UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In Re:	:	
DUKE POWER COMPANY, Et Al.	:	DOCKET NUMBERS
(Catawba Nuclear Station	:	50-413
Units 1 and 2)	:	50-414

MAY 12, 1983
5:10 P. M.

DEPOSITIONS OF:

ROBERT SHARPE

C. W. HENDRIX, JR.

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APPEARANCES:

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Washington, D. C.
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Anne W. Cottingham

ALBERT V. CARR, JR., ESQ.
RONALD L. GIBSON, ESQ.
Charlotte, N. C.

Counsel on Behalf of Applicant, Duke Power Company

ALSO PRESENT:

Roger W. Ouellette
Duke Power Company

Mike Childers
Duke Power Company

Michael F. Lowe
Palmetto Alliance, Incorporated

Nina Frankel
Lee Ann Kornegay
Electronic Recorder
Palmetto Alliance, Incorporated

I N D E X

WITNESSES	DIRECT	CROSS
Robert Sharpe	5	--
C. W. Hendrix, Jr.	5	--

The Depositions of Robert Sharpe and C. W. Hendrix, Jr., are taken at the Offices of Duke Power Company, Charlotte, North Carolina, on this the 12th day of May, 1983, in the presence of Mr. Jesse L. Riley and Robert Guild, Counsel on behalf of the Intervenor, Palmetto Alliance, Incorporated; Anne W. Cottingham, J. Michael McGarry, Albert V. Carr, and Ronald W. Gibson, Attorneys on behalf of the Applicant, Duke Power Company.

It is agreed that Lynn B. Gilliam, Notary Public in and for the State of North Carolina, may take said Deposition in machine shorthand and transcribe the same to typewriting.

MR. MCGARRY: I have some introductory comments if I could just make them by way of introduction; as in other Depositions taken yesterday and today, I would like this Deposition transcript Record to reflect that a Stipulation has been entered into concerning the taking of this Deposition by other than stenographic means.

That is appended to Mary Birch's Deposition. Also the comments that Applicant made concerning Notice and accommodation contained in Mary Birch's Deposition apply equally to this Deposition.

Another comment with respect to the avail-

ability of documents, the FSAR is available and hopefully any other documents that are germaine to this Deposition are available in this room.

Two other points, originally a Westinghouse Witness was scheduled to be deposed, but because of Palmetto's Requests, whatever the reasons underlying the Request might be, the Westinghouse Witness is not present.

Rather we have provided two Duke Witnesses. Hopefully they will provide responsive answers. Let me amend that, of course they will provide responsive answers.

Hopefully those answers will prove of value. It is our position that the most knowledgeable people with respect to Contention 44 reside at Westinghouse.

Lastly, the Deposition today will be taken in introductory fashion by Mr. Guild; and with respect to the substance, by Mr. Riley.

In the normal instance we would oppose that and be of the view that the Deposition should be conducted by Mr. Guild.

We know Mr. Riley, we know of his cross examination skills, and we do not oppose Mr. Riley taking the Deposition in this one instance.

MR. GUILD: By way of introduction, my

name is Robert Guild, and I represent Palmetto Alliance, one of the Intervenors in this case.

One of the Contentions that has been Admitted and is the subject of this litigation under consideration by the Licensing Board is numbered 44 and relates to reactor pressure and Embrittlement.

ROBERT SHARPE and C. W. HENDRIX, JR., having been first duly sworn to tell the truth, were examined and testified as follows:

DIRECT EXAMINATION

BY MR. GUILD:

Q Are you Mr. Hendrix?

MR. HENDRIX: Yes.

Q And you, sir, are Mr. Sharpe?

MR. SHARPE: Yes, sir.

MR. GUILD: And Counsel will stipulate both of these gentlemen participated in Responding to Interrogatories previously served by Palmetto Alliance with respect to this Contention?

MR. MCGARRY: That's correct with respect to Mr. Hendrix.

MR. SHARPE: I really don't have any

Affidavits in there.

MR. MCGARRY: But Mr. Sharpe did not have any Affidavits with respect to this.

MR. GUILD: I stand corrected.

BY MR. GUILD:

Q Gentlemen, I refer you to Applicant's Answers to Interrogatories, it's a document dated December 31st, 1982.

On Page 9 of that document are some quotes concerning Contention 44, if you would just take a moment and examine that, please.

I believe both of you have seen that Contention before?

MR. SHARPE: Yes.

Q Since there are two Witnesses answering the questions as a matter of clarity, I would ask if the question is not posed to a specific Witness, if you would identify yourself before answering so that the tape will reflect the identity of the person giving the answer.

Again, I will ask, if either I or Mr. Riley is asking the question and the question is not clear, please stop and ask for clarification.

Otherwise we will assume that the question

is understood, and that the answer is responsive to that question.

Mr. Sharpe, would you please, sir, state your present position with the company and briefly give us a resume of your past experience with Duke and of your professional training and background?

MR. SHARPE: My title is Nuclear Engineer, Licensing, in the Nuclear Production Department at Duke Power.

I have a Bachelor of Science Degree in Nuclear Engineering from North Carolina State University.

I have been with Duke since 1971. I am responsible for licensing at Catawba, and I was also involved in the preparation of the Catawba FSAR.

I was also involved for a number of years with the Electric Power Research Institute's Selecting Pressure Vessel Subcommittee.

Q And for what period of time were you involved with that subcommittee, Mr. Sharpe; do you recall?

MR. SHARPE: It seems like it was about 1975 to '78.

Q Mr. Hendrix, would you do the same, your present position and a little resume of your background?

MR. HENDRIX: I am presently a Maintenance Engineer, Nuclear Production Department. I have been with Duke Power since 1977, January of 1977.

I have a Bachelor's Degree in Physics from Georgia Tech and my Master's is in Metallurgy. I have been involved with various materials and problems at Duke Power Company, and I have served on EPRI Committees in the materials areas as well as Honor's Group and Committees and Subcommittees as well as Atomic Committees and Subcommittees.

Q Mr. Hendrix, would you state specifically the committees or working groups that you have been a member of that have dealt specifically with pressurized thermal shock or Embrittlement issues?

MR. HENDRIX: In the Embrittlement area, I have served a short period of time on the Babcocks and Wilcox Honor's Group Materials Subcommittee, which deals with Reactor Vessel Surveillance Program; EPRI Pressure Boundary Subcommittee from 1978, and I am still on that subcommittee which also deals with Vessel Materials Surveillance problems or programs.

Q Mr. Hendrix, could you relate generally how your present position relates to the subject of Embrittlement?

MR. HENDRIX: I am responsible for a

general review of some of the Materials Surveillance Programs; specifically, Oconee, though that is not my primary responsibility.

Q How about Materials Surveillance at any other facilities of the company?

MR. HENDRIX: I am involved in those to a much less degree at Catawba and McGuire.

MR. GUILD: Gentlemen, if you would be kind enough to respond to questions now that Mr. Riley has for you on the subject of his Contention, I would appreciate it.

CONTINUED DIRECT EXAMINATION

BY MR. RILEY:

Q Mr. Hendrix, were you present at the time of ultrasonic testing of the Oconee reactors?

MR. HENDRIX: Was I physically present?

Q Physically present, yes.

MR. HENDRIX: No.

Q Are you knowledgeable with the records that were obtained in this testing program?

MR. HENDRIX: In a general sense, yes.

Q How many of the Oconee reactors had been tested by ultrasonic means?

MR. HENDRIX: The vessels, themselves,

all have been tested.

Q When was the time each vessel was tested; was it tested more than once?

MR. HENDRIX: I can't really give you a specific date that they were tested. Most recently all three units were tested in the years of '81 and '82, but I can't give you the specific day or dates they were tested.

That information is available in the QA Office, Quality Assurance Office.

Q Where was the testing done?

MR. HENDRIX: The testing was done by Babcocks and Wilcox.

Q How many people were involved in the testing program?

MR. HENDRIX: I really am not aware.

Q I would like to turn to the Interrogatories that were Responded to on December 31st; and Mr. Sharpe, I am looking at Pages 67 and 68.

Am I correct in thinking that your responsibility would be in the same area as Mr. Ouellette's--am I pronouncing that correctly?

MR. CARR: Ouellette.

MR. SHARPE: That's right.

Q To read that Interrogatory Ten, it says,

"At what temperature will water in the ECCS be maintained? Has any consideration been given to increasing this temperature? Explain your Response in detail."

The Answer is that the water in the storage tank will be maintained at a temperature of 70 degrees. Is this the only source of water for the Emergency Cooling System?

MR. SHARPE: To my knowledge it is.

Q Are you familiar with a gas pressurized component that comes on at the highest pressure that the ECCS would operate at?

MR. SHARPE: I'm not sure if I understand your question. Are you alluding to the fluid tanks in the UHI System?

Q That's right.

MR. SHARPE: Well, those are not a source the same as the fueling waters, storage water tank.

Q I know they aren't, but are they a source of water in the fluid storage tanks in an emergency situation?

MR. SHARPE: Yes.

Q But what about the source of water for the High Pressure Injection System?

MR. SHARPE: That comes from the refueling water storage tank.

Q What about the Low Pressure Injection System?

MR. SHARPE: That comes from the refueling water storage tank.

Q So there are two fuel sources?

MR. SHARPE: Well, you have the ECCS pumps, and you have the passive tanks that would dump water into the cooling system also.

Q But they are physically separate?

MR. SHARPE: Yes.

Q Going on to Page 68, Number 14, "Describe in detail how the welds in Unit 2 are located away from peak neutron exposure. Specify where and why it was not possible to do so."

In Response, "The core region shelves of the Catawba Unit 2 Reactor Vessel are fabricated of plate material and have longitudinal welds which are angularly located as far away from the peak neutron exposure as geometrically possible."

How many longitudinal welds are there?

MR. SHARPE: I believe they are shown in the FSAR.

Q Do you recall what the angular spacing is,

how many plates are involved?

MR. SHARPE: No, I don't.

Q All right, the reference on that is FSAR Figure 5.3.1-2. Would you mind referring to it in response to the question?

MR. SHARPE: Now repeat your question.

Q Yes, how many longitudinal welds are there and how far separated are they angularly?

MR. SHARPE: Like 90 degrees, 120 degrees, 180 degrees, that sort of thing. It looks like 120 degrees apart in this figure.

Q That would mean there are three longitudinal welds?

MR. SHARPE: Three longitudinal welds.

Q Now can you explain how it is possible to locate that as far away from peak neutron exposure as geometrically possible?

Let me ask another question first, I guess this would be easier: In tracing the neutron effluence around the circumference of the reactor, how many times does it peak?

MR. SHARPE: I believe that was provided in the Response to the Discovery Request. It showed that the change in exposure versus the azimuthal angle.

Q Now that was not in Response to Contention

44. If we take a look at this, how many peaks would there be around the circumference?

MR. GUILD: For the Record, I might note that is an Attachment to the Applicant's Response to CESG Discovery on this subject.

THE WITNESS: I might note that this was really a Westinghouse Response, and that I am not that familiar with this.

And we were sitting here trying to put this together to come up with a response for you, but I don't think we can really address this as adequately as Westinghouse could.

BY MR. RILEY:

Q All right, have you any basis for saying, and I realize what you have just said, the ratio between the peak circumferential effluence and the minimum circumferential effluence?

MR. SHARPE: I really wouldn't have a response for that.

Q On Page 70, the Answer to C reads, "RT SubNDT is then the higher of T SubNDT and T Sub CV." And it looks like a hyphen, "-60 degrees F."

Would that be a minus sign?

MR. SHARPE: Yes.

MR. HENDRIX: Hendrix, yes.

Q Thank you; Mr. Hendrix, are you familiar with the determination of that magnitude of 60 degrees F; and if you are, would you please explain it?

MR. HENDRIX: I am not familiar enough with the determination of the 60 degrees F number to really discuss that.

Q Would it be similarly true that you would not wish to discuss the variance in the 60 degree number?

MR. HENDRIX: Not at all, I would not.

Q About four-fifths of the way down the same page, and this may be more related to your concerns, Mr. Sharpe, it says, "For the main weld both drop weight and Charpy V-notch Tests were performed."

Would you define the main weld the subject of the reactor?

MR. SHARPE: This Response is provided by Westinghouse. I could not explain it any further.

Q All right, the last sentence in the Response to 20 on Page 71 reads, "The transition temperature approach contemplates the heatup and cooldown and operation of reactor vessels will be controlled to assure that the reactor vessel temperature is well

above the RT SubNDT during these operations."

Now this, I gather, Mr. Sharpe, is in the FSAR for Catawba or some similar controlling document?

MR. SHARPE: The controls being the heat-up and cooldown curves?

Q That's right, and the assurance that the temperature is well above?

MR. SHARPE: Those curves are in the FSAR.

Q All right, quantitatively speaking, how much is well above?

MR. SHARPE: I couldn't explain it any further. Westinghouse provided this Response.

Q Not wishing to be argumentative about it, Duke will be operating and Duke will be determining what these temperatures are.

And temperatures are reportedly a description of value, and I would like to get a sense of how much well above is.

MR. SHARPE: Maybe I can explain how the curves come about. Westinghouse provides the heatup and cooldown curves based on materials data provided in the FSAR.

This had been provided to us initially to go

in the tech specs that are issued to Duke with the operating license through the life of the plant surveillance capsule data to be used to update those curves as necessary.

Westinghouse has the expertise in their shop to do this, and I don't believe Duke really has the input into those curves.

Q Do I anticipate those curves changing during the life of the reactor?

MR. SHARPE: I believe the curves that are provided in the FSAR at this time indicate that they are--maybe it would be helpful to pull that section of the FSAR out.

Q Please do.

MR. SHARPE: I am looking at the FSAR Figure X440.A-1-2. This is the heatup and cooldown curves, respectively, for Catawba Units One and Two up to sixteen full-powered years; so sometime prior to exceeding sixteen full-powered years, we would have to update the curves based on the surveillance data that was available at that time.

Q What time do you expect the first surveillance data would be ordered for Catawba Units One and Two in terms of--

MR. SHARPE: In accordance with 10CFR50,

Appendix H, I believe the first surveillance capsule comes out at the first refueling.

Q Have you anything to add to Mr. Sharpe's response, Mr. Hendrix?

MR. HENDRIX: No.

Q Mr. Hendrix, does Oconee operate on the same basis that Mr. Sharpe just described as proposed for Catawba?

MR. HENDRIX: You mean--

Q With respect to observing heatup and cooldown operations which are, I quote, "...well above the RT SubNDT"?

MR. HENDRIX: I would say I don't have detailed knowledge as to what the margin between where you are operating at a specific temperature and pressure point is with respect to RT NDT; and I am not sure that is a valid comparison.

But they certainly operate with heatup and cooldown curves which will ensure that you are above RT NDT.

I should rephrase that to say there is a margin for the embrittled factor.

Q Could we expand on that just a little bit? What is, as of the most recent test, the highest RT NDT for Oconee reactor vessel material?

MR. HENDRIX: I couldn't say what the exact number is. Again, that information is available as per our response to other questions in that that is located in the Licensing Library.

Q Could you hypothetically accept 168 degrees Fahrenheit?

MR. HENDRIX: I could; I have no knowledge that is the highest or the lowest number.

Q In the Interrogatories, I believe that is the highest number indicated in your Response. If we take that hypothetically, does that mean that the vessel would be depressurized before getting into the vicinity of this highest RT NDT?

MR. MCGARRY: Excuse me, Mr. Riley; do you have a reference of the 168, and we can stipulate to that.

MR. RILEY: We will probably be coming across it a little bit later. It is on Page Seven of the filing of February 28 by the Applicant, and the highest temperature given is actually 196, bottom line of that table.

And I would like to be sure of the significance of the heading of that table. It reads, "The RT space Degrees

Fahrenheit..." I should say, "RT SubDT Degrees Fahrenheit, 9/30/82," and to the right there is a letter, small "a".

Could you tell me if that means at or on 9/30/82?

MR. HENDRIX: No, that refers to the footnote at the bottom which tells you the basis for that number.

Q These were values on 9/30/82?

MR. HENDRIX: With the calculational techniques that are referred to in footnote "a".

Q And that is not the end of the life, RT NDT?

MR. HENDRIX: No.

Q That is how many degrees below boiling point?

MR. HENDRIX: What number?

Q One hundred ninety-six?

MR. HENDRIX: It is obviously 16.

Q Right; with respect to depressurizing the reactor, would you on that basis be able to say at what temperature you would have what minimal reactor pressure?

MR. HENDRIX: I am not an operator, and I am not familiar with the operating curves or the way they operate the plant.

Q That is a satisfactory answer. Question 21 deals with the "fracture mechanics approach" and there is a discussion of "crack toughness."

Of course, this is going to be Mr. Hendrix. Would you compare for us the load extension diagram tinsel cast for a specimen which was crack free versus a specimen that had cracks in it?

MR. HENDRIX: I'm not sure what aspect you would like to look at, and I cannot say in detail that I have ever done that.

I would assume for a notched specimen that you would expect to see a failure and a lower load than an unnotched specimen of the same properties.

Which I think has been stated previously.

Q Would it make a difference as to whether this test was performed above or below RT NDT?

MR. HENDRIX: Yes.

Q What would the difference be?

MR. HENDRIX: Above RT NDT you would expect a double fracture; below you would expect a brittle fracture.

Q Would you care to define brittle fracture in terms of the load extension diagram that would go with it?

MR. HENDRIX: Brittle fracture is

characterized by a fracture without significant elongation.

Q All right, now let's translate that into stress. With respect to an unnotched sample below RT NDT, what magnitude of load would develop for the notched or cracked specimen?

MR. HENDRIX: You have to repeat that, I'm not--you have to repeat that. I'm not sure I understood.

Q All right, the load sustained by an unnotched specimen below RT NDT will have a certain value, and there will be some extension associated with it.

For a cracked specimen, what fraction of load will develop up to the point of failure, at the point of failure?

MR. HENDRIX: I have no idea.

Q Will it be substantially less than the load that developed for the uncracked specimen?

MR. HENDRIX: I don't know whether it would be substantially less or not.

Q You are familiar with the concept of modulus?

MR. HENDRIX: Yes.

Q What sort of extension had you in mind when you responded that there would be very little extension

or no extension for the cracked specimen?

MR. HENDRIX: I really didn't have a number in mind. That is a quantitative statement rather than a qualitative statement.

Q So you wouldn't be able to translate a specific statement in terms of a tinsel value or loading based on a knowledge of modulus?

MR. HENDRIX: No, I would not personally be able to do that; no.

Q Now, at a temperature above RT NDT, again considering specimens of the type just discussed, would the cracked specimen develop as much extension as the uncracked specimen?

MR. HENDRIX: I really don't know the answer to that either.

Q But your answer is it would not sustain as high a load?

MR. HENDRIX: No, I would not expect it would. Again, that is supposition.

Q Has the Fracture Toughness Program referred to in Item 23 been completed?

MR. HENDRIX: Mr. Hendrix, I am not familiar with that program.

Q Are you familiar with that program, Mr. Sharpe?

MR. SHARPE: Mr. Sharpe; I believe this was in the FSAR. This was a discussion provided by Westinghouse; and I believe the follow-up discussions and Supplemental Response to the Interrogatories indicated the program had not been completed.

There were a number of progress reports.

Q Are you in any position to state when you think the project will be completed?

MR. SHARPE: Mr. Sharpe, no.

Q Do you know the period in which Catawba One Reactor Vessel was fabricated?

MR. SHARPE: I do not.

Q Do you, Mr. Hendrix?

MR. HENDRIX: I don't know specifically, no.

Q Would your response be the same for Catawba Unit Two Reactor Vessel?

MR. SHARPE: Yes.

(Mr. Hendrix nodded his head affirmatively.)

Q Are you familiar with the NRC Rules in terms of ASME Code that applies to the several reactor vessels at Catawba One and Catawba Two?

MR. SHARPE: I am not personally familiar with those.

MR. HENDRIX: Only in a very general sense.

Q You are aware that a different rule applies for Catawba One and Catawba Two?

MR. HENDRIX: Not specifically; you mean in terms of some specific aspect of the design and construction?

Q Well, what I was specifically seeking was the date on which construction was started for each of those, and I have to understand that neither one of you knows?

MR. SHARPE: Right.

MR. CARR: Excuse me, if I can call their attention to our December 31 Responses, Response to 18, Page 69 and 70, appear to be addressing that; and I don't know if that will help them or not.

MR. HENDRIX: It helps in the sense that we understand--I think that the construction design of the vessels and of the plants, there was a different code that applied during those for each of those.

However, as to the specifics, you know, what the differences in the two codes might have been, of course, I have no

detailed knowledge of that at all.

MR. GUILD: Counsel, I might state that the Answer to Interrogatory 25 referenc the FSAR, Section 5.3.1.5, on Catawba compliance with ASME specs.

MR. RILEY: Also for the Record, there is a discussion of related matters in the SER 5.3.1, Pages 513 to 522, but neither in the Applicant's Responses nor the SER is the date of initiating fabrication given.

It is simply that one was before '71, and the other was before '72.

BY MR. RILEY:

Q Did you find a starting date in the FSAR?

MR. SHARPE: No, that gave the same information you were just referring to, the code dates that apply to each of the vessels.

Q All right, the questions I will address now are in reference to your Response dated February 28. Now on Page 63, the Response--that is dealing with overcooling transients; and the Applicant's Response is, "There has been no overcooling transient at Oconee of the sort contemplated in Contention 44."

And I would like to have you let me get a better understanding of what "of the sort" means.

MR. HENDRIX: I can't answer that question.

Q If you're not able to answer, can you tell us of any sort of overcooling transients that have occurred at Oconee?

MR. HENDRIX: No.

Q To your knowledge no overcooling transients have occurred?

MR. HENDRIX: No, I can't tell you that there have been.

Q Did Duke Engineers or other personnel make the calculations for end of life RT NDT, or were these calculations made by someone else?

MR. HENDRIX: Which specific calculations are we referring to?

Q At the bottom of Page 63, calculations of 58 degrees increase for Unit 1 and a 94 degree increase for Unit 2?

MR. HENDRIX: Yes, that is provided by Westinghouse. That is in the FSAR.

Q Mr. Hendrix, going with the discussion started at the bottom of Page 64 and ending on 65 and also generally there have been references to the influence of nickel, copper, and phosphorus on the

increase of RT NDT with neutron effluence.

Are you familiar with the basis, either experimentally or in conclusion, relating to the copper content?

MR. HENDRIX: Only in a very general sense.

Q Are you able to tell us that you have some familiarity with experimental work at which low copper seals were exposed to neutron effluence and the RT NDT followed?

MR. HENDRIX: No, I don't have those kinds of details.

Q On Page 66 at the bottom of the page--this is for you, Mr. Sharpe--the Item 1, "Fabrication Weld Examination, the location is the QA Vault at Cherokee."

I wondered if that would still be the case with the closing down of Cherokee?

MR. SHARPE: I don't know whether that is the case or not. I believe we copied some of those records, and I am not sure where they are; but we have them now.

MR. RILEY: I gather, Mr. Carr--

MR. CARR: We brought them up here in case you wanted to come to the

Document Room and inspect them.

I'm not sure where they are in Charlotte, but they are available if you would like to look at them.

MR. RILEY: Thank you.

MR. CARR: Is that right, Mr. Hendrix?

MR. HENDRIX: Yes, it is; I don't know exactly where they are, but we could certainly find them.

BY MR. RILEY:

Q On Page 67, top item, Table 2--

MR. CARR: Excuse me; Roger tells me it is already in the Room, the information is there.

MR. RILEY: Thank you very much.

BY MR. RILEY:

Q On Page 67, item 2 under the common location, "QA DPC Unit 1, EC1273, Unit 2 documentation not issued by B and W."

This is from McGuire Units One and Two. Could you explain to me the association of B and W?

MR. SHARPE: Babcocks and Wilcox Company

does our ultrasonic inspection of the vessels.

Q Can you tell us Mr. Sharpe, or Mr. Carr, if the progress reports referred to on Page 68, Item 23 on, "Fracture Toughness Program," are available here in Charlotte for inspection?

MR. CARR: I don't know, I don't think so; I don't know.

MR. SHARPE: I don't know.

BY MR. RILEY:

Q Are these progress reports available somewhere in the Duke organization? Is this something that you just know about by report?

MR. SHARPE: I don't know.

Q All right, going to the bottom of that page--

MR. CARR: May this be a clarification by Counsel? I am informed that those reports have been done by Westinghouse, but we are uncertain as to whether we have them here.

I don't think we do.

BY MR. RILEY:

Q At the bottom of the page there is a sentence

that reads, "As Applicants indicated in their December 31 Rerponses, they are unable to answer the question concerning 'ferritic composition' because they cannot ascertain its meaning."

Do you hold with that Response, Mr. Hendrix?

MR. HENDRIX: Yes, I am afraid I do.

Q Are you familiar with the use of the term ferritic in the Safety Evaluations Report?

MR. HENDRIX: No.

Q Let me refer you then to Page 513 where there are two references. This will be about 12 lines down in the middle of the Response, 1 in parentheses.

MR. SHARPE: Yes.

Q Then going on to five, "ferritic steels."

MR. HENDRIX: I understand how that is used, yes.

Q Would it be possible then to respond to Question Number 25 about what ferritic composition is used at Catawba?

MR. HENDRIX: Do you mean then the composition of the ferritic materials used?

Q Yes.

MR. HENDRIX: Can I respond? Let me read this.

Q Certainly, specifically what is the composition of the ferritic materials used at Catawba?

MR. HENDRIX: Right, let me say I can't personally respond to that. I believe that information is in the FSAR.

MR. SHARPE: Yes, that is in Table 5.3.3-2 for Catawba, Unit 1 Reactor Vessel. The corresponding information for Unit Two is in Table 5.3.3-3.

Q May I take a look at it to see the degree of completeness? Thank you.

MR. SHARPE: Back up a page.

Q Yes, thank you. That is responsive; thank you. On Page 69 in Line 3 of your Table A1 of Appendix A, and this is Appendix A to what?

MR. HENDRIX: If you look at the specific capsule for the numbers that are listed in Table One, there is an Appendix A and Table A1 will provide that information; so that Appendix is for each of those capsule reports.

They are a standard format.

Q In the capsule would you list the types of material that are present; for example, reactor plate, reactor weld material, bolting material, that sort of thing?

MR. HENDRIX: You are not talking specific

material, just in general what types of material are there?

Q Well, specifically, in the capsules that will be applied at Catawba.

MR. HENDRIX: I again have no detailed information of that. That should be included in the FSAR.

Q Can you tell us for Oconee?

MR. HENDRIX: For Oconee, I can't tell you specifically. That is a large volume of information; however, it is included in the capsule reports and there are general documents that describe the overall Oconee Surveillance Program; and all that information is available in those documents.

Q Could you tell us the physical form in which the weld material is included? In other words, are welding rods used in the exposure?

MR. HENDRIX: No.

Q Are welds produced?

MR. HENDRIX: Welds are produced; I think the best answer to that is to look in detail at those reports because they will tell you exactly what the shape of the specimen is and where they were observed and all the details that you would require.

Q Thank you. Taking a look at Tabie 70, and

this is for you, Mr. Hendrix, you have a degree in physics and a degree in metallurgy, and you have been looking at numerical data for much of your academic and professional life.

What do you think of the third column where every initial RT NDT is 20 degrees?

MR. HENDRIX: I really have no comment. Those numbers were provided by the vendor based on testing.

Q Did you ever question their credibility?

MR. HENDRIX: No.

Q Are you familiar with the phenomena of variance in measuring physical attributes?

MR. HENDRIX: In general.

Q Does this strike you as being a remarkable exception to what we usually see?

MR. HENDRIX: Again, I would have to look at exactly where those numbers came from; and I am certainly not the best person to address where these numbers came from since they were arrived at considerably before my employment with Duke Power.

Q These represent ten different welds. If we take a look at the fourth column we see a range of values from one hundred eighty to one hundred ninety-six.

Would you care to make a statement on whether that represents a large degree of variance or not?

MR. HENDRIX: No, I wouldn't care to comment.

Q Can you explain the large degree of variance in that fourth column as a metallurgist?

MR. HENDRIX: I think those numbers were arrived at using REG-Guide 199, and where one picks up variances there, I really haven't looked at in any detail.

Q We were told in some of your Responses that the rate of change in RT NDT depends upon the copper content, phosphorus content, and nickel content.

May we correctly conclude from looking at this data there was great variaability in the copper, phosphorus, and/or nickel content in the various data?

MR. HENDRIX: Again, I cannot comment. It would be more useful to look at the chemistry of these materials that I referenced from the capsule report.

Again, the chemistries are there.

Q In the table, there is a sentence that reads, "It has been shown that the RT NDT values calculated for Regulatory Guide 1.99 are conservative."

Will you explain why they are conservative; how this conservatism is assured, Mr. Sharpe?

MR. SHARPE: I have reviewed the results of our capsule reports, and in a general sense; and I have compared those to the REG-Guide values, to the actual; and in general the REG-Guide numbers are conservative.

Q All right, in this context can conservative be expressed in degrees Fahrenheit?

MR. SHARPE: No.

Q In what language can conservative be expressed?

MR. SHARPE: It can be expressed in degrees Fahrenheit, most certainly.

Q Would you please express it in degrees Fahrenheit?

MR. SHARPE: It varies.

Q Yes, but can you give us a range?

MR. SHARPE: No, I can't specifically give you a range; that data is in those reports, specifically in a table.

And it is specifically compared.

Q Yes, but Mr. Hendrix, what I'm asking for is your professional judgment as to whether or not these differences in degrees Fahrenheit are conservative

or not.

What I'm asking you to help me with is how many degrees margin is a conservative margin?

MR. HENDRIX: The problem I'm having as far as I'm concerned, any actual number that falls under the predicted number is conservative; so I can speculate on what the range of differences were from my memory.

Again, I just don't think that is useful when we actually have the information available to look at.

Q But you wouldn't need that material in front of you, would you, in order for you to say what you consider the threshold level for conservatism, how many degrees?

MR. HENDRIX: I would consider that if the actual number was equal to or less than the predicted number, then anything less than the predicted is conservative.

The prediction was then conservative in terms of shift.

Q In other words, it could be as small as zero degrees Fahrenheit?

MR. HENDRIX: It could be as small as zero degrees Fahrenheit.

Q On Page 71 there is another listing of sources. I believe these are the same ones that we were looking at before and are available at Duke?

MR. HENDRIX: Yes.

Q Are you familiar with the EPRI Report on Reactor Annealing?

MR. HENDRIX: Yes, I've scanned that report, not in detail.

Q Right, are there any physical provisions in the Catawba--let's make that Oconee first--Oconee instructions that would permit the use of the methodology as discussed in the EPRI Report, any of the annealing techniques which they discuss?

MR. HENDRIX: I couldn't address that question, no.

Q Mr. Sharpe, with respect to Catawba, have you information about whether or not the Catawba construction is such that it would facilitate the use of one of those techniques.

MR. SHARPE: To the best of my knowledge, there is nothing that would preclude that. However, there is no indication there would be RT NDT shifts based on the present forecast.

MR. HENDRIX: I don't know of anything that would preclude annealing to Oconee vessels. To

make a determination you would have to look in detail.

Q If I understand you correctly, Mr. Sharpe, you are saying that the forecast of 40 actual operating years life for RT NDT at Oconee is such that you anticipate no need to anneal in accord with Part 50?

MR. SHARPE: I was referring to Catawba.

Q I'm sorry, I meant Catawba.

MR. SHARPE: I believe that is correct, could you repeat the question? I was keying on Oconee.

(Whereupon, the former question was read by the Court Reporter as follows: "Question: If I understand you correctly, Mr. Sharpe, you are saying that the forecast of 40 actual operating years life for RT NDT at Oconee is such that you anticipate no need to anneal in accord with Part 50?")

BY MR. RILEY:

Q If I understand you correctly then, Mr. Sharpe, your reason for not considering annealing at Catawba is your forecast for a lifetime RT NDT; is that it would fall within Part 50?

MR. SHARPE: I think we are saying there was nothing that would preclude annealing. At this

time we do not anticipate that it would be necessary to anneal the Catawba vessel during the lifetime based on the expected shift in RT NDT.

Q Mr. Sharpe, has the shift, well, let's put that differently: At the time that Oconee was built was there concern with RT NDT increasing over a period of time?

MR. SHARPE: Again, I was not involved at that time so I really, I would assume that there was, but I don't know that for sure.

Q Would you not expect that tinsel form would have addressed the matter at that time if it were recognized?

MR. SHARPE: I really can't comment.

Q To your knowledge did anybody in Duke Engineering or Metalurgical Staff know what the RT NDT, know of the time they were fabricated?

MR. SHARPE: I believe that information is in the Oconee FSAR.

Q That RT NDT was the determining factor--

MR. SHARPE: I don't think it was a terminology that was used at that time. It was the subNDT.

Q Right, would you explain the difference?

MR. SHARPE: I could not.

MR. HENDRIX: The best place is in the Welding Research Bulletin 175, which is really the basis for that argument; and that is the clearest place to get the discussions, the difference between those two numbers.

Q Mr. Sharpe, do you know if any forecast was made based on RT SubNDT which was obtained for Oconee and its end of operating life value?

MR. SHARPE: Yes, there was a curve that shows the end of life, that shows the SubNDT value.

Q How does that compare, the present forecast for end of life?

MR. SHARPE: I cannot comment on that, I'm not really personally familiar with the relationship between NDT and SubNDT, to my knowledge.

Q Just staying with the SubNDT, has current information or recent information, say 1982, say when the coupons last testing was that were performed--

Some of those are pretty recent, aren't they?

MR. MCGARRY: I would like the Record to reflect there have been quite a few answers to the effect of I don't know; and our position has been if we had the Westinghouse and B and W individuals here,

they would have been much more responsive.

But we find ourselves today doing the best we can.

MR. RILEY: We appreciate that. We have not persisted in any other areas in which this has been the case.

MR. GUILD: Palmetto Alliance requested Counsel to take the telephone Deposition, and the Applicant declined to do that Request; and therefore due to the expense of transporting the Westinghouse Witness to Charlotte or Columbia, we have been unable to take their Deposition.

MR. SHARPE: Mr. Riley, I believe in Response to Interrogatory 34 lists the dates of the respective Oconee Surveillance Capsule Reports.

BY MR. RILEY:

Q And it is 1981?

MR. SHARPE: Yes.

Q And that would be for Oconee III?

MR. SHARPE: 1981 for Oconee II, both of them; yes.

Q Based on those reports, cannot the NDT

value be determined rather than RT NDT?

MR. HENDRIX: For some materials, yes.

Q For the materials used?

MR. HENDRIX: For the materials that are in those capsules, yes.

Q Right?

MR. HENDRIX: Let me take a step back, I am not sure of that. It depends on how the initial TNDT values were determined. If they were drop weight, tear tests, it would not be a one to one comparison.

You could get a number which may be similar, but maybe wouldn't be the same. Again, I don't have detailed knowledge of how the initial toughness numbers on the vessel materials and weld numbers were obtained, so I really don't know how we could compare.

Q Do you know if the drop weight was used for qualifying some of the materials in Catawba Units?

MR. HENDRIX: I really don't have specific information, I would have to look and see what was used.

Q The information was given in the SER, as a matter of fact, five exceptions are provided with respect to types of testing done on reactor materials,

which means that at least as I would interpret it, that the NRC feels able to convert numbers given by one test procedure to another?

MR. HENDRIX: Yes.

Q And if we accept that premise--

MR. HENDRIX: I said that that would not be a one to one comparison, but you could get a comparison; yes.

Q For the materials in those capsules?

MR. HENDRIX: For the materials in those capsules.

Q If we accept that for the materials in those capsules, how does the current forecast for end of life rather than TNDT compare with that initial forecast?

MR. HENDRIX: Again, I go back; the best way to look at that is to get those reports and do that comparison.

I can't do that, myself, now.

Q Of your own personal knowledge, you don't have a recollection of those two sets of values and how they compare?

MR. HENDRIX: No.

Q Do you, Mr. Sharpe?

MR. SHARPE: No, I can't.

Q I am now picking up Applicant's Responses dated March 25, 1983. I am looking at Response to Item Two on Page Thirty-Eight, and Mr. Hendrix, your initials follow this Response.

The first sentence reads, "The reason that the RT SubNDT values experienced at Oconee have deviated, if they have from the original predicted values, is set forth in the documents listed below."

And I wondered why you phrased the sentence as you did, "if they had."

MR. HENDRIX: Because I didn't go through and do a detailed, point by point comparison of each to determine whether or not there were deviations; and I wasn't sure whether there had been.

Again, I could go back to my answer that the best way to look at those things is to look at the actual reports and do the comparisons for yourself.

It is there in a single table.

Q Okay, thank you.

MR. GUILD: Counsel, we are talking about a simple answer that appears on a single page of documents.

We can save ourselves a lot of trouble and have a clear answer to a narrow question if Mr. Ouellette or Mr. Sharpe can

help me out with where the documents are, I will go fetch them.

MR. MCGARRY: We can reflect that we have now carried in from the Document Room all of the materials that have been produced so far on Contention 44; and they are available here to us today.

MR. RILEY: I would like to inquire of Duke's Counsel considering the volume of this material, which is approximately two inches, might it not be more expeditious if I will go through it, and if there is something that will prove useful, . to bring it up at a later date rather than take it up at this point?

MR. MCGARRY: Certainly, let me state our position. Our position is this material has been available in this room and discovery closes on this subject on May 20; and that is next Friday.

MR. RILEY: I think your point is well taken.

BY MR. RILEY:

Q What in the NRC document, itself, there,

responds to our Discovery dated December 18, and I am not holding you responsible for what the NRC says, but there is a sentence here that involves you, and perhaps you can enlighten me on it.

On Page 86 of this particular file, and you are welcome to look at this sentence, "Final design details," this is in the context of considering overcooling and overpressurization events, "Final design details will be reflected in plant technical specifications."

Can you tell us what the status of that is, Mr. Sharpe?

MR. SHARPE: No, I think you have to ask the NRC Staff about that.

Q Is it true that the design details on dealing with overcooling and overpressurization were not complete as of December 18 last year; and if it is, are they complete now?

MR. SHARPE: We have addressed Cask A49, Pressurized Thermal Shock, in the Catawba FSAR. I really couldn't comment on it beyond that.

Q As far as you know, there are no outstanding requests from staff with respect to your responses?

MR. SHARPE: Correct.

Q On Page 87 is an Interrogatory that Duke

was also presented with, "What is warm prestressing? Will this process be used on the Catawba reactors?"

As I recall, the Response was warm prestressing was a phenomenon, not a process; and Mr. Hendrix is in agreement with that statement?

MR. HENDRIX: Yes.

Q However, the NRC treats it as if it were a process; and will you tell us what the NRC had in mind, Mr. Hendrix, in making its Response which I hand to you?

MR. HENDRIX: I certainly cannot address the phenomena of warm prestressing. That is much better addressed by the person from Westinghouse who would have come.

Q Would you now take the position that in the minds of some people warm prestressing is a process as well as a phenomenon?

MR. HENDRIX: I really can't discuss that in any detail. I guess no comment on that.

Q One sentence there which I can't understand, and perhaps you can help me, "Warm prestressing was not used for evaluating the reactor vessel integrity of Catawba Units One and Two."

MR. HENDRIX: Again, Ted Meyer from Westinghouse, who would have been here, is the person

to answer that question. He is completely capable of doing that.

Q The same page, in Response to Interrogatory Nine about training for handling overcooling and overpressurization transients, "Improvements in training and operating procedures concerning overcooling and overpressurization are under development by the Staff."

Have you any familiarity with this, Mr. Sharpe or Mr. Hendrix?

MR. HENDRIX: Well, I think we could say that improvements in training and operating procedures were an outgrowth of TMI, which we have addressed.

The operating procedures in response to NUREG 737, Item 1C1, I believe we certainly provided copies of those procedures to the Intervenors.

Q Would you agree, Mr. Hendrix, to an NRC Response which reads, "Longitudinal welds are not preferable to circumferential welds in maintaining the reactor vessel integrity. The stress intensity factors from the longitudinal RN crack under pressurized thermal shock condition, which would be greater than the stress intensity factor from a circumferential oriented crack."

The law that applies stress intensity factor

is less likely a brittle factor?

MR. HENDRIX: I really cannot respond to that.

Q If these questions are outside your domain of technical operations, why please so indicate. If you have a temperature differential between the inside diameter and the outside diameter of 250 degrees, meaning that the inside is hotter than the outside by 250 degrees, would you be able to tell me what the stresses at belt line would be at the inside diameter and at the outside diameter; and where the neutral plane would be located?

MR. HENDRIX: I would not.

Q The same answer would be true for stresses perpendicular to the plane of the belt line?

MR. HENDRIX: Yes.

Q Can you tell me what the coefficient of thermal expansion is as a function of temperature for the materials in the reactor for the range of life to 600 degrees Fahrenheit?

MR. HENDRIX: I cannot personally tell you that now.

Q Do you have any tabular material that would enable you to say?

MR. HENDRIX: I feel certain that I could

find that material; yes, sir.

Q You could find that?

MR. HENDRIX: Yes.

Q With respect to variances and thermal coefficient property, do you think that the literature you would have available to you would give information as to the variance coefficient of expansion; for example, for plate to plate over the operating temperature range?

MR. HENDRIX: I think the information that I would have readily available would not speak to the variance.

If one wanted to do a more detailed look, you could probably come up with that.

Q Are you familiar with the effect of fluence on thermal coefficients?

MR. HENDRIX: No.

Q You would disregard this as irrelevant or is it possibly an important question?

MR. HENDRIX: I cannot respond; I have absolutely no information on the effect of effluence on thermal shock expansion coefficients.

Q Did the reactor vessel that was used on Catawba One originate outside of, and I can't pronounce it, De Rotterdame Drodgdak Mattschappu N. V. --

good try.

MR. MCGARRY: Better than I could do.

MR. SHARPE: I believe we have identified in the FSAR and Responses who made the vessels, if that is what you are asking.

BY MR. RILEY:

Q Specifically did it originate in a combustion engineering division in Indiana? It provided a number of vessels to the Rotterdame organization at one time. I want to know if this is one of them.

MR. SHARPE: I don't have any specific knowledge of that.

Q Do you think there is anything in the FSAR about it?

MR. SHARPE: I think the FSAR or the Interrogatory Responses indicate who the vessel manufacturer was.

I believe there was a line of questions on that.

Q Well, that is the Rotterdame concern, but I'm asking for the history of the vessel because I know of a number of engineering vessels by Rotterdame.

MR. SHARPE: I am not familiar with that.

Q Can you tell us a little something, Mr. Hendrix, about warm prestresses in a semi-quantitative way; namely, done at temperatures above RT NDT; and is it different as the temperature increment above RT NDT increases?

MR. HENDRIX: Warm prestressing is, again, is a complex technical phenomena, and though I have a rudimentary understanding of it, I believe anything I would say would only serve to further confuse if you are slightly confused now.

I could not explain in any detail warm prestressing. To go to get those details you would have to go to those personnel who are well versed in prestressing.

They are available.

Q What are the terms of art used in limiting reactor vessel materials? Would you define that term?

MR. HENDRIX: Limiting reactor vessel materials means looking at those materials, and you have to look at a number of parameters, the level of effluence, the copper, nickel, phosphorus, various other parameters that would make this material limited with respect to embrittlement over the life of

the plant.

Q Let's see if I understand that: If you have several types of material in a reactor, you have plates and welds and perhaps some other materials in there; and the copper contents differ, and effluent levels differ, the limited material would be the one that would show the highest rise in the RT NDT, or would show the highest terminal RT NDT projected for the life of the plant, would show the highest terminal RT NDT?

MR. HENDRIX: That would be essentially correct. I think the third factor one has to develop is the stress of it, a stress analysis test of the vessel.

Q And a flange would be a different story than a belt line, for example?

MR. HENDRIX: I assume it is.

Q I am simply thinking of how large it is. Now I want to ask questions about Applicant's Responses --you made a distinction between a flaw and a crack in Response to Interrogatory One.

Would you tell us in more logical terms what the difference is?

MR. HENDRIX: No, I really couldn't say.

Q Am I to conclude there is no difference

between a flaw and a crack?

MR. HENDRIX: No, a flaw is a broad range of defects. It could include a crack, a rounded occlusion, a lap, any kind of flaw.

Q All right, you have read the reports on the ultrasonic testing performed on the three Oconee units?

MR. HENDRIX: In detail, no; I have looked at the results, at a summary of the results. That isn't really my job to look at those in any detail.

Q You wouldn't be able to comment then if I said that ultrasonic testing on one of the units showed a crack a quarter of an inch deep?

MR. HENDRIX: Not specifically, I certainly would not except to refer you to those documents that are on file in the QA Vault, which show there were no unacceptable indications found in any, and I assume you are talking about Oconee, in any of the recent inspections within the last year, year and a-half.

Q The SER states that procedures used in welding a reactor as such, as to have a reasonable expectation of not forming any micro-cracks.

Are you familiar with that?

MR. HENDRIX: No, I am not familiar with that statement.

Q This is part of the regulations pertaining

to a welding reactor vessel. It applies to placing the cladding and effects on the sub-cladding, and these procedures are all aimed at avoiding formation of cracks and micro-cracks.

I believe you will find in your reports on the ultrasonic testing of the Oconee reactors, the ultrasonically designed presence of cracks in welds in at least one of the Oconee reactors.

What I want to ask you is how did you get from a condition of no crack to crack, if at all times you have been involved the mill ductility reference temperature --

MR. HENDRIX: I cannot respond to that except to say again we would have to go back and look at specifically what indications you are talking about and reiterate that there were no unacceptable indications in the Oconee vessels.

There were no indications that were referred to as cracks. As I remember the discussion specifically again, I am not aware of what you are specifically referring to; but the discussions as I remember them referred to the indications as likely fabrication flaws, not service induced flaws.

Q Are you familiar with Mr. Foss' Answer to the last of the CESG Interrogatories, the last in

number, the very last one?

MR. HENDRIX: The very last one, I just scanned these, not in detail. I mean I have read it.

Q Now, of your own knowledge, are you familiar with the high pressure injection, long nozzle cracking of Oconee?

MR. HENDRIX: I am familiar with it in a general sense.

Q Can you tell us what detailed knowledge you have of it, the specifics of your knowledge?

MR. HENDRIX: I would have to resurrect from memory the work that was done on that particular failure, and I would rather not do that.

Again, I think that would be, I am not sure I can ressurrect it in accurate detail. I do remember the incident.

Q Can you give us a reference to a full account?

MR. HENDRIX: I would have to go and look. Also, I believe I should say this: That failure was reported to the NRC in some detail, so that information is available.

I am not sure what other information is available, but I do know there was a final report on that particular failure.

MR. RILEY: Perhaps Counsel could tell us whether those documents are available here in Charlotte.

MR. CARR: I have no idea, it is the first I've heard of it, if I understood what I heard.

You see, I have a little bit of difficulty understanding how it is relevant to this Contention.

MR. RILEY: Well, our view is that if the state of the art was not such at that time that Oconee was fabricated as to anticipate and prevent certain types of defects, it is a reasonable question as to whether or not the state of art is now such as to similarly anticipate and prevent such defects.

MR. CARR: Without getting into an overly technical debate, what is the Contention between--did you say high pressure injection nozzle and a reactor belt line?

MR. HENDRIX: Belt line flaw is what we were discussing.

MR. RILEY: They both involved

welding of similarly clad materials.

BY MR. RILEY:

Q Mr. Markey raised some questions regarding pressurized thermal shock in his letter of February 15, and this is 1983; and the NRC, which received this letter, has made a Response, and in the discussion on Oconee, one of Duke Power Company was involved in providing design and operating data and reviewing the accuracy of analytical models; and it is apparent that the situation was complex.

It was used in the Contention of Risk Analysis and modeling to forecast levels of risk at specific levels of risk; and I would like to know if either of you is familiar with that work?

MR. HENDRIX: No.

MR. SHARPE: I am not.

Q You have not seen the document?

MR. HENDRIX: Not to my knowledge.

MR. SHARPE: No.

Q Have you heard before of this program, PTS Risk Program?

MR. HENDRIX: I am not directly involved with the PTS.

Q Right, but have you heard before of the

program?

MR. HENDRIX: Specifically the PTS Risk Program, not to my knowledge; no.

Q How about you?

MR. SHARPE: No.

Q Who in the company would be dealing with that problem and supplying this information to the NRC Staff?

MR. SHARPE: On Oconee?

Q Yes, Oconee One.

MR. SHARPE: Actually supplying information or transmitting it to the NRC?

Q Supplying and transmitting are both involved.

MR. SHARPE: I would assume a lot of that information would come from Babcocks and Wilcox, but I don't have any specific knowledge.

Q Well, the language of this letter is, I believe this is over Charlie Talmadenes' signature, that Duke provided information.

MR. HENDRIX: We are just not aware of who did or would have.

MR. GUILD: For the Record, this is a March 24, 1983, letter from the Chairman of the Commission to Representative Markey,

and one of the enclosures to the letter is a staff, NRC Staff discussion of the subject of PTS, which makes the reference to Duke and the Oconee Unit as one of three subject plants; and Duke Power as one of the submitters of data to the Staff for Response to Representative Markey, and perhaps that might clarify enough or examination of the document might help the Witnesses respond.

MR. HENDRIX: I think I know the program that you are talking about, but I really cannot say who actually supplied the data.

It would be a number of people because the data involved would have been from several different areas, some from B and W, some from Duke.

Again, I think I know the program you are talking about, but I am not positive.

MR. SHARPE: Design and operating data, the design information would likely come from Babcocks and Wilcox and the operating data would come from Duke.

MR. GUILD: Counsel, perhaps for

additional clarification perhaps the Witnesses can identify who would likely know the answer and who would be responsible for that report or that information.

MR. CARR: I thought I heard them say they did not know.

MR. SHARPE: I assume if it came from Duke to NRC it would be in our corporate files.

We keep everything in our files that we send to NRC.

MR. GUILD: Is there somebody who would be more responsible who would know the answer to the question?

MR. SHARPE: If we had sent this information specifically or--

MR. GUILD: Or where we could find it.

MR. CARR: Again, not to be difficult, I thought I heard Mr. Sharpe and Mr. Hendrix say they did not know; and I don't know.

It is ten minutes past 7:00 at night, and I can't go make a phone call to find out who has it.

MR. GUILD: Mr. Hendrix, do you know who might have that information or have it available?

MR. HENDRIX: I don't know now who did, but I know who to go ask.

MR. GUILD: Who can you ask?

MR. HENDRIX: I would start with the Head of Licensing and it would be under his responsibility somewhere.

MR. GUILD: Fine. Gentlemen, thank you very much; that is all the questions I have.

FURTHER THE DEPONENTS SAITH NOT.

I, Robert Sharpe, hereby certify that I have read and understand the foregoing transcript and believe it to be a true, accurate and complete transcript of my testimony.

Robert Sharpe

This Deposition was signed in my presence by Robert Sharpe on the _____ day of June, 1983.

Notary Public

I, C. W. Hendrix, Jr., hereby certify that I have read and understand the foregoing transcript and believe it to be a true, accurate and complete transcript of my testimony.

C. W. Hendrix, Jr.

This Deposition was signed in my presence by C. W. Hendrix, Jr., on the _____ day of June, 1983.

Notary Public

C E R T I F I C A T E

STATE OF NORTH CAROLINA

COUNTY OF MECKLENBURG

I, Lynn B. Gilliam, do hereby certify that the proceedings were by me reduced to machine shorthand in the presence of the Witnesses, afterwards transcribed upon a typewriter under my direction; and that the foregoing is a true and correct transcript of the proceedings.

I further certify that these proceedings were taken at the time and place in the foregoing caption specified.

I further certify that I am not a relative, Counsel or Attorney for either Party or otherwise interested in the outcome of this action.

IN WITNESS WHEREOF, I have hereunto set my hand at Charlotte, North Carolina, on this the _____ day of June, 1983.

LYNN B. GILLIAM
Court Reporter

My Commission expires May 12, 1988.