you could
actually replace the racks in the Oconee 3 pool, due to fill-
ing up the space in Oconee 1.

So although that August of 1980 date happens to be
the first date at which you could actually get in there and
start doing work, it is also about the same date-- You
wouldn't want to postpone it any further than that, so that
kind of seems just an operating window that they can work in
at that time.

If you get the Oconee 3 pool reracked you would

886164

POOR ORIGINAL

EL/ehll 1 then have to move the assemblies back out of the 1 and 2
2 pool into the 3 pool. It would be necessary to finish the
3 racking in the Oconee 1 and 2 pool by December of 1982,
4 which means you could start as late as August of 1982.

5 Again with those assumptions that we can send
6 divers down and can work out these problems, it is possible
7 to racker both pools without any shipment offsite. That
8 would require, however, 688 onsite transfers. That was the
9 one method of doing pool Number 3 first.

10 The other method would be doing pool Number 1 and
11 2 first. For that one, the latest date we could do that was
12 the date I mentioned previously, which was April of '81. At
13 that time we could racker the Number 1 and 2 pool with poison
14 racks and immediately start transferring the assemblies
15 from the Unit 3 pool into the newly racked 1 and 2 pool.

16 The earliest date-- Excuse me.

17 If we were to start transferring from Oconee 3
18 to Oconee 1 and 2 pool, the date that we could start re-
19 racking the Oconee 3 pool would be January of '83, and com-
20 plete about May of '83.

21 Now it would be necessary to complete by May of
22 '83 because the Oconee 3 unit has an in-service inspection
23 which comes up that fall. So we would want to complete prior
24 to that in-service inspection.

25 There is, however, a window after the in-service

POOR ORIGINAL
886165

1 inspection which ranges from December of 1983 to April of
 2 1984 which is after the in-service inspection. It would be
 3 possible to also rerack the Oconee 3 pool at that time, so
 4 rather than having a first and final date, we just have two
 5 windows in which the Oconee 3 pool could be reracked at
 6 that time.

7 Going that particular way with the Oconee 1 and 2
 8 pool first, it would require the transfer of 443 assemblies
 9 onsite.

10 So again it is possible. There are a number of
 11 things to contend with which I have not looked at, how the
 12 divers would go about doing it, what the exposure might be,
 13 what the costs might be. Just looking at dates and dis-
 14 charge schedules, it could be possible to do, and that's
 15 about what it is.

16 Q Did you consider whether you would gain anything
 17 in terms of time and flexibility or reduction in handling
 18 if, instead of completing the reracking of the Oconee 1
 19 and 2 pool with stainless steel racks, the Applicant stopped
 20 the reracking, sought permission, and got approval to com-
 21 plete -- to do the whole pools with poison reracks and finish
 22 the reracking job of 1 and 2 with as many poison racks as
 23 they could while still leaving enough space in the pool for
 24 their other purposes? Would that buy you some time by doing
 25 it at this point?

POOR ORIGINAL
 886166

eb13 1 A I don't believe it would buy us any time because
2 we presently-- The assumption I made in this particular
3 calculation assumed we had the availability of 750 slots,
4 spaces, in the Oconee 1 and 2 pool, and it assumed we
5 immediately went out for contractual arrangements and an
6 application to allow -- to receive what was needed as far as
7 the licensing and the acquisition of racks.

8 Now we tried to optimize things I guess and see
9 what was available.

10 Q Would you have a judgment as to whether or not
11 some time between April of 1978 and-- Well, strike that.

12 In your judgment, assuming that the technical
13 problems with the reracking of the Oconee 3 pool can be
14 solved, reracking it wet can be solved, is there still time
15 for the Applicant to choose that option, given what you've
16 previously projected or the schedule times that it would take
17 to get an order in, an application, and get it approved and
18 do all that other stuff, for it to rerack Oconee 3 with
19 poison racks?

20 A Yes, there is an option there, or there is time.

21 Q When does the time expire? Did I understand you
22 to say it's December of this year or January of next year,
23 roughly, for them to make the decision to go that way?

24 A Looking at the two alternatives I chose the one
25 for doing Number 3 first, and the one for doing Number 1 and

POOR ORIGINAL

L/ehl4 1 2 first, the one that buys us the most time would be the
2 installation of 1 and 2 first.

3 If we look at that one, they have until December
4 1979, this year, or possibly January, 1980, that time frame
5 to start the license application and start the procedures to
6 prepare for reracking.

7 Q For poison racks. And that is if you start with
8 1 and 2.

9 A That's correct.

10 Q And that option, if I remember, also involved
11 about two-thirds as many onsite spent fuel transfers as you
12 would starting with the Unit 3 reracking first, as I remember.

13 A That's correct.

14 Q Assuming that the technical problems associated
15 with reracking Unit 3 underwater are not are reasonably
16 solvable, that the only way that it could be reracked with
17 poison racks is to rerack it dry, and assuming that no off-
18 site transshipment is permitted, when did the deadline pass
19 that the Applicant could have submitted an application and
20 had enough time to rerack Oconee 3 with poison racks?

21 A To tell you the truth, I think I would have to
22 look at it again. The thing I would have to look at is what
23 the history of the discharge schedule was to find out how
24 many assemblies were in the pool, to find out what the capa-
25 city was in Unit 1 and 2 pool, and it's the same procedure

POOR ORIGINAL

over again. I didn't consider that.

Q Okay. At some time could you give us that date?

Now you made a reference to the amount of spaces that you would need in the Oconee 3 pool to have free enough working space, and if I remember correctly, I think you testified that you'd have to get down to at least no more than 192 spent fuel assemblies in the Oconee 3 pool to have sufficient working space in the pool to do a wet reracking with poison racks.

Do I remember that correctly?

A Yes.

Q I believe yesterday in testimony when we were discussing the question of the reracking of the McGuire Unit 1 pool with poison racks that you testified that you would -- if you put all 300 Oconee spent fuel assemblies into the McGuire pool, it would still be possible to have enough working space to rerack, you thought, with poison racks at that time.

Do you remember that testimony? Am I remembering correctly?

A Yes.

Q Is there some difference between the problem of reracking the McGuire pool wet and reracking the Oconee pool Number 3 wet that makes you have to leave much more space in the Oconee 3 pool than you apparently were assuming you

POOR ORIGINAL
886169

1 would need to leave in the McGuire pool?

2 A Yes, I believe there is.

3 To actually look at it and come up with an
4 exact picture the way I just have for the Oconee pool, I would
5 have to take a look at the specific racks again, but I can
6 explain to you the distinction. It might be easier-- I have
7 a small diagram that was furnished by Duke to me, to show
8 me exactly what the Oconee pool looked like. It may be
9 easier to explain it if you were looking at it, rather than
10 me trying to draw a verbal picture.

11 MR. ROISMAN: Let's mark it as an exhibit,
12 Mr. Chairman.

13 I know what the next Staff exhibit number is, but
14 do you have any problem with this little chart as a Staff
15 exhibit? It would be Number 24. Otherwise I'd have to go
16 to NRDC Exhibit Number 5,000, I guess.

17 MR. KETCHEN: Okay.

18 CHAIRMAN MILLER: It would be 24, I think.

19 MR. KETCHEN: You recall yesterday I identified
20 the errata sheet I passed out as 24, but if you want to
21 scratch that --

22 MR. ROISMAN: Well, all right, let's call this 25.
23 Can I take a look at that while you're looking at
24 it?

25 (Mr. Roisman inspecting document.)

POOR ORIGINAL

VEE/eb17

MR. ROISMAN: Mr. Chairman, can we mark this one sheet of paper as Staff Exhibit Number 25 for identification?

CHAIRMAN MILLER: Yes, it will be so marked.

(Whereupon, the document referred to was marked as Staff Exhibit 25 for identification.)

Landon 4

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

POOR ORIGINAL
886171

1 CHAIRMAN MILLER: We haven't seen Exhibit 24, which
2 you identified as the errata sheet, have we?

3 MR. KETCHEN: I believe I passed out copies last --

4 CHAIRMAN MILLER: That was additional testimony.

5 MR. ROISMAN: Well, there was, this morning, Mr.
6 Chairman, passed out at least to the parties --

7 MR. KETCHEN: At the close of the session last
8 night, I thought I did give you the document. If I didn't,
9 I'll now provide you with copies.

10 CHAIRMAN MILLER: I guess we don't have it. That's
11 all right. I just want to keep the exhibits straight.

12 Now, Mr. Roisman is showing Exhibit 25, which has
13 just been marked, to the witness.

14 BY MR. ROISMAN:

15 Q Now, Staff Exhibit 25, is that something you
16 prepared, or someone else prepared for you?

17 A (Witness Spitalny) This was prepared by somebody
18 else.

19 Q Who prepared it?

20 A Mr. Snead.

21 Q Would you just tell me, what does it purport to
22 show?

23 A Basically, it shows a top view of the modules that
24 would be seen if you were looking down on top of the spent
25 fuel pool of the Occanee 3 pool. The exhibit also shows a side

1 view of one of those modules.

2 Q Okay.

3 Now, can you explain to me, by looking at this,
4 what it is you think that would require you to leave more
5 open space in the Ocone 3 pool to rerack it with poison
6 racks, assuming you are going to rerack it wet, than you
7 imagine would be needed to retain in the McGuire unit 1 pool
8 if you were going to rerack it wet with spent fuel in it?

9 A My assumption that I made for the McGuire unit 1
10 pool is one that I made in most rerecking situations. I
11 usually look at the number 50 percent, roughly, to give an
12 idea of what we require to accomplish rerecking. 50 percent
13 of McGuire would be the storage of 250 assemblies, and usually,
14 give or take a few, the real criteria is that any diver that
15 is in the pool must stay a distance of 10 feet from any fuel.

16 So normally somewhere in that area you can go
17 down and operate.

18 Now, where we run into a problem here -- and this
19 is because of looking at the specifics -- what I was trying
20 to say, basically, is you have 10 modules. Each are 6 x 8
21 feet.

22 Q I'm sorry. You have 10 modules. Where?

23 A In the spent fuel pool.

24 Q Oh? I'm trying to get it clear for the record.

25 I can see what you're saying there, but --

POOR ORIGINAL

886173

1 A In the Oconee 3 spent fuel pool.

2 Q All right.

3 A As I explained earlier, two of these modules are
4 welded together. This is one (indicating on the exhibit)
5 and another (indicating on the exhibit.)

6 They're welded together and put down as a unit
7 into the pool.

8 Q All right. So there are five at this point, five
9 units, made up of two modules each?

10 A That's correct.

11 To look at a side view of that would be this
12 lower picture. This would be one module, which is welded to
13 the second module. These are upright canisters which receive
14 the fuel.

15 Q Okay.

16 A That would be a side view of the canister.

17 Q All right. So the thing that holds the two modules
18 together that make up one unit is this channel that you
19 referred us to that runs across the bottom of the modules?

20 A That's correct, across the width.

21 Q All right.

22 A Now, the requirement of having to stay 10 feet
23 from the fuel assemblies is, if you were to send down a diver
24 in one corner of the pool to, for example, remove this
25 particular rack or set of modules, you need 10 feet this way

1 to stay away from any fuel.

2 Q I understand.

3 A There's not 10 feet between these modules.

4 Q How much space is there between the modules?

5 A I guess I don't know, for certain.

6 Basically, what we did is we communicated. I
7 asked questions and they responded. They had said that the
8 reason they were limiting it is because of working space and
9 the requirement to maintain 10 feet. By having fuel in this
10 module it would not be possible to have a distance where the
11 divers would have to work and get in. In other words, they
12 wouldn't be able to stand on top of this module. They'd be
13 standing here to work on this module, and it's not possible
14 to have fuel here and maintain a distance of 10 feet to where
15 the diver would be.

16 So it's necessary to remove fuel from this area
17 to allow the required separation distance.

18 MR. ROISMAN: Mr. Chairman, earlier I had sort of
19 made the point that I thought the information that we're now
20 getting from Mr. Spitalny could be very important.

21 I guess the question I want to ask the Board --
22 and maybe you're going to say, "We don't invite your opinions,
23 Mr. Roisman," is whether the Board feels, as I'm inclined to
24 feel, that it's sufficiently important that it ought to be
25 laid out in a piece of testimony.

POOR ORIGINAL

886175

wal 5

1 What I'm seeing here -- and I'll show the Board,
2 so you'll have some idea -- what I'm seeing here is a chart
3 in which, on the upper part, we're looking at an overview,
4 looking down on the modules in the units. And the question
5 is: These units apparently are six feet by eight feet in
6 size. If you fill up three of them and want to work on the
7 furthest of the remaining two, do you or don't you get ten
8 feet between the edge of number 3 and the working part where
9 you are? That has to do with exactly what the number of feet
10 are between each of the units. It has to do with physically
11 where this person has to stand to do with work when they're
12 down there.

13 The addition of one additional module sounds like
14 it gives you something in the neighborhood of about 100
15 additional fuel assemblies that you could leave in the pool,
16 that pool having close to 500 capacity.

17 My question is: If I'm right what it's important,
18 100 fuel assemblies might give you as much as two additional
19 discharges from Oconee-3, is it going to be necessary to have
20 this diagram done on a piece of paper that we can all look
21 at, with the feet marked off so we can test the accuracy of
22 the assumption that you have to have only two units filled
23 rather than three?

24 If so, this isn't going to do it.

25 DR. LUEBKE: I would be inclined to add a further

POOR ORIGINAL
886176

1 thing, because I would imagine it's time and distance. In
2 other words, if it's eight feet he works fewer hours or
3 minutes, and if it's twelve feet he works more hours or
4 minutes. So there's an additional discussion I could see that
5 would be beneficial.

6 CHAIRMAN MILLER: I believe, yes, we would like
7 to have it done, not necessarily more elaborately, but in
8 more detail. And I think we'd also like to have some testimony
9 from somebody who's familiar with the work as it's being
10 done on site, rather than doing it be personnel who are not
11 familiar with the actual performance.

12 MR. ROISMAN: Mr. Chairman, would it then be
13 appropriate procedure for me to suggest that I simply suspend
14 at this moment with Mr. Spitalny, and at the next break
15 attempt to discuss with Mr. McGarry and Mr. Ketchen what
16 might be a supplemental piece of testimony to come in at the
17 hearings starting September 10, and advise the Board of what
18 we think ought to go in and then you can advise us if you
19 think there's more that ought to go in.

20 DR. LUEBKE: Yes, indeed. I have another question
21 which is, as I listen to Mr. Spitalny, is it correct I might
22 have the idea that it is physically mechanically more diffi-
23 cult to put in poison racks than it is stainless steel racks,
24 with divers, and welding, and cutting -- and the mechanics of--

25 WITNESS SPITALNY: No, that's not normally the

686177

POOR ORIGINAL

1 case.

2 The thing that makes the difference in this
3 situation was the installation of these particular racks.

4 DR. LUEBKE: Which is different from other
5 installations around the country?

6 WITNESS SPITALNY: Presently, yes. Presently
7 there's an easier method of installing racks. These were the
8 first set of free-standing racks that were employed. They
9 were done a number of years ago.

10 DR. LUEBKE: That had better be elaborated on in
11 this new testimony that we're talking about, so there's
12 more understanding of how we got to the place where we are.

13 WITNESS SPITALNY: It's a unique position. This
14 method of installation has not been used anywhere else, as
15 far as we know. So it's because of that ---

16 DR. LUEBKE: But given that situation, then,
17 poison racks are mechanically just as hard to install or just
18 as easy to install as stainless steel racks?

19 WITNESS SPITALNY: Yes, assuming the removal of
20 racks. That's where the problem comes in here.

21 DR. LUEBKE: That makes me wonder why this
22 application here, which has recently been approved, came in
23 for stainless steel racks instead of poison racks, if poison
24 racks are just as easy to put in.

25 WITNESS SPITALNY: Well, there are a couple things

POOR ORIGINAL

386178

1 to consider. At that point it's possible, at the time they
2 were negotiating to receive the stainless steel racks, that
3 they may not have been able to receive poison racks in that
4 time frame in which they had a default position, and said
5 we'd better use stainless steel because we're running out of
6 room.

7 And it's also possible that at the time they
8 were negotiating the contract they still had the problems
9 with poison racks that have kind of gone away.

10 DR. LUEBKE: But that was some time ago. We
11 might have a discussion of how it is next week.

12 WITNESS SPITALNY: Well, things have changed.
13 I don't know how -- there are a number of considerations.

14 MR. ROISMAN: I take it that would be one of
15 the things you would like to have addressed?

16 DR. LUEBKE: Yes.

17 CHAIRMAN MILLER: I think we'd better suspend
18 that line of interrogati at this point, because it is
19 apparent that the Board does deem it significant and we would
20 like to have a more detailed study made on some of this
21 additional information that's been described. Mr. Spitalny
22 may be able to assist in the preparation of that. We'll
23 take it up in September.

24 MR. ROISMAN: All right, Mr. Chairman, then I
25 guess at this point Mr. Spitalny and Mr. Roberts could step

086179
POOR ORIGINAL

1 down and we could go ahead with what Mr. Ketchen proposed,
2 which is to get the rest of Mr. Nash's testimony and put Mr.
3 Batiglio on the stand and continue with cross.

4 CHAIRMAN MILLER: Are there any further questions
5 now of Mr. Spitalny?

6 MR. KETCHEN: Well, there was another calculation.
7 Is there an outstanding calculation to be done that you asked
8 about earlier?

9 MR. ROISMAN: I had asked him for a calculation
10 connected with this question in terms of the data on which
11 the Applicant, assuming he couldn't do the underwater reracking
12 at Oconee Unit Number 3 -- I believe his testimony had been
13 if you couldn't do it, then you could never rerack Oconee
14 Number 3 with poison racks, without either offsite shipment
15 or the building of an independent spent fuel storage facility
16 at the site, or something beyond just a transshipment on site.
17 And I asked him what date that would happen.

18 But that, I think, ties into -- and I would
19 expect in our discussions at the break that I would take care
20 that I would want answered that, in the context of an under-
21 standing exactly what it is about Oconee Unit 3 that makes it
22 unique, and how much that creates problems.

23 So it could all be answered at that time. He
24 said he'd have to take some time to answer that.

25 MR. KETCHEN: I just wanted to understand what

POOR ORIGINAL
686180

1 his understanding is of what he is supposed to do. There
2 was an additional calculation that had to be made.

3 MR. ROISMAN: I want it to be clear on the record.
4 I don't think we -- you and I, much less Mr. McGarry, have
5 an understanding yet.

6 What has happened is that the Board has said, as
7 I understand it, that at this point in time it would be
8 helpful for us to make a suggestion to the Board of what Mr.
9 Spitalny and perhaps an Applicant witness might testify to at
10 the September hearing dealing with this question of, in
11 effect, the feasibility of reracking with poison racks Unit
12 3 at Oconee.

13 We'll discuss that and see if we can come to an
14 understanding and report to the Board. Dr. Luebke will tell
15 us all the things we didn't think about that he'd like to
16 have dealt with, and we will then have a description of what
17 has to be testified to in September.

18 Do I understand the Board correctly?

19 CHAIRMAN MILLER: I think that's correct, yes.

20 MR. KETCHEN: What I'm worried about, Mr. Chairman,
21 is -- I'll participate in this process, but it's not our
22 theory of the case, anyway. As you recall, we have a little
23 more narrow scope of theory.

24 I guess I object to the process where we get into
25 a situation where a question is asked of a witness, "Have you

686181
POOR ORIGINAL

1 done a calculation?" He hasn't done a calculation.

2 I'm frankly willing to go that answer if it's a
3 simple calculation that can help out and get us through the
4 process, fine. But when that calculation leads into consulting
5 work and needs additional testimony to be held over until
6 another hearing that was set aside for a different purpose,
7 it just gets into, in my mind, how long does this go? When
8 does it stop?

9 You know, we can just do this forever and ever.
10 That's my concern. And it's sort of in the form of an
11 objection.

12 I'll participate in this process, but I think in
13 the future -- I'll just express my concern about what happens
14 at the next hearing, when an additional request for "Have
15 you done that calculation?" "No." "Can you do it at a
16 break?" And then we go on and on and on. It's that concern
17 that I express. I'll quit there.

18 MR. ROISMAN: Mr. Chairman, let me just be clear,
19 because I don't want to appear to be -- I don't want my
20 position not to be clear.

21 I think that if the Staff does not want to
22 provide the information, we'll leave the record where it's
23 at now, and that that would not disadvantage my client.

24 I believe that if we ultimately prevail on the
25 underlying legal question about the scope of the hearing,

886182

POOR ORIGINAL

1 what will happen is that the hearing will result in a denial
 2 of the application on the ground of inadequate evidence to
 3 sustain the result.

4 I really consider it an advantage to the Staff
 5 to allow the opportunity to fill in this piece of the record.
 6 If they don't want to do it, I'm not trying to force them to
 7 do it, or to compel them to do it, on my own. And I
 8 consider it a question whether Mr. Ketchen wants to gamble
 9 that he'll win on the legal position, and if so, so be it.

10 So I don't want the Board to think that I'm
 11 trying to compel the Staff to do it. I'm offering them the
 12 opportunity to do it if they want to do it.

13 DR. LUEBKE: Excuse me. In which case, Mr.
 14 Roisman, you'll have some more cross-examination if there's
 15 no elaboration of this testimony?

16 MR. ROISMAN: You mean some more cross-examination
 17 for Mr. Spitalny?

18 DR. LUEBKE: Today.

19 MR. ROISMAN: No, my interpretation would be that
 20 Mr. Spitalny does not at this point have available to him
 21 information sufficient to tell us the feasibility of the
 22 poison racking option for Unit 3 at Connee.

23 DR. LUEBKE: Okay.

24 MR. ROISMAN: That the record doesn't contain the
 25 evidence for that, except in Applicant's Exhibit 1, which
 purports to say that it is feasible.

1 WITNESS SPITALNY: I don't know if it is proper,
2 but there was a statement I was going to make, and I refrained
3 from doing it because I thought I was going to have to be
4 responsible to write some testimony. If I'm not going to
5 write testimony, it's my legal position that it would be one
6 other statement that I would have come out with at that time.

7 CHAIRMAN MILLER: Everybody clear?

8 MR. ROISMAN: Yes. He'll give us a little bit
9 bit but he doesn't have to give us a lot is what he testified.

10 CHAIRMAN MILLER: Well I think the parties had
11 better consider what they're going to need for the record.
12 We would expect in the preparation of some of this testimony --
13 we would think the Applicant would be involved, after all,
14 they do have the expertise and they do have some incentive.

15 And the Staff's witnesses, if you leave the
16 testimony where it is now, you're taking a certain risk.
17 If you're prepared to take the risk, do it knowingly.

18 MR. KETCHEN: I'm aware of what they are as well
19 as Mr. Roisman, Mr. Chairman.

20 CHAIRMAN MILLER: In that event, why the Board,
21 being neutral, will abide by the gambling spirit possessed
22 by counsel.

23 MR. KETCHEN: It wasn't necessarily with this
24 instance, it was with the next one after this one. Do you
25 see what I mean? I said I would participate in this one at

336184
POOR ORIGINAL

1 the break and with Mr. Roisman as to the calculation.

2 But at the September hearing or in this hearing
3 when it comes up again, did you do this, no, I didn't, and
4 okay over a break you do it. And then we get into another
5 hearing in October and, you know, it just goes on and on and
6 on. At some time, we will take the risk and say let's
7 close the record, we'll get your decision and we'll deal with
8 it however it comes out.

9 CHAIRMAN MILLER: Tell us when you reach that
10 point.

11 MR. ROISMAN: I don't understand why Mr. Ketchen
12 is so convinced that the evidence cascade plan is a reality
13 but he doesn't have the same confidence about the spent fuel
14 cascade plan.

15 CHAIRMAN MILLER: One man's cascade may be another
16 man's waterfall, I don't know.

17 Let's leave it there.

18 MR. ROISMAN: Why don't we let them off subject
19 to possible recall and go ahead with -- I'm ready to go ahead
20 with Mr. Nash.

21 CHAIRMAN MILLER: Any objection to this by
22 anyone?

23 MR. RILEY: Mr. Chairman, if I may, I would like to
24 introduce one consideration for Mr. Spitalny, whatever the
25 course of events.

886185

POOR ORIGINAL

1 BY MR. RILEY:

2 Q The usual approach is to have at least a 10-foot
3 layer of water as shielding for an underwater worker. And
4 this question was touched on before but I don't know if the
5 record resolved it in my judgment.

6 Wouldn't it be possible to introduce a temporary
7 shielding material to supplement the water so that the diver
8 could work with six feet of water between him and the shield
9 and then the adjoining spent fuel, and the material for the
10 shield could be lead. Now as I understood, there was objection
11 to lead but lead, of course, can be covered with an impermeable
12 sheathing like stainless steel.

13 But the question is, is it not possible
14 technologically by a rather simple device to protect the
15 diver in closer quarters?

16 MR. KETCHEN: Mr. Chairman, I'm going to have to
17 object again. This is exactly the type of thing I'm worried
18 about. Mr. Riley's recross is over. He has made a couple
19 of statements that I don't know, frankly, whether they're
20 true or not true. They're now in the record.

21 And even if he was crossing I would object
22 because he didn't ask the witness, he stated it as a fact
23 or maybe he is assuming it.

24 But I think again he's asking -- this whole
25 thing came up on a reserved question by Mr. Roisman after

336186
POOR ORIGINAL

1 recross, redirect was over. And now Mr. Roisman has asked
2 for the calculation and we're now talking about further
3 elaboration of that. Now Mr. Riley has got some concerns he
4 wants addressed.

5 We're just not consultants to Mr. Riley or
6 Mr. Roisman, and I would object to a response to Mr. Riley's
7 question, because his opportunity has passed.

8 CHAIRMAN MILLER: We sustain the objection on the
9 grounds that it is beyond the scope now of recross-examination
10 which is limited narrowly.

11 Anything within that narrow scope, Mr. Riley?

12 MR. RILEY: I apparently misunderstood, Mr.
13 Chairman, I thought that was within the narrow scope.

14 CHAIRMAN MILLER: I don't believe so. Not in
15 view of the developments where we stand now.

16 MR. RILEY: Well my apparent failure to understand
17 is I thought we were addressing the question of how we can
18 make a time period such that it would be possible to avoid
19 transshipment. One of the questions was dealing, as Mr.
20 Spitalny pointed out, with these welded together modules.

21 MR. ROISMAN: Let me just explain.

22 As I understand it, where we are is that that is
23 an issue which, if the parties agree among themselves, will
24 be addressed at a subsequent hearing when Mr. Spitalny has
25 had an opportunity to prepare, and perhaps the Applicant as well,

POOR ORIGINAL
686187

1 a more detailed piece of testimony, at which time, if the
2 allegation continues to be made that the 10-foot space is
3 essential to preserve, it would be open to someone to ask the
4 question Could you get away with less space using some
5 alternative?

6 Do I understand correctly?

7 CHAIRMAN MILLER: That's our understanding, yes.

8 MR. RILEY: With that understanding, I withdraw
9 the question.

10 CHAIRMAN MILLER: You may be excused, gentlemen,
11 thank you.

12 (The witness panel excused.)

13 MR. ROISMAN: Mr. Chairman, excuse me. It's
14 getting out of hand here. I hope I'm not primarily
15 responsible, maybe I am.

16 Those gentlemen who just left the witness stand
17 have some body testimony that had been offered in evidence
18 by the Staff along with Exhibit 17A, which was Mr. Nash's
19 little piece.

20 The cross-examination with regard to all the
21 rest of that with the possible exception of this one thing
22 that Mr. Spitalny is going to provide us with is essentially
23 completed. And if this is not the time, and I'm perfectly
24 willing for it not to be, to make the motion in opposition
25 to the motion into evidence by identifying the portions we

POOR ORIGINAL

1 want struck and why, fine. If it is the time, I'd like to
2 make it and let the Board rule on the admissibility into
3 evidence of Staff Exhibits 13, 15, 16A, 16B, 17B, 17C, 19A,
4 19B, 19C, 19D and 22, with the understanding that 17A
5 wouldn't be offered into evidence until we've completed the
6 cross-examination of Mr. Nash.

7 If we wait until it's all over near the end
8 of the day when maybe nothing more significant than motions
9 to strike were on anybody's mind anyway, we could do it then.
10 I want you to know that was a pending item at the time that we
11 got into this dispute about which panel went when.

12 CHAIRMAN MILLER: Well that is correct. There
13 has been an offer into evidence of the

14 MR. KETCHEN: Yes, sir.

15 CHAIRMAN MILLER: -- written testimony, and it
16 has a number of exhibits, with the exception of Dr. Nash's
17 which is being withheld temporarily until the completion of
18 his cross-examination.

19 Now we have the remnants of the panel, while
20 counsel cogitate at recess as to whether or not they are
21 going to go into certain additional matters in September or
22 not. The Board is not certain whether that impinges upon
23 the proffered testimony, to the extent it can be deferred till
24 then, or whether counsel wish it to be deferred till then, or
25 if counsel wish to have the objections and the offers of

1 proof heard in whole or in part at the present time.

2 So what we're going to do is take a recess for
3 ten minutes. And we would like to have you, then, thrash it
4 out, tell us what you wish. The Board in that respect is at
5 your service. We don't care: we're willing to go either way
6 whichever seems to be both efficient and fair.

7 (Recess)

8 CHAIRMAN MILLER: Come to order, please.

9 I trust counsel have had a chance to be discussing
10 matters since we left off.

11 Can counsel report to the Board what recommendations
12 you have as to the procedure and scheduling as well as any
13 agreement which you might have come to which will reduce
14 our trial time?

15 MR. ROISMAN: Mr. Chairman, two points: one,
16 the Applicant and the Staff advised me that they are not
17 interested in voluntarily putting into evidence any additional
18 material on the question of the feasibility of the reracking
19 with poison racks of Oconee Unit 3 and they're willing to
20 let the record stand where it is.

21 CHAIRMAN MILLER: Very well.

22 MR. ROISMAN: Number two, Mr. Ketchen and I have
23 discussed the question of the order of proof and with the
24 exception of one question that he'd like to ask Mr. Spitalny,
25 we propose to go ahead and cross-examine these two gentlemen

886190

POOR ORIGINAL

1 and Mr. Carter.

2 And at the end of all of that, the Staff will
3 again proffer for introduction into evidence the exhibits
4 that they have testified to and objections will be raised at
5 that time to those proffers.

6 CHAIRMAN MILLER: All right. That's acceptable
7 to the Board, you may proceed.

8 MR. KETCHEN: I have one question, a redirect
9 question based on the present status that I would like to
10 ask Mr. Spitalny, so if I could get him recalled.

11 CHAIRMAN MILLER: You had better come back up
12 here and take your seat briefly, and then probably we can
13 excuse you.

14 MR. MC GARRY: Mr. Chairman, if I may inquire of
15 the Staff, after completion of cross-examination and redirect,
16 will you also intend to move the EIA and the SER into evidence
17 in addition to the documents you referenced?

18 MR. KETCHEN: Yes, and the errata sheet. Two
19 errata sheets.

20 CHAIRMAN MILLER: We'll probably accept those.

21 MR. KETCHEN: Mr. Chairman, I would like to be
22 permitted to lead a little bit, if I can.

23 CHAIRMAN MILLER: Go ahead. If it isn't too
24 violent, we'll let you go ahead.

25 MR. KETCHEN: I'd like to get the question out

POOR ORIGINAL

686131

1 based on the questions Mr. Roisman was asking and having this
2 witness -- he was going to answer or volunteer a response
3 to Mr. Roisman's question or request for the additional
4 evaluation. The question is in the area of does it change
5 your current evaluation.

6 CHAIRMAN MILLER: Are you asking him?

7 MR. KETCHEN: That's what I'm asking.

8 CHAIRMAN MILLER: Go ahead.

9 Whereupon,

10 BRETT S. SPITALNY

11 resumed the stand as a witness on behalf of the Regulatory Staff
12 and, having been previously duly sworn, testified further
13 as follows:

14 FURTHER REDIRECT EXAMINATION

15 BY MR. KETCHEN:

16 Q Mr. Spitalny, would these additional exercises
17 and evaluations change your testimony in any way?

18 And if I may ask the second question: if so,
19 how?

20 A (Witness Spitalny) No, it does not change any of the
21 testimony that has been given or anything that has been
22 stated.

23 A point that I wanted to bring out was that we
24 have focused very much on the use of poison racks and the
25 dates of when we would possibly be able to install poison

36192
POOR ORIGINAL

1 racks.

2 And the point that I think is important to
3 remember at this point and what the Staff's position is is
4 that our evaluation is independent of the dates at this point.
5 Our evaluation stops when we have determined what the impacts
6 are and when we have determined what the costs related to the
7 alternative is.

8 I have stated in testimony and numerous times
9 in response to questions that the use of poison racks, it
10 is a good idea. The point to remember is that the impacts
11 from transshipment are insignificant in that transshipment is
12 also a good idea.

13 And the drill that we may go through in trying
14 to move the date up or back or whatever or try and accomodate
15 one or two more discharges will have no effect at all on the
16 evaluation or the impacts of any of this.

17 So I think it's important to remember the Staff's
18 position is not based on timeliness.

19 CHAIRMAN MILLER: Anything further?

20 MR. KETCHEN: Nothing further.

21 CHAIRMAN MILLER: Mr. Roisman?

22 FURTHER RECROSS-EXAMINATION

23 B BY MR. ROISMAN:

24 Q How do you know before you've done the more
25 detailed analysis that we talked about doing that it wouldn't

POOR ORIGINAL
886153

1
2 change the consequences or the results or the conclusions that
3 you've reached?

4 A Well, we have looked at the
5 possibility of reracking. We have looked at the costs of the
6 reracks and the impacts from that and determined that
7 basically the alternatives, if we compared the poison racks
8 to that of transshipment, are very much one and the same.
9 And we have looked at it even beyond these 300 assemblies and
10 drawn the conclusion that it's insignificant either way.
11 Both alternatives in my mind, and I believe it would be
12 the Staff's mind, are acceptable.

13 Q But as I understood, and maybe I misunderstood
14 what Mr. Ketchen was asking you, I thought he had asked you
15 whether, if you did the more detailed analysis, it would
16 change your conclusions as to when and how reracking of the
17 Oconee Unit 3 pool could take place.

18 Were you telling him that it wouldn't change
19 those conclusions or couldn't change those conclusions, or
20 were you telling him that it couldn't change this ultimate
21 conclusion that you just told me about?

22 A Well you've named three sets of conclusions,
23 I guess. And what I'm trying to say is that I don't believe
24 the timing of the poison rack installation would affect the
25 overall conclusions that the Staff has come to.

Q Let me frame the question differently so we don't

POOR ORIGINAL
686194

agbl2 1 do it in reference to Mr. Ketchen.

2 Do you remember just before the break we discussed ---
3 and the Board was involved in the discussion and Dr. Luebke
4 added in some points -- a much more detailed look at the
5 feasibility and timing of a reracking of the Oconee Unit
6 Number 3 pool with poison racks, particularly wet. Do you
7 remember that discussion?

8 A Yes, I do.

9 Q And that prior to that discussion you had
10 testified to your conclusions based on some discussions with
11 the Applicant and some work that you did during a lunch break
12 as to when that time would be, what its difficulties would be,
13 why you needed to keep this many spaces open and why you
14 didn't -- all those points. Do you remember that piece of
15 testimony?

16 A Yes, I do.

17 Q My question to you is, if you did the more detailed
18 analysis that you talked about just before the break, are
19 you saying that you do not believe that it would change the
20 conclusions that you have given in the immediately preceding
21 testimony about the timing and difficulties of reracking the
22 Oconee Unit Number 3 pool with poison racks?

23 A I believe I understand you.

24 The difficulty would still remain. The timing
25 might change with regard to the dates that I spoke of, in that

886195

POOR ORIGINAL

1 if it was able to be shown that we could indeed store an
2 additional 100 assemblies in the Occanee 3 pool, then we might
3 be able to buy some more time. So, in that regard, the dates
4 may fluctuate slightly.

5 The point that I was making here is I felt that
6 I was being asked to perform an analysis which was at this
7 point not really part of my particular --

8 MR. ROISMAN: Can I cut him off, Mr. Chairman?
9 I know what he's going to say, he's said it twice now.

10 CHAIRMAN MILLER: Yes, that's correct. You may.

11 BY MR. ROISMAN:

12 Q I do want to ask you, are you telling me that
13 when you investigated the availability of alternatives for
14 the -- to the proposed action, the feasibility of the alter-
15 native in terms of its timing, when it might be available,
16 didn't enter into the considerations, that all that entered
17 into it was the economic cost and its environmental impacts?
18 Is that your testimony?

19 A Initially we spoke to the timing of it, in the
20 EIA we spoke to the timing of reracking. The timing did not
21 allow for the action to take place, in our minds, at the time
22 we were doing it. In addition to looking at what that timing
23 was, we evaluated the impacts of all the alternatives.

24 I think if when we were evaluating it, if it was
25 clear and there was evidence that the Occanee pools could be

POOR ORIGINAL

1 reracked and timeliness was not a concern, I think the
2 conclusion of the document, the Environmental Impact Appraisal,
3 may have read that there were two acceptable solutions to
4 the immediate shortfall of storage space at the Oconee pools,
5 one being reracking, the other transshipment.

6 Q What kind of reracking do you mean when you use
7 the term?

8 A It could have been either/or, I'm not making
9 a distinction.

10 Q All right.

11 A The way the conclusion did read was that we felt
12 there were two viable solutions, however, because of timeli-
13 ness, one seemed to clearly outweigh the other, again because
14 of the timeliness. But we have no objections either way.

15 The point that we brought out at that time and
16 that I tried to make is that we just have found nothing wrong
17 with the transshipment, so that our overall conclusion
18 irrespective of the timing of the reracking is still that
19 transshipment is acceptable.

20 Q Just for the record, you were wrong in your
21 initial assumption that the stainless steel reracking couldn't
22 timely be available for the Applicant, were you not?

23 A We were wrong in that it has been able to be
24 accomplished. There were some things that led to that
25 decision which has been discussed previously.

POOR ORIGINAL

1 Q I understand.

2 MR. ROISMAN: I'm ready to go on with Mr. Nash
3 and Mr. Pittiglio.

4 CHAIRMAN MILLER: All right. I assume that's
5 the conclusion, then, of Mr. Spitalny's testimony?

6 You may step down. Thank you, Mr. Spitalny.

7 (The witness excused.)

8 Whereupon,

9 CLAYTON PITTIGLIO

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

13 Whereupon,

14 DARREL A. NASH

15 resumed the stand as a witness on behalf of the Regulatory Staff,
16 and, having been previously duly sworn, testified further
17 as follows.

18 CHAIRMAN MILLER: You may inquire.

19 MR. KETCHEN: Mr. Chairman, if I may at this time,
20 I would like to identify a document, the Testimony of
21 Darrel A. Nash. It consists of five pages. I would
22 like to have that marked for identification as Staff
23 Number 26A.

24 This document was furnished to the parties and
25 the Board by letter of July 20, 1979.

POOR ORIGIN
886138

1 CHAIRMAN MILLER: Very well. The document may be
2 marked Staff Exhibit 26A for identification.

3 (Whereupon, the document
4 previously referred to as
5 Staff Exhibit 26A was
6 marked for identification.)

7 MR. KETCHEN: Another document that I handed
8 out early today, and this document was prepared at the request
9 of Mr. Roisman, not totally at his request but by agreement
10 or stipulation at a bench conference, I believe, Monday
11 wherein he indicated that his preference would be to have
12 any corrections made by a document rather than by having
13 the witness do it orally. And we did that.

14 The document I will identify as a two-page
15 document. It indicates page four changed, at the top right-
16 hand corner it has the date 8/8/79. It's a two-page document.
17 It starts out with the question:

18 "What are the cost comparisons of
19 building an IS/SI at Oconee versus other
20 feasible means of handling the Oconee spent
21 fuel?"

22 With respect to that stipulation that -- well,
23 this document I would like to have marked as 26B for
24 identification.

25 CHAIRMAN MILLER: It may be so marked.

1 (Whereupon, the document
2 previously referred to as
3 Staff Exhibit 26B was
4 marked for identification.)

5 MR. KETCHEN: If I may just indicate for the
6 record, based on the stipulation, the document identified as
7 Staff Exhibit Number 26B is designed to replace the material
8 starting at the bottom of page three of Staff Number 26A
9 and continuing through page four. 26B would substitute for
10 that material in 26A.

11 CHAIRMAN MILLER: In other words, it's the
12 testimony of Dr. Nash, is that what it purports to be?

13 MR. KETCHEN: Yes, it is, it's additional testi-
14 mony of Dr. Nash.

15 CHAIRMAN MILLER: So Exhibit 26B then supercedes
16 the existing pages four and five?

17 MR. KETCHEN: No, sir. It supercedes four, page
18 four only, and the bottom -- or the last question and answer
19 on page three starting with:

20 "What are the cost comparisons of
21 building an ISFSI?"

22 CHAIRMAN MILLER: All right. It supercedes all
23 the last question and answer on page three of Dr. Nash's
24 testimony, is that right?

25 MR. KETCHEN: I thought you said page three.

POOR ORIGINAL

686200

1 CHAIRMAN MILLER: I said the last question and
2 answer on page three is superceded.

3 MR. KETCHEN: That's correct so far.

4 CHAIRMAN MILLER: And in addition, it supercedes
5 how much of page four of the same testimony?

6 MR. KETCHEN: The entire page four.

7 CHAIRMAN MILLER: All right. Then page five
8 remains unchanged, is that it?

9 MR. KETCHEN: At this time, yes, sir.

10 CHAIRMAN MILLER: Well at this time, what does
11 that mean?

12 MR. KETCHEN: Well there's one additional
13 correction.

14 CHAIRMAN MILLER: I see. Okay.

15 MR. KETCHEN: It's a minor correction I'd like
16 the witness to make.

17 CHAIRMAN MILLER: Very well. We have then
18 marked, you may proceed.

19 MR. KETCHEN: Mr. Chairman, I have a document
20 entitled "Testimony of Clayton L. Pittiglio, Jr.," and
21 attached to that document as I filed it is a document
22 entitled, "Statement of Professional Qualifications of
23 Clayton L. Pittiglio, Jr."

24 The first document, "Testimony of Clayton L.
25 Pittiglio, Jr.," has a cover page and five pages of testimony

POOR ORIGINAL

856201

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

agbl9

that will be proffered. And then the attached document is a two-page document. I would like those to be marked respectively as Staff exhibit for identification 27A -- the testimony 27A, and the professional qualifications as 27B for identification.

And the parties have been furnished the documents, Staff 26 and 27, and I have given the Reporter, or I will provide the Reporter with the appropriate number of copies so that he can have them bound into the record.

CHAIRMAN MILLER: All right. The documents will be marked for identification as indicated.

(Whereupon, the documents previously referred to as Staff Exhibits 26A and B and 27A and B were marked for identification.)

CHAIRMAN MILLER: You may proceed.

DIRECT EXAMINATION

BY MR. KETCHEN:

Q Mr. Pittiglio, do you have a copy of your testimony before you?

A (Witness Pittiglio) Yes, I do.

Q And I'll talk about 27A and 27B, if I may.

Do you have any corrections, additions or modifications to either number 27A or 27B?

886202

POOR ORIGINAL

agb16

1

A No, I do not.

2

Q And Mr. Pittiglio, do you adopt both 27A and

3

27B as part of your testimony in this case?

4

A Yes, I do.

5

Q And it's true and correct to the best of your

6

knowledge?

7

A Yes, it is.

8

B1

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

POOR ORIGINAL

b2 ebl 1 MR. KETCHEN: Mr. Chairman, I'm going to go ahead
2 and make the proffer of Dr. Nash's testimony. I would just
3 point out that Dr. Nash was available-- Maybe I could have
4 some advice on how to proceed.

5 I would like to point out that Mr. Pittiglio has
6 not been voir dire. I don't know whether--

7 CHAIRMAN MILLER: Well, let's see if-- Does any
8 Counsel wish to interrogate on voir dire Dr. Pittiglio?

9 MR. ROISMAN: No, Mr. Chairman.

10 CHAIRMAN MILLER: All right, the qualifications
11 then presently are as stated in your exhibit for identifica-
12 tion 27-B.

13 You may proceed.

L,380 14 BY MR. KETCHEN:

15 Q Dr. Nash, do you have available to you copies of
16 Staff Exhibits for identification Numbers 26-A and 26-B?

17 A (Witness Nash) I don't have a copy of 26-B before
18 me.

19 (Document handed to the witness.)

20 Q Do you now have that 26-B?

21 A Yes, I do.

22 Q Dr. Nash, do you have any additional corrections
23 to your testimony, either to 26-A or 26-B for identification?

24 A I have one additional correction on Exhibit 26-A
25 on page 5.

POOR ORIGINAL

686204

1 Q Will you make that correction at this time, please?

2 A In the answer, about midway through that answer
3 there's a figure in parenthesis which reads 13 years. That
4 should be changed to "about 8-1/2 years."

5 That completes the corrections.

6 Q Dr. Nash, as corrected, do you adopt 26-A and
7 26-B as part of your testimony in this case?

8 A Yes, I do.

9 Q And it's true and correct to the best of your
10 knowledge?

11 A That is correct.

12 MR. KETCHEN: Mr. Chairman, before I proffer the
13 testimony, I would like to make one comment, just to preserve
14 the Staff's theory of the case.

15 This testimony is offered to make sure the record
16 is complete, at least insofar as the Staff is concerned, about
17 information that has been brought out during the course of
18 the proceeding. As we know, there were questions about the
19 scope and the Staff, by sponsoring this testimony, does not
20 intend to give up its legal position which it will argue at
21 the appropriate time in proposed findings of fact and
22 conclusions of law which it will submit.

23 Nevertheless, there was quite a bit of information
24 brought out in the proceeding that we are constrained to
25 make sure the record, in our view, has full information.

POOR ORIGINAL

656205

RE/eh3 1 What we are really trying to say, boiling it down,
2 is we think it is beyond the scope of the case, but never-
3 theless, we think that if you answer it or rebut it that
4 we'd correct the record by doing so. And that's the purpose
5 of Dr. Nash's testimony, and Mr. Pittiglio's testimony.

6 With that preliminary comment, Mr. Chairman, I
7 would like to proffer Staff Exhibits for identification
8 26-A and B and 27-A and B.

9 CHAIRMAN MILLER: Are you offering the witnesses
10 as a panel?

11 MR. KETCHEN: I'm offering the witnesses as a
12 panel. And at this time, that completes my direct examina-
13 tion of this panel, and they're available for cross-
14 examination.

15 CHAIRMAN MILLER: All right.

16 You may cross-examine.

17 MR. ROISMAN: Mr. Chairman, inasmuch as-- Strike
18 that.

19 CROSS-EXAMINATION

20 BY MR. ROISMAN:

21 Q Mr. Nash, we sort of started to get into some
22 of this when you indicated that we were going to start
23 slopping over into other testimony of yours, so feel free
24 now, in terms of answering questions that I ask you, either
25 about the EIA or about your testimony, to put the two

686206

POOR ORIGINAL

1 together in your answer. I may from time to time ask you
2 to tell me, however, when the analysis was done, at the time
3 the EIA was published or since the time of the EIA.

4 For the purposes of the questions I ask you with-
5 out that in it, will you put it all together? All right?

6 Now, Mr. Nash, directing your attention back to
7 the EIA and page 58 where Table 10-1 appears, I think you
8 heard in the last hour or so of discussions between myself
9 and the Board on the one hand and Mr. Spitalny on the other
10 that the timing of a spent fuel handling that involves
11 reracking of Oconee Unit Number 3 could affect whether it
12 would be available as an alternative or not.

13 Am I correct in saying that in doing a proper
14 cost-benefit analysis, one of the things you look to is the
15 availability of the alternative, that it couldn't be con-
16 sidered to be cost beneficial to do something if you
17 couldn't do it for some reason? Is that correct?

18 A (Witness Nash) That's certainly true.

19 Q Did you make an attempt in analyzing alternatives
20 contained in Table 10-1, in doing your review of it, to see
21 whether the options listed there were or were not available?

22 A I didn't go beyond the statements that were in
23 the table.

24 Q In other words, you accepted those statements?

25 A Yes, listed on this benefit column here. There

586207
POOR ORIGINAL

3/eb5 1 are some other notes saying "This is not available," and so
2 forth.

3 Q Okay.

4 If you were attempting to look at Table 10-1 and
5 see has this been properly done, as a cost-benefit analysis
6 specialist, would that look include going back and verifying
7 that the statements that are made that a certain option is
8 or is not available were in fact accurate?

9 A Yes, under the condition that -- or with the
10 additional explanation that, as I indicated in one of the
11 answers this morning, that in doing a cost-benefit analysis,
12 if further investigation is warranted to make a decision,
13 you do that.

14 If decisions can be made without that more in-
15 depth investigation, you may choose to stop at the level
16 that is displayed here.

17 Q All right.

18 But I take it that before you know that you can
19 stop without going further, you must know that the things
20 upon which you rely for your assumption that you need to go
21 no further are themselves reliable. Is that not right?

22 A Well, yes. But I would like to explain something.

23 Q Sure.

24 A At the time that I reviewed this EIA, as I under-
25 stood the course of the investigation, it was mainly between

656278

POOR ORIGINAL

1 transshipment or construction of an independent facility,
2 either construction or use of an independent facility.

3 Maybe I'm jumping to --

4 Q No, you're doing just fine.

5 A Something such as expansion of Oconee, I really
6 didn't look at that option all that closely to see whether
7 that was or was not available at the time.

8 Q It turns out that it was. doesn't it?

9 A It turns out that it was.

10 Q So that to that extent, this cost-benefit analy-
11 sis as it appears in Table 10-1 and as it was when you did
12 your review actually had left out not only a viable alter-
13 native but one in fact that the Applicant has chosen to
14 pursue. Is that not true?

15 A Yes.

16 Q Has that caused you now to look with considerably
17 more care to see whether there might be yet some other
18 alternatives that have been left out that might be viable
19 and economically feasible that aren't included in Table
20 10-1?

21 A No, I have not looked at any other alternatives.
22 My understand'ing of the studies and evidence so far in this
23 case is that the transshipment is an acceptable option. Re-
24 racking and a few other alternatives are also available.
25 We-- Under the part of the CFR that's done for this

POOR ORIGINAL

686209

B/sb7 1 particular case, we don't attempt to do an optimization study
2 to determine which of the alternatives available are the
3 best.

4 This is more looking at acceptable options.

5 Q Am I mistaken, but isn't the purpose of a cost-
6 benefit analysis to find out precisely what you say you
7 don't do, that is, to find out what is best of a group of
8 available options?

9 A The purposes for which the cost-benefit analysis
10 was developed generally -- well, I can say were for evalua-
11 tion of government projects. Shall we do A or B, or neither
12 one? This type of thing.

13 I think that if we confine the narrow purview of
14 cost-benefit analysis to that, then one would say that, you
15 know, that that wasn't completed here.

16 I think you can use techniques of cost-benefit
17 analysis to evaluate alternatives, not necessarily looking
18 for an optimum, in comparing some subset of the available
19 options. It's to that extent that I used cost-benefit
20 analysis.

21 I didn't use it to seek for an optimum.

22 Q But what purpose would the cost-benefit analysis
23 serve if you've got a set of alternatives and they are all
24 equally acceptable, and if I understand what you said your
25 understanding of the CFR regulation was, it was that when

686210
POOR ORIGINAL

WRB/eh8 1 they are all acceptable you don't go on and pick the best.

2 What was the function of the cost-benefit balance?
3 Why did you do it at all? Why did you need it?

4 A Well, what maybe is close to the cost-benefit
5 analysis done in this case was the Staff Exhibit 26-A and B,
6 and the reason for preparing this testimony, if you want to
7 call that a full-blown cost-benefit analysis, was that during
8 the first part of the hearing, I guess even somewhat before
9 that, it became obvious that, at least to me and I think to
10 the Staff, that one of the proposals was an immediate con-
11 struction of an independent facility, and the purpose for
12 preparing this testimony was to make that comparison with
13 another alternative.

14 And almost any other alternative or set of alter-
15 natives would be a lower-cost approach. It's more or less
16 to demonstrate that the time of consideration needs to be
17 taken into account when a comparison of two alternatives
18 such as this were being evaluated.

19 Q Let me test that a second.

20 Isn't it equally true that during the course of
21 the first couple of weeks of this hearing that the option
22 of doing a poison reracking at Cconee was also beginning to
23 appear to be a -- quote -- "viable option" to transshipment,
24 given that the stainless steel reracking had already been
25 approved and was in the process of being done?

696211

POOR ORIGINAL

/ab9 1 Why didn't you prepare testimony to see how the
2 economic balance worked out between poison reracking on the
3 one hand and transshipping 300 spent fuel assemblies on the
4 other?

5 A Well, my understanding is that both of these
6 options would be acceptable for the Staff to recommend or
7 not recommend amendment of the license, and so therefore, a
8 more -- the final step of the cost-benefit analysis would not
9 aid in the decision.

10 Q Isn't an independent spent fuel storage installa-
11 tion also an acceptable alternative for the Staff to recom-
12 mend? Are you aware of any legal problems with such an
13 option?

14 MR. KETCHEN: Objection, Mr. Chairman.

15 CHAIRMAN MILLER: On what basis?

16 MR. KETCHEN: Is he aware of any legal problems
17 He's not a lawyer. There may be some. I don't know whether
18 there are or not.

19 CHAIRMAN MILLER: Well, the question is whether
20 he's aware of any supposed legal problems, not that he him-
21 self is making the analysis as I so interpret the question

22 You understand you're not being asked to be a
23 lawyer and interpret. The inquiry is whether you have heard
24 of any legal problems, whatever they might be.

25 WITNESS NASH: I believe that the ISFSI is also

686212

FOUR ORIGINAL

B/ab10 1 acceptable. While my understanding is that we would not go
2 through a final determination until Duke, what the least-
3 cost alternative is, we want to assure ourselves that we
4 don't require them to accept a higher-cost alternative which
5 doesn't accomplish any environmental or public health and
6 safety goal.

7 And so therefore, we -- the analysis of the ISFSI
8 was done.

9 BY MR. ROISMAN:

10 Q I don't understand. Why isn't that applicable
11 to a spent fuel storage rereacking? It is arguably more
12 expensive if you just look at the per-assembly cost and look
13 at nothing else in the consideration, an arguably more ex-
14 pensive option.

15 Why weren't you concerned at the possibility of
16 forcing them into accepting poison rereacking in lieu of
17 something that was not economically cheaper -- I'm sorry,
18 that was economically cheaper?

19 fls.
20
21
22
23
24
25

POOR ORIGINAL

686213

WRB/wbl 1 A (Witness Nash) I'm not sure I can give an
2 adequate answer to that. I would say that if those two
3 alternatives were being seriously considered, one or the
4 other, then I believe that a cost-benefit analysis between
5 those two, or maybe not a full-blown one but at least a
6 comparison between those two, an in-depth one, should be
7 made.

8 Q Isn't it true, from what you heard in earlier
9 testimony in this case from the applicant's witnesses and
10 some from Mr. Spitalny, that those are two options that are
11 open to the applicant; even if the applicant, if it got
12 approval for transshipment might not use it but would choose
13 to go to poison reracking instead?

14 A Yes, I understand those are options that are open.

15 Q Let's take a look at Staff Exhibit 26A.

16 First of all, let me see if I understand what
17 you've been saying.

18 Did you on your own decide that it would be a good
19 idea to do this comparison of the economic advantages of an
20 ISPSI versus transshipment? Was that a decision you made?

21 A If I recall correctly, I initiated the suggestion,
22 and Staff counsel suggested that I do go ahead and prepare it.

23 Q And was this testimony prepared exclusively by
24 you? I'm talking about 26A.

25 A Yes, it was-- It's totally my responsibility, let's

POOR ORIGINAL

056214

WRB/wb2 1 put it that way. I may have had some assistance.

2 Q Okay. Let's take a look here on page 1 at the
3 bottom of the page and the top of page 2. Do I correctly
4 understand that one of your premises here that sort of under-
5 lies your analysis is the premise that almost always the cost
6 of money exceeds the rate of inflation?

7 A Yes, that is a premise.

8 Q Okay.

9 And that you then go on and, using 8 percent as
10 the rate of inflation, figure out how much more the ISFSI
11 would cost if you built it ten years from now versus building
12 it now, and, comparing that to a figure on the cost of money,
13 you come to the conclusion that it will generally be cost-
14 effective to wait to build it rather than to build it now;
15 is that correct?

16 A Yes, that would be the expectation.

17 Q If it were the case that the cost of building the
18 ISFSI were escalating faster than the normal rate of inflation,
19 would it be possible that your conclusion would be erroneous
20 and that it might be cheaper to build the ISFSI now than to
21 build it later?

22 A It would have to exceed the weighted cost of
23 money.

24 Q I understand.

25 A And in that case that would be correct, that it

E/wb3 1 would be cheaper to do it now.

2 Q Do you have a number that you're using in this
3 analysis for your assumed weighted cost of money?

4 A Yes. That's the 11 percent.

5 Q Okay.

6 Do you know what the rate of escalation of the
7 cost of building nuclear facilities has been over the last
8 five years, and whether it has been at, below, or above the
9 8 percent inflation rate?

10 A Well, I'd have to add a qualification.

11 Q Any way you want to do it.

12 A I rather strongly suspect that if you look at
13 the total cost of the facility it's greater than 8 percent
14 per year.

15 The real problem that one gets into in evaluating
16 costs such as this is that the power plants that are built --
17 that were built five years ago are not the same power plants
18 that are built now. We continually add safety features and,
19 to some extent, add on environmental requirements, and both
20 of these cost conditions are made for the benefit of the
21 public. So you can't attribute this total cost increase just
22 strictly to inflation or even to the escalation experienced
23 in the construction industry of materials, equipment, and
24 so forth. It results to a considerable extent -- and I don't
25 say we don't know how much of an extent, but to a considerable

NR 1/wd4 1 extent in additional protection of the public.

2 Q And that, I take it, could be applicable to an
3 ISFSI just as much as it could be applicable to the building
4 of an entire facility; is that not true?

5 A I wouldn't agree with that. I think that an
6 ISFSI is certainly much less complex than an entire plant.
7 I'm outside my expertise to some extent. But there are much
8 fewer things that can go wrong with a storage facility, spent
9 fuel storage facility. And while there maybe some improve-
10 ments that are required on the part of NRC, or other agencies
11 perhaps, I would not expect those to increase as rapidly as
12 the changes that have occurred in the past few years in an
13 entire power facility.

14 Q But, again, looking at it as you just did, more
15 conceptually than substantively, doesn't the fact that we
16 have essentially no independent spent fuel storage facilities
17 built at all, and, therefore, relatively little experience
18 with the design of them, suggest that their costs may be
19 susceptible to a fair amount of escalation due to the fact
20 that the first few that are built will give us lessons that
21 will relate to the subsequent ones that are built ten years
22 from now, add that might be a counterbalancing factor?

23 A Yes. There could be a counterbalancing factor
24 the other way of the learning involved with construction that
25 would tend to lower costs. I'm not prepared to-- All I can

886217

POOR ORIGINAL

1 say is it could go both ways.

2 Q Are you familiar with the chart in Dr. Bupp's
3 book "Light Water," that shows the learning curves on the
4 construction of nuclear power plants? Do you have that chart
5 in mind? It's sort of reverse hyperbole, with Shippingport
6 very high, Oyster Creek down at the bottom, and then the
7 costs of nuclear plants start back up again fairly dramatical-
8 ly? Have you heard that?

9 A I looked at that book some time ago. I'm trying
10 to recall whether that one corrects for the matter that I
11 described a few minutes ago. I don't think it does. --which
12 is the additional safety and environmental requirements placed
13 on power plants.

14 Q By "corrects" you mean takes out as an irrelevant
15 escalation cost the portion of that attributable to the increas-
16 ed environmental and safety standards.

17 A I wouldn't call them irrelevant. For the purposes
18 of comparing escalation due only to materials and equipment
19 and labor.

20 Q But if we're trying now to evaluate from a cost-
21 benefit analysis, what is the best thing to do in terms of
22 financial investment? Build an independent spent fuel storage
23 facility starting in 1979 or build one starting in 1989?
24 Does it really matter what the source of the escalation is as
25 long as we know that the escalation is going to be there?

POOR ORIGINAL
686218

WFB/wb6 1 Isn't that the critical number, what the escalation
2 of the costs will be? not why?

3 A I think why is important, too. Because if we
4 do conclude, say sometime between now and 1989 that additional
5 safety requirements should be in place, I think this should
6 be built in. And I presume that the NRC would require them
7 either to be put on the facility as it's constructed, if it's
8 constructed later, or perhaps backfitted if the change is
9 serious enough.

10 Q Well, but that touches on an interesting point,
11 doesn't it? In the nuclear reactor area the escalation that
12 has resulted that we talked about before in the costs as a
13 result of environmental and safety standards, what portion
14 of that has resulted in a backfitting cost to plants already
15 built? Most of it? Half of it? Less than half? Do you
16 have any knowledge on that?

17 A May I talk with my panel member here?

18 Q Sure.

19 (The panel conferring.)

30 20 A I'll answer, and you may want to address a similar
21 question to Mr. Pittiglio since I'm interpreting what he
22 said, to some extent.

23 I'm not sure we have full information to answer
24 your question. We've looked at the increase in nuclear
25 power plant, increasing costs of nuclear power plants, and this

686219

POOR ORIGINAL

1 is power plants on line from '69 up through '76. And we
2 looked at the increase in cost of those existing plants, the
3 capital cost of those plants after they were built; in other
4 words, then there had been additional capital additions to
5 the plants. And that turns out to be about 3.7 percent
6 annually from '72 through '76.

7 Q You mean that that's a cost added on to an already
8 completed and operating plant attributable to capital improve-
9 ments?

10 A I'm not sure how much that says about how much of
11 the total additional safety and environmental requirements
12 were actually incorporated into those plants. But it does
13 say that-- I think I would consider it a substantial cost
14 increase in those plants as a result of these backfits.

15 Q But what has been the rate at which the capital
16 costs of nuclear plants has been escalating between -- well,
17 let's take first that time period 1969 through 1976. At
18 what rate was the cost of the plant increasing?

19 A I don't have that figure. I think, again, just
20 looking at the total plant in, say, 1965 and one in 1975, I
21 think it's about 10 percent.

22 Do you have a more precise number?

23 A (Witness Pittiglio) No, I don't have a more
24 precise number on that particular one.

25 Q Are you familiar, for instance, with what's happened

636220

POOR ORIGINAL

RB/wb8 1 in terms of the escalation of the costs of plants under
2 construction from their original estimate to their conclusion?
3 Say, Shoreham? a plant that began its construction in the
4 early seventies and is winding it up around now? Have you
5 looked at any of those numbers? Could you give us any numbers
6 on that?

7 A (Witness Nash) I haven't looked at Shoreham.
8 I have looked at some, but I don't have a figure that I can
9 give you right now.

10 Q All right. That's all right. I don't want you
11 to speculate. It does not help the record.

12 Let's go back to your 8 percent inflation rate.

13 Talking just in terms of the general construction
14 industry and for materials and labor, has the rate that the
15 cost for those items been going up in the construction
16 industry been ahead of the 8 percent inflation, that is,
17 higher, at, or lower than the general inflation rate?

18 A 8 percent is about average for cost increases in
19 the nuclear construction industry.

20 Q I'm sorry?

21 A 8 percent is about what has occurred in the nuclear
22 construction industry.

23 Q I thought just a minute ago you told me it was
24 10 percent.

25 A The 10 percent is-- Okay; I need to clarify that,

SS6221

POOR ORIGINAL

1 then.

2 3 percent is the -- about the rate of increase
3 of materials, equipment and labor, if you take a composite
4 of that. The 10 percent or more is the cost of the plant.
5 And the reason for the difference is that there have been
6 additional requirements put on the plant, increasing their
7 costs over and above just the cost of labor and materials.

8 Q Who did that calculation to determine what
9 percentage of the absolute cost increase for the next
10 generation nuclear plant was attributable to the inflation
11 in the narrow sense of the word, and what portion was attribut-
12 able to more stringent environmental and safety factors?

13 A Well, that hasn't been isolated as precisely
14 as I may have given the impression. The cost escalations
15 in materials and construction-- We have a contractor, the
16 Oak Ridge National Laboratory, that keeps up to date on
17 that. And I believe he uses the Handy Equipment Construction
18 Index--

19 Q I'm sorry; I didn't hear you. The what?

20 A I believe it's the Handy Equipment and Construction
21 Index. --and relies on various reports from the Department
22 of Labor. Those are a couple of sources. And perhaps other
23 sources that he uses to derive the escalation rates.

24 Q Let's see if I understand. Is the process, then,
25 that you can determine by simply looking at available records

686222

POOR ORIGINAL

RE/wb10 1 how much each new nuclear plant is costing than the previous
2 one? Am I right?

3 A Yes.

4 Q And you can get a rate that's going up, let's just
5 say 11 percent over what the previous one did; all right? --just
6 for discussion purposes?

7 Are you saying the way you determine how much of
8 that is attributable to safety and environmental improvements
9 is to take the general inflation rate in construction, and
10 subtract that rate from the rate that the nuclear plant has
11 been going up, and assume that the difference is attributable
12 to environmental and safety upgrading? Is that correct?

13 A Well, that's right. And this latter part that's
14 residual is a matter of some controversy. Various applicants
15 and licensees have blamed it strictly on such things as
16 licensing delays, and so forth, and that that takes the larger
17 portion. Others have argued that it's mainly safety and
18 environmental matters. And so it is a residual which typically
19 happens, and it's not very well understood.

20 Q Well a licensing delay itself would only make for
21 more of the inflation, the base inflation, presumably; isn't
22 that true?

23 A Yes, that's true. It's a little bit-- It's often
24 not easy to determine just what stage of construction they're
25 in, what stage in contracting for services, and so forth.

686223

POOR ORIGINAL

1 Q Let me take you back to the EIA for one second.

2 There is on page 64 of the Environmental Impact
3 Appraisal a statement in response to Commission Factor No. 5,
4 "Would a deferral or severe restriction on this licensing
5 action result in substantial harm to the public interest?"
6 And then a paragraph appears there analyzing it. As I remember,
7 you have a piece of testimony in already that is the subject
8 of some of the discussion of what's the cost of the Oconee
9 units having to be -- their power having to be replaced by
10 something else; is that right?

11 A Yes.

12 Q Now my question to you is: This paragraph, if
13 we are in a situation in which the choice between options,
14 no one option-- Strike the whole thing and let me start it
15 again. I'm sorry.

16 If the transshipment option is not needed in
17 order to prevent the plant from being shut down at this time,
18 and if there are other things that could be done which would
19 prevent the plant from being shut down, then does the measure
20 of the value of doing a transshipment, compared to doing nothing,
21 change substantially from what is set forth here on page 64?

22 A I think I have your question. I would like to
23 read the paragraph.

24 Q Yes. Sure.

25 (The witness reading.)

586224

POOR ORIGINAL

B/7-612 1 A Well, there are more options available now than
2 is stated in this paragraph. There would not be an immediate
3 shutdown of the Oconee units.

4 Q So that it is possible that a number of options
5 might be able to claim the benefit would accrue to them if
6 they could prevent the plants from being shut down when the
7 present reracking space availability has been used up, and
8 they could come on line in time; is that right?

9 A Could I ask you to repeat that?

10 Q Yes. I'm sorry. I think it was a little confusing.
11 What you've got here is a pretty gross number,
12 10^3 dollars per year, as the value of keeping Oconee from
13 being shut down. In the context of the EIA as it was originally
14 written, that was a value which was attributable only to the
15 transshipment option because the assumption was made that it
16 was the only thing that would keep that from happening;
17 am I correct?

18 A Yes.

19 Q That very substantial benefit now would be equally
20 applicable to whatever other options one might use that
21 could also keep Oconee from being shut down in the longer time
22 frame that we've got available; is that correct?

23 A Well, yes, I think so. If you only have two
24 options then you make a comparison between those two. I think
25 if you have two other options, both of which are better than

POOR ORIGINAL
686225

3/wb13 1 this, then you wouldn't want to claim the benefits -- I mean
2 I think the benefit of.... You would compare the benefits of
3 the two options that were closer, rather than the one out
4 here that obviously would not be chosen.

5 Q Okay. But my question then is: If we assume
6 for a moment that the only way that you could prevent the
7 shutdown of Oconee were to build an independent spent fuel
8 storage facility, the cost of building the independent spent
9 fuel storage facility would be less than the benefit of
10 preventing Oconee from being shut down; is that not true?

11 A I'm quite sure that that's-- Yes. Certainly.
12 Yes, it would be correct.

13 Q Okay.

14 Now in your evaluation--

15 CHAIRMAN MILLER: Pardon me. How much is \$10
16 to the eighth power?

17 WITNESS NASH: \$100 million.

18 CHAIRMAN MILLER: I can handle that a little
19 better. Thank you.

20 MR. ROISMAN: I'm sorry, Mr. Chairman. That's
21 the only technical thing I've learned in eight years of
22 licensing hearings, is what the eighth power is.

23 BY MR. ROISMAN:

24 Q Now in looking at the alternatives analyzed in the
25 cost-benefit analysis, isn't it true that one factor that one

POOR ORIGINAL
886226

ought to take into consideration in considering what is the best thing to do now would be whether at some time, to assure that the Oconee plants would not have to be shut down because of lack of spent fuel storage space, you would have to build an independent spent fuel storage facility at the site? If that were the case, wouldn't that be a factor you would need to take into account?

A I'm sorry; I hate to ask you to repeat it, but....

Q Let me take you through it by several steps.

You've heard the testimony from other witnesses to the effect that if you were to rerack with poison racks at Oconee Units 1, 2 and 3, you might be able to extend the spent fuel storage through the middle of 1989, have you not?

A Yes, I have.

Q And that if you were to transship within the Oconee system utilizing existing space for plants that are firmly committed to be built, you might be able to get up into the late 1990's or maybe even early 2000's using transshipment; is that not correct?

A Yes.

Q And that if you made an independent spent fuel storage facility of appropriate size now, you would assuredly be able to have enough space by simply making it large enough to accommodate all the spent fuel that Oconee would discharge without any further licensing actions being required;

POOR ORIGINAL

686227

RB/wb15

is that not correct; through its lifetime?

2 A Yes. And I would like to explain.

3 Q All right.

4 A My understanding is that the time required for
5 construction of the independent facility is something on the
6 order of four to five years. And what you have to be careful
7 of -- and I agree one should attempt to avoid shutting down
8 Oconee because of the shortage of storage space, that you
9 need to assure yourself that five years in the future there's
10 an adequacy of storage space.

11 Q Okay. I understand that you may want to take some
12 of these proposals in combination. My question to you was,

13 Is it true that there is a benefit -- I'm not
14 necessarily saying a benefit that outweighs the cost, but
15 a benefit associated with being able now to take steps which
16 will give you the assurance that you will not have to worry
17 about spent fuel storage problems causing you to shut down
18 the Oconee units through the lifetime of the Oconee plants?

19 A You're asking is there a benefit which you would
20 put on the plus side of the ledger without regard to the full
21 analysis?

22 Q Without regard to the fact that there might be
23 some minusses associated with choosing that also?

24 A Yes. I would agree with that.

25 Q Is there anyplace in the cost-benefit analysis in

POOR ORIGINAL

686228

RB/wbl6 1 the EIA with which you are familiar where an effort has been
2 made to quantify what that benefit would be as a way of off-
3 setting what we know are the anticipated economic costs of
4 building such an independent spent fuel storage facility?

5 A I'm quite sure that that analysis does not appear
6 in the EIA, nor, to my knowledge, in subsequent testimony.
7 I rather suspect that the benefit is rather small.

8 Q Do you have an expert judgment as to your belief
9 that it's small?

10 A I can give you my judgment, I guess.

11 Q Well, you're under oath. Is it a judgment that
12 you feel competent to make?

13 I want you to understand if you tell me Yes, I'm
14 going to ask you all the bases for it.

15 A Okay. Well, I can answer Yes, and I can give you
16 my basis, and you can take them for what they're worth, I
17 guess.

18 Q That's exactly what I want to do. If you want to
19 give me the answer Yes, then give me the basis.

20 A Okay.

21 I would say Yes. And the basis is that my under-
22 standing is that construction of this facility is by -- well,
23 at least by the standards of constructing an entire power
24 plant, rather straightforward, and I don't see any real
25 expectation that a big schedule slippage would occur, say

POOR ORIGINAL
686229

1 during either the licensing or the construction phase.

2 That's my basis for the answer.

3 Q You mean that, therefore, if one had the
4 independent spent fuel storage facility as the only available
5 option, you're saying that you don't see that there would be
6 difficulty in simply starting it sufficiently in advance to
7 have it on line at the appropriate time; is that what you're
8 saying?

9 A Yes.

10 Q But doesn't that answer depend upon your premises
11 as to how early you would know about the availability of
12 the non-independent spent fuel storage options?

13 A Certainly-- Well, I think at that point you
14 wouldn't have to know-- You'd have to have some judgment
15 as to whether there were options to not constructing the
16 facility five years in advance, and calculate such things as
17 pin packing and dry storage and all these kinds of things
18 now, if you have to know, say five years in advance, whether
19 some additional, or some other option is available to the
20 construction of the facility.

21 Q But it is important to keep in mind that what
22 we're talking about a 100-million-dollar-a-year gamble;
23 isn't that true?

24 A That's true. You have to make some judgment
25 when there's reasonable doubt that this option, that maybe

686230

POOR ORIGINAL

B/wb10 1 hasn't entered into this hearing but is forecasted to be
2 available five years in the future, if there's some consider-
3 able doubt that that will be available, yes, I would say --
4 and the only other option is the construction of a facility,
5 then, yes, I would say we should proceed with it.

6 Q Well, to get it down to concrete, let's just take
7 what specifically we have seen happen in the course of this
8 proceeding.

9 You will remember, I think, that in earlier-- Or
10 do you remember that in earlier testimony it was presumed by
11 witnesses for the applicant and the staff that before the
12 spent fuel storage that has been obtained by the reracking of
13 Oconee Units 1, 2 and 3 had been exhausted, it would be
14 possible to apply for, and obtain, a poison reracking of
15 those three units that would permit you to extend the spent
16 fuel storage capabilities on the site to somewhere in the
17 middle of around 1989? Are you familiar with those-- I think
18 most of those discussions happened during the June hearings.

19 A The general time periods that you're describing
20 I would accept.

21 Q And did you hear the testimony only a couple of
22 hours ago by Mr. Spitalny that indicated that upon conducting
23 some more thorough analysis of the feasibility of the rerack-
24 ing, at least at Oconee Unit No. 3, it is possible that,
25 absent the use of transshipment, the reracking of Oconee

686231

POOR ORIGINAL

RE/wb19 Unit No. 3 with poison racks may not now be feasible?

2 A Yes, I heard that.

3 Q And, therefore, is it reasonable to conclude
4 that this area of spent fuel storage may have in it some
5 unpleasant surprises?

6 A Well I would agree with that. The poison racks
7 are not the only option that appears to me to be available.

8 Q I assume you would consider transshipment to be
9 an alternative option?

10 A Yes.

11 Q When did you first start looking at the question
12 of a proposal to transship spent fuel from Oconee to McGuire,
13 roughly?

14 A It was either April or March of 1979. Probably
15 March.

16 Q I'm sorry?

17 A Probably March.

18 Q Did you at that time have any assessment as to
19 the ease or simplicity with which you thought approval for
20 that option might be obtained?

21 A My assessment at that time was that it would not
22 be extremely difficult.

23 Q Is that still your assessment?

24 A I guess I would change my assessment, that it's
25 more difficult than I suspected at that time. --or may be more

POOR ORIGINAL

886232

B/wb20 1 difficult.

2 Q Why do you feel it would not have been a good
3 idea -- or do you feel it would not have been a good idea
4 to prepare, as part of the cost-benefit analysis for this
5 case, an analysis of the judgment of those people who have
6 the expertise on the likely availability and cost of the
7 options which one would hope could come on line to deal with
8 the Oconee spent fuel storage problem as a way of assessing
9 what is the best thing to do now?

10 A Well my assessment at this time is that in spite
11 of perhaps some increased uncertainty that the approval will
12 be granted, I think unless -- you know -- further information
13 to the contrary, I would think this more in-depth analysis --
14 well, I think it would be premature at this time.

15 Q Do we have a chicken and an egg problem here;
16 that is, that if you don't do the analysis before you make
17 the approval, you may make the approval not knowing that you
18 had a better course of action?

19 A I guess I can only state from the Staff viewpoint
20 that we think we have enough information to make our recom-
21 mendation. And I don't know if the Board will agree with that
22 or not.

23 I guess I'm somewhat puzzled. I'm almost thinking
24 you're asking if the Board and the Staff are independent, or
25 something; I'm not sure.

POOR ORIGINAL

Q I'm not going to ask that, because I know the answer already. And so does the Board.

Well, let me put it somewhat differently.

This transshipment proposal provides Oconee with a 300 spent fuel assembly relief valve; is that correct?

A Yes.

Q That calculates out to a certain number of years' worth of leeway.

A Yes.

Q --before the next step has to be taken; is that right?

A Yes.

Q Now are you telling me that if this one is approved you would continue to have a high confidence in the approval of the next one, and that therefore adding spent fuel transshipment on spent fuel transshipment is a sufficiently likely event, then one need not analyze in any greater detail the availability of options of Oconee for the spent fuel storage problem?

A Well, I don't think that the approval of one application necessarily makes the next one that much easier. I would look on them as independent applications, and I wouldn't expect that one approval or disapproval would make the next one that -- you know, change the likelihood of the next one.

686234

POOR ORIGINAL

Well, from the perspective of an effort to find a permanent -- that is, during the lifetime of Oconee -- spent fuel storage solution, would you expect that the benefits and costs, in comparison between an independent spent fuel storage facility at Oconee with a lifetime capability on the one hand versus a lifetime of transshipment from Oconee to McGuire to Catawba to Cherokee to Perkins to whatever, in order to get that, that that cost-benefit comparison there would be different in terms of the relative merits of the two courses of action, and attempting to compare the merits of a 300 spent fuel transfer versus the building of an independent spent fuel storage facility to handle the lifetime discharge of Oconee's fuel?

A Well it would be somewhat different in that you would have to take into account that the reracking at Oconee has been approved and underway or completed, and the other is not approved. And so uncertainty does enter into it.

Q I wasn't even talking about reracking; I was just asking you -- I was trying to find out whether you would have -- Would the difference in benefits and costs between the building of a lifetime capability independent spent fuel storage facility and the transshipment of 300 spent fuel assemblies be different if the comparison were between that same independent spent fuel storage and a lifetime of transshipments from Oconee to the various places that Duke would have for it in

656235

POOR ORIGINAL

their system?

A Let me see if I understand you correctly.

You're saying if you are comparing 300 assemblies put into an independent facility versus doing what with them?

Q No. The independent spent fuel storage facility option that at least NRDC has asked to be considered is not one that's only 300 spent fuel assemblies large, nor necessarily 1500, but, rather, whatever size you need to provide Occanee now, by building it, the assurance that they'll be able to discharge their lifetime spent fuel into it; okay? So that's Option 1. And you can compare that to the option of now deciding to approve transshipment of 300 spent fuel assemblies, and in making that comparison you come with costs and benefits for the two and a balance between them; correct?

A Well, I don't think so, because you're talking about the storage of a few thousand assemblies in one case and 300 in the other.

WB doc 13
nd> .fil

10

21

22

23

24

3

POOR ORIGINAL

686236

Q You mean the comparison wouldn't be fair, but you ask me, can't you?

A I'm not sure what meaning it would have.

Q Well, in the context of this case, as the environmental impact appraisal attempts to do it, isn't that essentially what it does? Doesn't the environmental impact appraisal, on Table 10-1 compare a much larger than 300 spent fuel assemblies ISPSI against transshipping 300 spent fuel assemblies?

A Okay. It does have average cost of the -- per assembly of storing the assemblies.

Q And aren't the average costs derived in one case from a relatively large, 1500 or so, assembly ISPSI, compared to the cost of shipping 300 spent fuel assemblies?

A Well, yes it is. And I'd like to explain that.

When you're looking at average costs . . . well, let me say it this way:

Well, they are average costs. One is a -- and I think you can compare it with some validity, in that the shipment of the 300 assemblies, those costs are going to be incurred at the time the shipment is made, and the cost is not going to change very much except for escalation, and so forth. So that you can keep adding on 300, 500, 5500, whatever it is, and it would still be the same cost per assembly.

In the case of the independent facility, the

1 average cost would drop substantially as you add more
2 assemblies to the facility.

3 Q But wait a second, now. We talked earlier about
4 the escalation caused by environmental and safety considera-
5 tions, right?

6 A Yes.

7 Q We've already seen in this hearing an escalation
8 cost of transshipping as a result of the imposition of an
9 increased safety requirement dealing with the sabotage, isn't
0 that correct?

1 A I'm not certain of that. I'll accept that.

2 Q And, therefore, isn't there reason to believe
3 that the average cost of shipping the spent fuel -- we're
4 looking at the total cost of moving, let's just hypothetically
5 say 2500 spent fuel assemblies by transshipment over a period
6 of the next 30 years, 25 years, versus the average cost of
7 moving them into an already-built and operating independent
8 spent fuel storage facility, the average might be actually
9 much different, mightn't it?

10 A Well, it could be. The cost difference between
11 the two is rather substantial, and I'd be very surprised to
12 see the cost escalation due to additional requirements and
13 whatever make the transshipment equal to, on a lifetime basis,
14 equal to the cost of the independent facility.

15 Q Well, isn't it true that if you had some kind of

16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

1 accident with a spent fuel cask in shipment that produced
2 results as out of line with what you had expected as regards
3 the Three Mile Island accident did in terms of being out of
4 line with what you expected there, you might have a very
5 substantial new cost that would have to be incurred to
6 transship, either because you'd have to redesign the cask or
7 redesign the trucks or redesign the whole process by which
8 you move fuel, spent fuel, from one place to another? And
9 that is a possibility, isn't it?

10 A Well, subject to I'm not sure I'd accept your
11 premise about the surprises at Three Mile Island, but if there
12 was a big surprise with casks, then certainly it's likely
13 that the costs would go up.

14 Q And are you trying to tell me now that you're
15 confident that they really couldn't go up to the per-assembly
16 cost of an independent spent fuel storage facility?

17 A Couldn't is not a -- that's a word I try to
18 avoid, because that's like, "Is it possible?" And, sure, it's
19 possible. But I try to deal in likelihoods.

20 Q Did you go to anybody who is skilled in the areas
21 that might be the source of a possible substantial escalation
22 of costs of transshipment and attempt to get from them some
23 judgment as to whether they thought these costs might
24 escalate substantially over the next 25 years due to supervening
25 events?

POOR ORIGINAL

686239

1 A No, I did not.

2 CHAIRMAN MILLER: All right, we'll take a short
3 recess. How about eight minutes?

4 MR. ROISMAN: Eight and a half?

5 CHAIRMAN MILLER: All right, eight and a half.

6 (Recess.)

7 CHAIRMAN MILLER: Proceed, Mr. Roisman.

8 BY MR. ROISMAN:

9 Q Mr. Nash, in doing a cost-benefit balance, we
10 talked earlier about the time frame being a factor that you
11 would look at, can you explain to me why in this instance
12 the cost-benefit balance done by the Staff doesn't look at
13 the time frame from now to the end of the lifetime of the
14 Occonee plant and measure each alternative or set of alterna-
15 tives to see how best it might deal with that problem?

6 A (Witness Nash) My understanding is that the
7 license application was for this transfer, and so therefore
8 we didn't do the analysis for the entire -- for the handling
9 of the entire fuel discharge.

10 Q Well, would you apply that principle even if it
11 were apparent to you that a proposed action was really
12 nothing more than a first step in a whole series of steps
13 that had a much longer time frame, with much longer numbers
14 of impacts in them?

15 A I guess I would -- my answer is that you do the

686240

POOR ORIGINAL

1 analysis required to make the decision that is before you.
2 the management or handling of the entire fuel discharge was
3 was before the Staff.

4 Q In short, you're saying that your position is that
5 the scope of cost-benefit balance is completely controlled by
6 the scope of what the Applicant asks for?

7 A Well, "completely" is perhaps too strong a word.
8 We evaluate the license or the application as it
9 comes to us, and I think, as Mr. Spitalny testified, he asked
10 the Applicant to look at other alternatives and this kind of
11 thing. This is the kind of thing that the Staff evaluation
12 involves.

13 Q But wasn't that a case of asking for other
14 alternatives to deal with what at that time was believed to
15 be a real short-term problem of getting enough space for spent
16 fuel storage with an impending loss of full-core reserve?

17 A Yes, my understanding is that it was an alternative
18 to the immediate transshipment.

19 Q And it was only incidental that that alternative
20 happened to involve giving an additional spent fuel storage
21 capability beyond the 300 assemblies, isn't that correct?

22 A Yes.

23 Q Now, my question to you is, again, is it your
24 position that when an applicant comes to you with a proposal
25 to do something, even though there are alternatives to that

POOR ORIGINAL

proposal which would do what plus a lot more, and even though the thing they're proposing to do is inevitably going to have to involve something else being done in the future, nonetheless the scope of your cost-benefit balance is controlled by the scope of what they've asked for?

A Well, I rather suspect, you know, the full Staff has looked at this application, and I would do this -- if I were intimately involved from the beginning. You make some judgment as to the consequences of those required follow-up decisions, and if they appear to be of no great consequence then that further probing is not -- would generally not be done.

If follow-up action appeared to -- that would be required -- appeared to be rather serious, of a rather serious nature, particularly to the public, then I think we would be much more concerned with evaluating a full evaluation of that entire chain of events that would have to take place.

Q Well tell me something. In light of the history of this case, why are you placing so much confidence in the ability of the quick look to warn you of the possibility of serious problems?

A Well, my evaluation of what's gone on so far is that the findings of the Staff in the BIA, as subsequently modified, hasn't changed the impacts that are likely to take

POOR ORIGINAL

686242

place. The only change is that I see, you know, the hearing
has gone beyond its original schedule, but I don't -- and
you're asking for really a personal evaluation, I think -- I
don't, in my judgment, there hasn't been any evidence
presented that really would change our estimates of the
likely impacts of this action or the required follow-up
actions.

Q Well, I mean I was thinking of the relatively
quick judgment that the only option available at this time
was transshipment. That judgment appears in Staff's conclu-
sions on page 59 of the EIA.

That one was wrong, wasn't it? We discussed that
before.

A Yes.

Q And then the judgments that were made about the
availability of the poison reracking of Oconee Units 1, 2 and
3, may -- may -- have been in error. We've gotten some new
information on that, right?

A Yes.

Q And yet you're confident in the quick judgments
on other aspects of whether you should have looked at a
broader range of alternatives, or whether you should have
looked at a longer time frame in the cost-benefit balance.
You're not shaken by those events at all, is that correct?

A Well, I think that even in the EIA -- I shouldn't

POOR ORIGINAL
686243

1 say "even in the EIA" -- in the EIA and subsequent Staff
2 testimony, I think we're beyond the phase of quick judgment
3 now. It's quite true that there may be some new information
4 to change our mind, but I think we're beyond quick judgments
5 or quick evaluations.

6 Q Well, but you still are not -- I mean it's still
7 the case that you have not done -- and by "quick judgment,"
8 I mean to contrast that to sort of sitting down and doing an
9 at-your-desk, on-a-piece-of-paper, detailed analysis of such
10 things as whether there really will be a group of viable
11 options available if and when transshipment is approved here,
12 and the transshipment option has been exhausted, whether or
13 not the Oconee Units will face a potential \$100 million a
14 year cost because of the failure to see now warnings about
15 problems and, therefore, something that might thrust the
16 independent spent fuel storage facility solution higher up
17 in terms of its relative benefits compared to other options.

18 MR. KETCHEN: I don't understand. Is there --
19 what's the question? I didn't follow it.

20 BY MR. ROISMAN:

21 Q Did you understand the question?

22 A (Witness Nash) I'm not certain of it. Was the
23 question, "Am I shaken by these subsequent events?"

24 Q No, you had said you really don't think there are
25 any more quick judgments left, and I was saying isn't there

POOR ORIGINAL

1 still essentially quick judgments being used with respect to
2 whether one needs to look in more detail at the potential
3 benefits of some of these longer-term options, versus the
4 potential benefits of this relatively short-term option that
5 is the proposal from the Applicant?

6 A If one were to do that -- first of all, I'm not
7 sure that additional analyses need be made. But if one were
8 to do that, I think a full evaluation would need to be made
9 of what I think you characterized as the permanent solution
10 at Ocoee. I think that that should be gone into in greater
11 detail, as well as -- because of the uncertainties involved
12 there -- as well as uncertainties with other options.

13 Q All right. My question is intended to include
14 that both options, or all the options, would be more
15 thoroughly investigated, not to try to suggest to you that
16 I thought the independent spent fuel one was clearly
17 established as a given benefit, and everything else had to
18 prove its day.

19 A Okay.

20 Q Looking at your testimony, again, you've used
21 for purposes of -- I'm talking now about Staff Exhibit 26A --
22 you've used the number, as the cost for an independent spent
23 fuel storage facility, of -- the 1979 level cost -- of
24 \$5,890,000. What is the source of the cost figure that
25 you used?

POOR ORIGINAL
686245

1 A I believe that's an Applicant estimate in the
2 record.

3 Q And are you using that because you're endorsing
4 it, or are you just using it for illustrative purposes?

5 A Illustrative purposes is a better description.

6 Q Was your choice of the number in any way
7 influenced by the fact that it's the highest one?

8 A No.

9 Q In your -- in Staff Exhibit 26B, which represents
10 the changes that have been made in the analysis, you use as
11 the base ISFSI a 1500-assembly facility, is that correct?

12 A That's correct.

13 Q Why did you choose the 1500-assembly facility?

14 A Well, that was the size of the facility which
15 could be constructed for the \$55-plus million.

16 Q Did you happen to notice that if you had used
17 another one of the examples used by the Applicant, namely
18 for a 3000-unit facility as it appears in Applicant's Exhibit
19 Number 1 on page 2, that the total cost for the 3000-unit
20 facility would have gone up only a very small amount, and the
21 per-additional spent fuel storage space cost would drop
22 dramatically?

23 A Are you referring to the installation of poison
24 racks?

25 Q I'm referring to what is shown on page 2 of

POOR ORIGINAL

Applicant's Exhibit Number 1, under Arabic 1, small letter d.
with a half a paren.

A Yes.

Q That example, listing \$61,032,000 as the cost of
the facility, and a per additional spent fuel storage space
cost of \$20,300.

A I see the figures you're referring to.

Q And I'm asking you, had you been aware of these
figures before I just now pointed them out to you?

A Well, this gets into Mr. Pittiglio's testimony.
And I think the reason for his testimony was that there was
some feeling on our part that the various estimates for the
facilities were --

Q I don't want to cut you off, but I'm going to,
because you're not answering my question.

I just asked you: Were you aware of this
number before?

A Okay. I hadn't gone into -- no, this is -- while
I had looked at this casually, this is the first time I've
been aware of the number.

Q How did you actually select the \$55,390,000
number? Did you ask somebody to give you a number, or did
you actually go back to Applicant's Exhibit Number 1 and try
to find the number in there?

A What I did was, after Mr. Pittiglio had done an

686247

POOR ORIGINAL

11
1 analysis, which he felt was representative of the total cost
2 of that estimate, including indirect costs, then I adopted
3 that number and did my analysis from it.

4 Q So the number comes from Mr. Pittiglio's
5 extrapolation of what he perceived to be the Applicant's
6 number for the building of a 1500-unit spent fuel storage
7 facility, is that correct?

8 A Yes. I'm not sure "perceived" is quite the
9 characterization, but that's correct.

10 Q Discovered?

11 A Analyzes, evaluates.

12 Q I see you two are very good friends.

13 If you had used the \$51,032,000 total cost number
14 given in Applicant's Exhibit number 1 for a 3000 capacity
15 unit, that would have made the relative difference between
16 the independent spent fuel storage facility on the one hand,
17 and transshipment on the other, less great, is that not true?

18 A That is true.

19 Q And by similarly extending the time during which
20 you would have to be considering transshipment, namely, the
21 transshipment of 3000 assemblies rather than 1500, the total
22 cost of the transshipment would also have been a larger
23 number, is that not true?

24 A The total cost of the transshipment?

25 Q Of transshipping 3000 assemblies.

686248

POOR ORIGINAL

1 A Yes.

2 Q So both sides of the equation would have changed
3 towards making the two options closer together in dollar cost,
4 that not true?

5 A If transshipment were the only other alternative
6 evaluated, then that side would not have changed. It would
7 only be -- the only change would be that you'd be getting a
8 lower average cost for the independent facility.

9 Q Wouldn't you get a higher average cost for the
10 spent fuel facility -- I'm sorry -- for the transshipment, as
11 a result of the application of the 3 percent escalation rate?

12 A Well, but then in order to put them on a common
13 time basis -- that is, put them on a present-value basis,
14 the further that cost is in the future, the lower the present
15 value of that cost.

16 Q It escalates at 3 percent, but then you discount
17 it at 11 percent. As a result, it is a lower present-value
18 cost.

19 Q But that statement of yours depends upon your
20 assumption that (1) the cost of money will remain at
21 approximately 11 percent through the period -- is that
22 correct? And (2) that the escalation rate of 3 percent will
23 be seen in backfitting costs associated with an independent
24 spent fuel storage facility today -- strike that. That's not
25 clear. Let me ask it differently.

POOR ORIGINAL
666249

1 The assumption of that differential is only true
2 if all the other statements you made earlier are correct,
3 about the fact that the difference between the 3 percent
4 escalation rate attributable to construction and labor, and
5 the total escalation rate attributable to nuclear construction
6 is based upon costs which would be backfitted on the independent
7 spent fuel storage facility, which is designed and built
8 today.

9 A Are you hypothesizing, or is the topic of your
10 question that this total would result in an escalation greater
11 than 12 percent? Is that the substance of your question?

12 Q I guess the substance of the question is, in
13 trying to compare the cost of building the independent spent
14 fuel storage facility today in today's dollars, the benefit
15 is that you don't subject that facility to escalation due
16 to inflation over the next whatever number of years it is we
17 want to assume. The size of that benefit is affected by
18 what you assume the escalation is going to be.

19 A Yes.

20 Q You've assumed 3 percent. We've discussed whether
21 or not the escalation -- total escalation cost in the nuclear
22 industry is greater than 8 percent. You said you think it
23 is, maybe 10 or more. You've said that you thought the
24 difference between 8 and 10 is attributable, at least to some
25 extent if not completely, to additional environmental and

safety factors.

Those couldn't be applied to the independent spent fuel storage facility built today unless it was a backfitting requirement.

A. Yes.

Q. So in trying to figure out whether you've got an advantage to building that facility today, versus building it in the future, one has to make some assumptions. And I am just trying to make clear and get confirmed that those were the assumptions you were making in reaching that conclusion.

A. I hope I'm answering the question. You asked, at least in part -- my testimony didn't include any backfitting costs on the independent spent fuel storage facility. It only included general inflation. But if I were to make some assumption on backfitting costs of that, that would increase that -- the cost of that option.

Q. Conversely, if we assumed that the cost of building the independent spent fuel storage facility today, versus building it 10 years from now would escalate at faster than 3 percent, then another one of your assumptions that you've used in your Exhibit 26A and B might turn out to make it more cost effective to build today than to build 10 years from now?

A. If the sum of the escalation and other requirements put on the plant were greater than 11 percent per year,

686251

POOR ORIGINAL

1 If the discount rate was 11 percent, then the earlier you
2 built it the better off you are.

3 Q All right.

4 Now, as I correct that the basic changes that have
5 been made in Staff Exhibit 26B from what had been in the
6 original version of this as it appeared in 26A, is it by
7 changing the size of the independent spent fuel storage
8 facility you then change the year that that gives you for
9 when you run out of full core reserve?

10 You then change the number of spent fuel
11 assemblies that will have to be transshipped.

12 You then change the average per-assembly cost of
13 an independent spent fuel storage facility, because you're
14 dividing into the same total cost a smaller number, and you
15 then change the relative cost differential between the
16 independent spent fuel storage facility per-assembly cost on
17 the one hand, and transshipment on the other.

18 And it all traces back to the size of the facility,
19 in other words?

20 A Well, I'd like to say that I discovered some
21 mathematical errors in addition to that that had to be
22 corrected.

23 Q Okay. But, in other words, it's not that it's
24 conceptually different?

25 A No.

POOR ORIGINAL

686252

Q Okay. It didn't appear to be. I just wanted to be sure that it was not.

On page 3 of Staff Exhibit 26A, the question that appears in the middle of the page:

"Are there any other reasons why such an ISFSI should not be built before needed?"

You discuss this basic principle of -- about accelerating technological development, modifications in the design for safety, and so forth.

Would the logic of what you said there apply equally in favor of postponing the building of a nuclear power plant?

MR. MC GARRY: I'll object to that question. I can't see the relation between building a nuclear power plant to the transshipment of spent fuel.

CHAIRMAN MILLER: I suppose it's the reasoning that's being tested.

Can you answer the question, Dr. Nash?

WITNESS NASH: I'll attempt to.

When an application comes in for a nuclear power plant, the Staff, before it recommends going ahead with this, has reached the conclusion that the power plant is needed in some time frame generally covering the time required to construct it.

I think to make it equivalent to the answer I've

686253

POOR ORIGINAL

1 when here, if we thought that there was another -- that it
2 could wait an additional five years beyond the time the
3 applicant said it needed it, I rather suspect we might -- I'm
4 sure we would if we had some reasonable confidence that it
5 wasn't needed for an additional five years -- we would
6 recommend delaying the start of construction until -- just
7 to take advantage of these same factors.

8 BY MR. ROISMAN:

9 Q Why don't you recommend in this case delay in the
10 start of transshipment, then, given that it's not needed right
11 now by the Applicant?

12 A (Witness Nash) I guess I would have to rely on
13 someone who has more technical expertise.

14 My judgment is that there are not a lot of
15 technological options -- developments -- likely to come
16 about with transshipment or necessary, to do so in a safe
17 and cost-effective manner.

18 Again, that answer is for what it's worth. I'm
19 not the expert.

20 Q But you feel you're expert to discuss the factors
21 that you do in the answer to the question we've just been
22 talking about on page 3 of Staff's 26A?

23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

POOR ORIGINAL
686254

1 I Well, I suppose the same general level of exper-
2 ence....

3 Q Would you say we take it for what it's worth?

4 A Yes.

5 Q What about your expertise on the question of the
6 facts discussed at the bottom of page 1 and the top of page
7 2 of Staff Exhibit 26?

8 There I take it you have no question about your
9 being expert to deal with the relative merits of postponing
10 a commitment of resources in 1979 and making the commitment
11 in later years and taking advantage of your assumed 3 per-
12 centage point edge. Is that correct?

13 A Yes, I feel confident I can make that judgment.

14 Q All right.

15 Why would that judgment form the basis for your
16 recommendation that the transshipment not be permitted to
17 begin until it's needed?

18 A Well, the same principle would apply, I think.
19 If you're looking at cost minimization, all other things
20 being equal, costs should not be made until necessary.

21 Q As far as you know, are all other things equal
22 in terms of the need to transship from Oconee at this point
23 to McGuire until some future time?

24 A As far as I know.

25 Q In your answer to the question that appears on

886255
POOR ORIGINAL

Page 5 of Staff Exhibit Number 25-A, you talk about the substantial cost that's incurred at the outset of the construction of an ISFSI, which cost then has to sit there waiting for the spaces that you've made available to be utilized. Correct?

A Yes.

Q Now is that same logic applicable to, for instance, the construction of a larger than necessary spent fuel pool at Catawba to accommodate spent fuel that might be shipped there from Oconee and McGuire some time in the late 1980's or early 1990's?

A Well, my understanding is that when a spent fuel pool is constructed at a nuclear facility as a part of that facility that the additional cost -- that they have to have a spent fuel pool there and the additional cost of enlarging that is rather minimal.

So that while it's true there is certainly a potential -- well, there will be more unused capacity during the earlier years than if a smaller structure were built, that is likely to be outweighed by the small additional initial cost for the larger structure.

Q Would that logic then appear to you to suggest that the Perkins and Cherokee facilities and the Catawba facility, if it doesn't already, should have in them sufficient space to store a lifetime of their spent fuel as being

POOR ORIGINAL

1 a relatively insignificant additional cost?

2 MR. MC GARRY: Will object, Mr. Chairman. I think
3 we're getting pretty far afield.

4 CHAIRMAN MILLER: Overruled.

5 You may answer.

6 WITNESS NASH: My understanding of the options
7 available for spent fuel storage is that there are a couple,
8 I guess, of modifications or more modifications that can be
9 made to the pool, like stainless steel racks, poison racks,
10 and so forth.

11 Building a spent fuel pool of a certain dimension
12 may not be wise, given the fact that there are things that
13 you can do within these dimensions to increase the capacity
14 at the time the facility is built.

15 BY MR. ROISMAN:

16 Q Well, but in that vein, let's look at it.

17 In Staff Exhibit Number 22 Mr. Spitalny has set
18 forth the size and pool capacities for Cherokee and Perkins
19 assuming that they used poison racks. And for those facili-
20 ties he has assumed a total discharge, just from, in the
21 case of Cherokee, 1988 through 2007, which would be less
22 than their lifetime, and assuming a 65 percent capacity
23 factor, of 2605 spent fuel assemblies.

24 And in the case of the Perkins units, assuming an
25 80 percent capacity factor, starting with 1994 and going

886257

POOR ORIGINAL

through the year 2007, 2030. And both of those numbers are larger than the amount of space, even with poison racks in the Perkins and Cherokee units as presently designed or capable of doing.

Now what I'm trying to find out from you is:

Is the logical extension of the position that you are taking on page 5 of Staff Exhibit 26-A that the Cherokee and Perkins units ought to be expanded so that using poison racks, they have the capability of storing a lifetime discharge of their own reactors' spent fuel?

A This is I think getting rather-- Or my answer I think is going to have to be rather speculative.

Catawba. I don't know when it got its construction permit. I suspect it was about 1974 or something like that. And I think it was in 1977 that a decision was made not to reprocess spent fuel.

I can hypothesize that at that early time Duke Power may have considered a larger dimensional pool to be the answer, the only existing answer to storing additional spent fuel. Since that time, in the last couple of years or so, there's been a substantial increase in options available for storing spent fuel.

And so making a larger capacity pool at the later units may not now be as necessary as it was thought necessary when the dimensions of Catawba were decided upon.

1 Well what you're saying is that the question
2 is to what side you would pick a spent fuel pool if you were
3 building one from scratch, and to some extent whether you
4 would build an independent spent fuel storage facility at all,
5 are dependent upon a number of arguably conflicting considera-
6 tions such as what you think the cost of money is going to be,
7 what you think the inflation rate is going to be on the
8 construction of the facility, what options you think may be
9 available and at what time in the future, a whole variety of
10 considerations. Isn't that essentially what you've been
11 telling me as we've discussed this over the past couple of
12 hours?

13 A Yes, there are always uncertainties in these.

14 Q And isn't it true there is really no analysis
15 that has been done in this proceeding which attempts to
16 quantify or even to systematically list all of those factors
17 and compare the alternatives to the proposed transshipment in
18 this case on the basis of a full consideration of those
19 factors?

20 A Yes.

21 CHAIRMAN MILLER: Is this approaching a convenient
22 point to recess?

23 MR. ROISMAN: I have about two or three more
24 questions of Mr. Nash, at least I think I do.

25 CHAIRMAN MILLER: All right.

886259

POOR ORIGINAL

1
2 BY MR. ROISMAN:

3 Q Were you here yesterday, I think it was, during
4 the discussion -- or perhaps both the day before and yesterday
5 at the discussion of the impact on McGuire and its spent fuel
6 storage options of moving 300 spent fuel assemblies from
7 Coonee to McGuire?

8 A (Witness Nash) Yes, I've been here all week.

9 Q In doing a proper cost-benefit analysis of the
10 benefits and costs of the transshipment proposal, would you
11 say that one ought to take into account the potential impact
12 on the storage at the recipient facility in terms of what
13 storage options are made available or reduced and what costs
14 might be incurred by moving 300 assemblies into that facility?

15 A I think this is getting somewhat into questions
16 and answers we've had earlier. I think that -- it's quite
17 true that if you put spent fuel assemblies from Coonee in
18 McGuire that that creates some -- then therefore that space
19 is not available for McGuire.

20 But I think I've said that the consequences of
21 that action are rather minimal, that is, that there are other
22 options, fairly readily available options for handling the
23 then-displaced McGuire fuel.

24 And so, therefore, I think it's, you know, the
25 cost-benefit analysis is sufficient. 686260

Q Well were you here when Dr. Nehemias indicated

POOR ORIGINAL

1 that it would be at least reasonable to assume that if you
2 started putting spent fuel into the McGuire Unit 2 pool
3 before you had racked it to poison racks, assuming you were
4 going to do that, that you might add in the neighborhood of
5 ten man-rem's of exposure to the workers as a result of doing
6 that?

7
8
9 A Yes, I heard that.

10 Q Is it your statement that in a cost-benefit
11 sense 76 man-rem is an insignificant difference over zero?

12 A I'm sorry, I didn't mean to smile.

13 Q That's all right. I don't mind if you smile.

14 A My understanding is that the controls, the
15 regulations under which the pool modification would have to be
16 done would only allow any given worker to sustain so much
17 radiation per unit of time and so forth results in -- the
18 conclusion that I would make is that the dosage received
19 by any one individual and over the number of people that
20 would be involved is a small number. Insignificant, if you
21 will.

22 Q You mean as compared to zero?

23 A Well --

24 CHAIRMAN MILLER: Can we compare it to one?
25 I hate to get into that infinity business.

26 WITNESS NASH: That's why I was smiling.

27 MR. ROISMAN: The reason I've been carrying it to

28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

1 pro is because the option is to renack McGuire, and if we
2 at any point fuel in there the number is zero. I don't know
3 if any option where the number would be one. I don't want
4 to make a hypothetical --

5 CHAIRMAN MILLER: One just to avoid infinity.

6 MR. ROISMAN: I don't mind infinity when it's
7 infinity toward benefits I like.

8 CHAIRMAN MILLER: All right, the witness may
9 answer.

10 WITNESS NASH: I consider the dosage that would
11 be received as controlled by only so much per worker and so
12 worth to be a very small amount. Obviously it's not zero,
13 obviously, and some positive amount is greater than zero.

14 I don't know -- if I could expand a little bit,
15 I think there's all kinds of situations that people either
16 voluntarily or involuntarily are subjected to that are not
17 optimal in the sense that, you know, no radiation is better
18 than some.

19 - But that may be an example that the air
20 condition is supposed to be 73 or 80, you know, as compared
21 to what we'd like, around 68 or 70. And aside from some minor
22 discomfort, most of us accept that.

23 And that's how I view the radiation dosage,
24 maybe not quite that insignificant but something along that
25 line, some radiation dosage versus none. 886262

POOR ORIGINAL

1 Because it is only some in addition to background
2 radiation. It's not zero completely.

3 BY MR. ROISMAN:

4 Q If it turned out that the presence of 300 spent
5 fuel assemblies in the McGuire Unit 1 spent fuel pool would
6 markedly complicate the process of converting the pool to
7 poison racks, or if I markedly increased the complexity
8 somewhat along the line of what we heard Mr. Spitalny testify
9 to today that perhaps could happen at Coonsee 3 or would
10 increase the cost maybe by \$2- or \$3000 an assembly, would
11 you consider that to be a significant factor that one might
12 want to look at in deciding whether to let the transshipment
13 occur at all before or after the McGuire Unit 1 reracking
14 had occurred, if it were going to occur?

15 A (Witness Nash) Yes, I think any problem of that
16 matter or other problems that are discovered -- if occupational
17 risk were substantially higher, that would be another factor
18 that would tend to mitigate against that action.

19 Q Do you know of any work that has been done in the
20 context of this case's cost-benefit analysis to find out
21 whether or not such additional costs might in fact be
22 incurred?

23 A I don't know of any.

24 Q Are you at all familiar with the Commission's
25 schedule of hearings in November of this year, 1979, on the

686263
POOR ORIGINAL

1 question of reducing the occupational exposure limits for
2 workers in the nuclear industry in response to a petition
3 filed by the Natural Resources Defense Council?

4 A. I guess I may have heard it in conversation.
5 You're giving me more information that I was aware of pre-
6 viously.

7 MR. ROISMAN: If I could have one moment, Mr.
8 Chairman.

9 (Pause.)

10 MR. ROISMAN: I think that's all that I have
11 for Mr. Nash. I'm not at all finished with Mr. Pittiglio,
12 who I have not even -- whom I have barely talked to, and I
13 would still like the two to sit together since obviously
14 they have done some of this jointly.

15 Just one point in terms of Mr. Spitalny.

16 Mr. Spitalny, I would leave for Miami as soon as I
17 could. The more you're here the more I think of for you.
18 I do remember he was going to give us a date, which he has not
19 yet given us, on when a decision would have had to have been
20 made to rerack Oconee Unit Number 3 with poison racks in order
21 to be able to do so without transshipment if one assumed that
22 the only way to rerack Oconee Unit 3 was to do it dry and
23 that date is yet to come.

24 CHAIRMAN MILLER: Do you have that under advis-
25 erment, Mr. Spitalny?

880264

POOR ORIGINAL

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

WITNESS SPITALNY: That is still an open issue. It didn't go away in the discussion counsel had.

MR. KETCHEN: That's what I was asking about at the time earlier today. I can go back and review the record. I recall that there were two dates, and that's why I was looking at that time. I thought they went away by taking the position we took.

MR. ROISMAN: No, what you asked me was were there two dates and I said yes and they can both be answered at the same time in September. Then you decided you didn't want to do the other stuff in September. I didn't agree that that meant that the other data which had already agreed to be supplied wouldn't be supplied.

CHAIRMAN MILLER: Well as I recall it, there was an agreement to supply information. I think Mr. Spitalny said he could. Now is this where the matter still stands?

MR. ROISMAN: That's as I understand it.

MR. KETCHEN: And I was asking, Mr. Chairman, and this panel as you say was released from the witness stand...

CHAIRMAN MILLER: The panel was released but I understood Mr. Spitalny wanted overnight to make some computations and he'd be prepared to give the answer.

MR. Spitalny, am I misquoting you on this one point?

686265

WITNESS SPITALNY: My understanding, I believe, was

POOR ORIGINAL

1 that I could perform a calculation. It would require me to
2 sit down again and evaluate what the history of the schedule
3 was. Again, said it could be performed either by doing the
4 same type of thing or it could be furnished at the September
5 hearing.

6
7 It was at that point, I believe -- I may be
8 wrong -- I believe that we started discussing the possibility
9 of testimony being entered in at that time in September and
10 that these dates would be addressed in that testimony. We
11 men, I thought, resolved that we were not going to supply
12 testimony and, therefore, I didn't know there was still a
13 need for --

14
15 CHAIRMAN MILLER: Therefore, since you are not
16 going to supply the additional testimony that counsel were
17 discussing and that the Board is not a part of, therefore,
18 that remains then as the Board will understand it this
19 computation you were going to do which would not, then, be
20 included with or enveloped in the September testimony.
21
22
23
24
25

POOR ORIGINAL
688266

1 MR. ROISMAN: As I understand it, Mr. Chairman,
2 we have this sort of distinction voluntarily offered to be
3 provided, additional information to be provided. The Staff
4 left open whether they would voluntarily offer to provide
5 all this additional information on the Oconee & other
6 issues. They decided they wouldn't do so voluntarily.

7 I understand I'm not in a position to force them
8 but I'm in a position to take advantage of their failure to
9 do that if I wish.

10 But this, voluntarily, had been agreed to already
11 and I would still like to get it.

12 CHAIRMAN MILLER: That was our impression.

13 MR. KETCHEN: Let me suggest this. Let me go look
14 at the record. If we can do it fairly efficiently and
15 effectively we'll try to do it by the morning.

16 On the other hand, that's I guess the same prob-
17 lem that I was having today, is I believe the Staff has its
18 case and we're getting to the point that --

19 CHAIRMAN MILLER: But this was cross-examination,
20 though. I understand your position on your own case and
21 there's no problem about that. You can make your own choice.
22 There is no difficulty.

23 This, however, I think was part of cross-
24 examination and it was submitted with some other testimony
25 we've had, so we'd like to have the record complete on that

2 1 expect, not because it's your primary case but because it
3 2 bears upon certain information or estimates that we al-
4 3 ready have, and this would be an additional factor. We see
5 4 it as an entirely different matter, in other words.

6 5 MR. KETCHEN: Well, just for the record I'm not
7 6 sure that it is, Mr. Chairman. If the witness has a number
8 7 and can give it, that's one thing. But to ask the witness
9 8 to do calculations that may require lengthy investigation
0 9 is another matter.

1 10 The question is-- I think it comes to the ques-
2 11 tion, does he have the answer, and if the answer is No, he
3 12 doesn't have it, that to me sort of ends it. And then the
4 13 question becomes what are, as Mr. Roisman points out, what
5 14 are the risks that Counsel are willing to take in supplying
6 15 or not supplying that number. I think we're at that point.

7 16 CHAIRMAN MILLER: The Board doesn't agree with
8 17 you on that; I'm sorry. We understand that there have been
9 18 questions and testimony as to the dates by which certain
0 19 action can or should or might be taken with reference to
1 20 various linkages, and this is the only one pending that
2 21 we can recall that has not been answered.

3 22 We further understood that Mr. Spitalny said he
4 23 could probably overnight compute and come up with the in-
5 24 formation.

6 25 Is that correct, Mr. Spitalny?

POOR ORIGINAL

686268

3 WITNESS SPITALNY: I guess I said it could be
4 done. If I made reference to overnight, I'm not sure.

5 CHAIRMAN MILLER: Well, how long is it going to
6 take you?

7 WITNESS SPITALNY: It would be the same type of
8 thing that I had performed during the lunch hour.

9 CHAIRMAN MILLER: Yes, similar to that.

10 Well, that doesn't seem to be anything insuper-
11 able unless Mr. Spitalny tells us that there is a great
12 imposition on his time. And if not, if it is similar to
13 what he did over lunch, we'd like to have that done to
14 complete the record as far as he's concerned. And then the
15 balance of the decision you've already made.

16 MR. KETCHEN: And then we just give the date and
17 that's it?

18 CHAIRMAN MILLER: I imagine the basis as to how
19 it's been arrived at could be reasonably described as the
20 others have.

21 Is there some reason that the Staff is refusing
22 to do this? Is it a matter of principle? We thought it
23 was a small matter, but if you're taking other elements
24 let's put everything on the table. We don't want any more
25 surprises.

26 MR. KETCHEN: Mr. Chairman, let's try to do what
27 we can overnight. Mr. Spitalny may have to get information

656269

POOR ORIGINAL

14 from the Applicant.

1 CHAIRMAN MILLER: We want to be reasonable with
2 you on this on it. See what you can do and report in the
3 morning.

4 MR. KETCHEN: Very well.

5 CHAIRMAN MILLER: Fair enough.

6 We will recess until 9:30 in the morning.

7 (Whereupon, at 5:15 p.m., the hearing in the
8 above-entitled matter was recessed to reconvene at
9 9:30 a.m. the following day.)
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

POOR ORIGINAL