ORIGINAL

NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:

UNITED STATES DEPARTMENT OF ENERGY PROJECT MANAGEMENT CORPORATION	)	DOCKET NO. 50-537
TENNESSEE VALLEY AUTHORITY (Clinch River Breeder Reactor Plant)	)	

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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PROJECT MANAGEMENT CORPORATION	x	Docket No. 50-537
	x	
TENNESSEE VALLEY AUTHORITY	x	
(Clinch River Breeder Reactor Plant)	x	

Monday, August 23, 1982
Hemlock Room

Executive Seminar Center Building

301 Broadway

Oak Ridge, Tennessee

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

BEFORE:

MARSHALL E. MILLER, Chairman

GUSTAVE A. LINENBERGER, JR., Member

CADET HAND, Member

PRESENT:

Representing Project Management Corporation:

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Representing U. S. Department of Energy:

WARREN E. BERGHOLZ, JR, Esq.
Office of the General Counsel
U. S. Department of Energy
Washington, D. C. 20585

Representing the Attorney General of Tennessee:

MS. LEE BRECKENRIDGE
Assistant Attorney General
State of Tennessee

Representing the Tennessee Valley Authority:

EDWARD J. VIGLUICCI, Esq.
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-and-

BARBARA A. FINAMORE, Esq.
Staff Attorney
THOMAS B. COCHRAN
Staff Scientist
Natural Resources Defense Council

Representing the U. S. Nuclear Regulatory Commission:

DANIEL SWANSON, Esq.
STUART TREBY, Esq.
U. S. Nuclear Regulatory Commission
Washington, D. C. 20006

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PROCEEDINGS

JUDGE MILLER: All right, the evidentiary hearing, which will be preceded by the final prehearing conference in this aspect of the proceedings, will come to order, please.

This proceeding is pending pursuant to Notice of Evidentiary Hearing and Prehearing Conference, duly published in the Federal Register, 47 Federal Register 31646.

First, I'll ask counsel and representatives to identify themselves.

We'll start with the Applicants, please.

MR. EDGAR: George Edgar. I'm with the Washington law firm of Morgan, Lewis & Bockius. I represent Project Management Corporation.

MR. BERGHOLZ: Warren Bergholz. I'm with the Office of General Counsel, United States Department of Energy. I represent the United States Department of Energy.

JUDGE MILLER: Thank you.

MR. BERGHOLZ: Behind me is Mr. Walter LaRoche and Mr. Edward Vigluicci, representing the Tennessee Valley Authority.

JUDGE MILLER: Anyone else? All right.

MR. TOUSLEY: My name is Dean Tousley I am with Washington law firm of Harmon & Weiss, representing Intervenors Natural Resources Defense Council and Sierra Club.

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MS. FINAMORE: My name is Barbara Finamore. I am an attorney with Natural Resources Defense Council, and I'm here representing the Natural Resources Defense Council and the Sierra Club.

JUDGE MILLER: Thank you.

MR. COCHRAN: My name is Thomas B. Cochran. I'm with Natural Resources Defense Council. I'm a physicist.

JUDGE MILLER: Anyone else, before we go to Staff?

(No response.)

JUDGE MILLER: Okay. Staff.

MR. SWANSON: My name is Daniel Swanson. I'm a counsel for the NRC Staff.

On my right is Mr. Stuart Treby, Assistant Chief Hearing Counsel for the Staff. And also sitting with us at counsel table today is Mr. Richard Stark, the Licensing Project Manager on behalf of the Staff for this project.

JUDGE MILLER: Does the State of Tennessee want to weigh in now?

MS. BRECKENRIDGE: My name is Lee Breckenridge, Assistant Attorney General. The Attorney General represents the State of Tennessee.

JUDGE MILLER: Thank you. Do we have anybody -- the City Attorney from Oak Ridge, isn't he usually with us?

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MS. BRECKENRIDGE: Not today.

JUDGE MILLER: How about our own county here, don't we have some counties that are involved?

Well, at any rate, we've identified all who are here, I assume. If anyone comes in, we'll pick them up.

We will first of all go into those matters which are appropriate for a final prehearing conference, and then, after a short recess, we'll just move right into the evidentiary hearing.

By the way, for the paging, let me just state we are starting this transcript with Page 1234. That is the page of the proceedings starting back in, I think, 1976, going to our last session here in Oak Ridge, which was, I believe, February of this year.

We got diverted inadvertently when we had some sessions with counsel and parties in Washington, and instead of picking up the number as requested, the reporter started off a new series, so therefore you will see that perhaps the last page of our conferences in Washington was 800 something. Those are the numbers that will be held for whatever conferences there are in Washington with parties and counsel. We just regard that as a separate segment of proceedings with its own numbers, but the TR, which we're already past, 1234 et seq. will be the -- the numbers of the transcript will be the proceedings here in Oak Ridge, and

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picking up with the preceding matters we took up here in Oak Ridge earlier this year.

I want to discuss numbering, don't let me forget it, when we get to handling of prefiled written direct testimony, but I won't take it up at this time.

Let me also now indicate that we have had some requests for prehearing -- pardon me, for limited appearance statements. We had let the public know that they are welcome to participate in that fashion, and pursuant to our invitations and notices, we have had eight requests, which I'll just run through the names so that you'll know who they are and we can have an identification, and where possible we can assign times we can have these statements, limited appearance statements at times that are convenient both to the parties and the Board as well as the persons participating.

We have heard from Mr. Albert Bates, Mr. Edward E. C. Clebsch, Mr. Michael D. Fort, Mr. Daniel F. Read, Mr. John Z. C. Thomas, Mr. Miro Todorovich, Mr. Louis G. Williams, and by telephone this morning I saw the representative of the Chamber of Commerce.

Now, as far as the Chamber of Commerce is concerned, I think the convenient time is immediately at the start of the afternoon session, which will be about 1:15, 1:30, or somewhere in there.

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Let me ask, are any of the other persons whose names that I read here and do they have any desires as to the timing of their oral statements, if they wish to make oral statements?

Yes.

MR. BATES: I'm Albert Bates, and I would -- it would be fine at the start of the afternoon session, if I could be heard then.

JUDGE MILLER: All right. Fine. We'll put you down then for about 1:30, then; 1:15 to 1:30, depending on when we adjourn for lunch.

Anyone else? Anyone else here whose name I haven't read?

(No response.)

JUDGE MILLER: All right, let us know as we go along. We'll try to accommodate everyone who wishes to be heard.

All right. Let me inquire now on the matter of procedures to take up at our prehearing conference. We will establish the ground rules for our evidentiary hearing that we'll be moving into shortly.

Before I go into that, are there any matters that you wish to identify for the record? I see that I have here a list of Applicants exhibits, for example.

MR. EDGAR: That's right. I have handed out to

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all parties, and we have previously notified the parties as to the contents of that list. We have also given all parties copies of those documents, which at the time we enter our testimony we would anticipate offering those exhibits.

JUDGE MILLER: That's your list of all exhibits offered so far now?

MR. EDGAR: Well, other than the prefiled testimony.

JUDGE MILLER: All right. Anything else that anyone wishes to identify for the record?

MS. FINAMORE: Yes, Chairman Miller, we would like to discuss several matters.

First of all, I think we'd all like to have it clear what the proposed schedule is, whether or not this hearing is to be concluded in one week or not. I think that the amount of time that we need for cross-examination depends directly on what portions of Applicants testimony and exhibits are introduced into evidence or not. We have --

JUDGE MILLER: I'm sorry. Go ahead. I'm trying to locate something.

You want to take up the questions as you present them now, or do you want to run through --

MS. FINAMORE: No, I thought I would just give you a list right now.

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JUDGE MILLER: Okay. Fine. Okay, go ahead. I've got the documents I needed to locate. Go ahead now.

MS. FINAMORE: For purposes of our own witnesses and those of the other parties, I think it would be helpful if we had some idea, at the end of this morning, as to what the schedule will be, and whether or not there will be further sessions after this week, and if so, where they would be held.

The second item we'd like to discuss is whether or not Dr. Cochran may be permitted to conduct cross-examination.

JUDGE MILLER: The answer to that will be no, if he's going to be a witness. I can tell you right now. We don't want any witnesses to act as lawyers, or lawyers to act as witnesses. This is a rule that we always follow, similar to that that prevails in Court, and so therefore we don't allow any witness to wear two hats and proceed to cross-examine other witnesses.

You'll have your option. I was just assuming that Dr. Cochran wanted to testify, from the prefiled written testimony.

MS. FINAMORE: Well, that would pose an extreme problem to us.

JUDGE MILLER: Well, I understand, but that's the rule. Let me say one other thing while we're at it.

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We've had a certain amount of informality in previous sessions, and understandably so, because there have been conferences with counsel or prehearing conferences. We're now moving into the stage where more formality is going to apply. In other words, we want you to conduct yourselves as though you were a lawyer in a courtroom and doing it in accordance with the procedures that follow, or the rules of evidence and the like, and that's what brings up the matter of how many voices; we're following the concept of lead counsel, so where you have multiple counsel, which is perfectly proper, lead counsel will be the one to be heard.

Now, if you wish to have another lawyer act, that may be permitted, provided that whoever is acting conducts the entire matter. If it's a witness, whoever takes that witness, takes that witness throughout. Arguing a motion, whoever starts it handles it throughout. In other words, we don't have anybody cutting in or whipsawing; as we have had, but for understandable reasons where there was less formality, but I'm mentioning it here now because I think we're getting into that area right now and we want to get the ground rules straightened out which will be applicable to everybody, if you've got multiple counsel and from all, but I won't say one party, one vote, but one party, one voice.

I'm sorry if I interrupted you. You may proceed.

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Were you through, Ms. Finamore?

MS. FINAMORE: Well, Mr. Chairman, I'm afraid that cause us some problems. We've prepared our entire case on the assumption that --

JUDGE MILLER: Well, that may cause you problems, but we've told you what the rules are, and another rule is going to be when we've made our ruling, we've all had a chance to consider, we're not going to keep on debating. This is another preliminary matter we're past now. We're down to courtroom practice. This is a trial. Proceed.

MS. FINAMORE: Another matter we would like to discuss is whether or not the parties will have an opportunity to present oral rebuttal.

JUDGE MILLER: Yes. That is to say rebuttal can't be anticipated, so all rebuttal, at least as presently contemplated, will and may be oral.

Next question.

MS. FINAMORE: Another matter we'd like to bring up is related to the question of scheduling. We have brought with us today, and are prepared to argue orally a motion to strike portions of the testimony and exhibits of Applicants.

This motion covers a large portion of the exhibits of the Applicants, and --

JUDGE MILLER: Well, let me cover that for you.

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That's another matter that the ground rules should establish.

As far as testimony is concerned, this Board, at any rate, follows and will adhere to the practice of asking that prepared written testimony be numbered as exhibits, whoever it is, Intervenors, Applicants; that when it is proffered, or offered with the witness on the witness stand, it should be numbered for identification. There should first be given an opportunity for voir dire examination, if the witnesses do act as an expert, and be given a right and opportunity to give opinion testimony, so there will be, first of all, the opportunity for voir dire, which will be covered right then and there, and the proffering party or counsel will identify the areas of expertise for which the witness is tendered. Voir dire will then cover, we'll then rule, and then thereafter you will have set and established the areas of expertise in which it is proper to ask questions leading to opinions, provided that a proper foundation is laid in accordance with the normal rules of evidence.

If there is going to be cross-examination, as usually there is or well may be, we will not rule upon the admissibility of the proffered exhibit, which is the written testimony, until there's been the completion of cross-examination. At that time, when the offer is made, there will be opportunity to object to all or any portion of it

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on stated grounds. The Board will then rule. Now, that's the normal procedure that this Board follows in the handling of testimony, including written testimony, and I think that answers your question, doesn't it?

MS. FINAMORE: Well, Judge Miller, as you have noted from the list of exhibits that Applicants have just given to you, they have introduced substantial portion of the PSAR and --

JUDGE MILLER: Well, they haven't introduced them yet.

MS. FINAMORE: They wish to introduce substantial portions of the PSAR.

JUDGE MILLER: I don't know. We've taken them as they come.

MS. FINAMORE: That's what in the list of exhibits. Now, under your format, we would have to cross-examine them on each portion of those PSAR before you rule --

JUDGE MILLER: You don't have to. You simply cross-examine after an offer is made. Now, it depends on how they handle it, which I think is a matter that probably you can get together on. I don't know what form they're going to make the -- mark them for identification and offer them into evidence. Until I know that, I won't be able to answer your question, but it will be normal and usual. Courts handle hundreds of thousands of exhibits, like

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anti-trust drafts, so therefore this isn't a novel problem.

MS. FINAMORE: Judge Miller, the cross-examination on those portions of the PSAR would take a sugstantial amount of time and would greatly increase the schedule of this hearing. We feel that those --

JUDGE MILLER: It may or may not, depending on the scope that is permitted there. You are anticipating and hypothesizing a lot of things that may not occur. That's why I'm suggesting you might want to be concrete.

We don't now have to go into everything that comes to your mind. Sometimes the problem is larger, looms larger in anticipation than it is in actuality. But I understand your situation. You're going to be given a full opportunity to address it, but I think that a little conference perhaps with Mr. Edgar at an appropriate time may put into a handable way how you want to present your points and render it feasible in a time frame. If it doesn't, we'll of course address it, we'll all address it and we'll rule on it. We're not going to do it now in a vacuum.

Next. Did you want me to address, by the way, your first question, which covered anything that's gone on now except for the schedule of further hearings, I can tell you that this week is for this portion of the issues at this time. We'll complete as much as we can. We intend to move

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with reasonable expedition, and we seek the cooperation of all parties and counsel to that end.

We will reschedule in terms of where are as we approach the end, asking for suggestions of all parties and counsel, but whenever the hearings will be resumed, they will be rescheduled. I can't tell you now when that will be, just as I can't tell you how high is up or how long a man's legs should be. I mean, it's long enough to reach the ground, obviously. But why don't we wait until we get, until we have specific concrete situations, instead of spending time preliminarily on apprehensions, and then apprenehsions of apprenehsions. That's what I'm trying to say. We appreciate the questions that are being raised, but many, if not most of them, will abide the event.

MS. FINAMORE: We have no further matters at this time.

JUDGE MILLER: Okay. Now, let's see, who else has not been heard? Staff.

MR. SWANSON: I just wish to report that the parties did confer informally and attempt to reach an agreement on as much as was possible. We attempted to reach an agreement on the precise scheduling of this week, but we were unable to reach an agreement as the amount of time, for example, to be allotted for discussion of each session. We did reach agreement, however, as to the order of

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presentation that is consistent with the Board's suggestion that Applicants would go first; the Staff would then follow second, and the Intervenors third, and that that order would follow in terms of the presentation of direct evidence and cross-examination, I believe.

MR. EDGAR: Mr. Chairman --

JUDGE MILLER: Pardon me. Were you through?

MR. SWANSON: No, I --

JUDGE MILLER: Did you want to interrupt or --

MR. EDGAR: No. I'm sorry. Excuse me.

JUDGE MILLER: Okay. Go ahead.

MR. SWANSON: Perhaps before we move on, if we want a complete discussion, for example, on schedule, we -- although we didn't have an agreement, it may be appropriate to discuss proposals at this time as to the schedule.

JUDGE MILLER: Very well. That might be most expeditious. You've told us now the scheduling suggested by the Staff.

MR. SWANSON: Well, no, it's a suggestion of --

JUDGE MILLER: You told us about a failure, I think.

MR. SWANSON: A failure --

JUDGE MILLER: Tell us about what affiramtively the Staff suggests.

MR. SWANSON: Well, the Staff is prepared to go

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along with the schedule proposed initially by Applicants. Perhaps Applicants would want to discuss that at this time.

JUDGE MILLER: All right. We'll see what it is, then. Mr. Edgar.

/ / /

MR. EDGAR: I have handed out Applicant's proposed schedule; essentially what we've done is attempted to derive some reasonable allocation of time on the assumption that we were going to complete the taking of evidence in this phase in one week.

On that assumption, the allocation is essentially to provide three of the days for NRDC to cross-examine and a day and a half split between Applicants and the NRC Staff on NRDC testimony.

The order of witnesses provided is that Applicants would put on their testimony on Contention 1, 2 and 3, with the exception of 2-E, which relates to the dose guidelines; then Applicants would present their testimony on Contention 2-E concerning the dose guidelines.

Following that, the Staff will present all of its testimony and, finally, NRDC will present its testimony.

Now, we have discussed this with the Staff. The Staff agrees. We have discussed it with NRDC and they are in disagreement. They can speak to their own basis for disagreement.

JUDGE MILLER: Very well.

MS. FINAMORE: Mr. Chairman, we believe that this proposed schedule is way too short to permit us adequate cross-examination of the Applicants and the Staff and, particularly in light of the fact that Dr. Cochran

2-21 will not be able to conduct cross-examination as we had planned and I think that's going to add more time to the cross-examination than even we had anticipated before this morning.

We have not brought our lead Counsel down here on the assumption that Dr. Cochran would be able to conduct cross-examination and I'm afraid that we'll need even more time.

JUDGE MILLER: Well, I don't know what led you to do that. We've had the lead Counsel concept -- we've previously discussed it. We've had lead Counsel, in fact, at our last session. I think I remember telling him, you know, we're going to be moving into the lead Counsel concept of trial and you've had two voice and now you've had three on everything, referring to Dr. Cochran, he will be permitted -- nothing improper about it but I was certainly pointing out quite clearly that we were not going to have three voices and we weren't going to have whipsawing and I think the record will sustain that because I recall commenting on it.

So, to the extent that you are telling us facts, we have no problem. To the extent that you are tending to imply that you were taken by surprise, I think for the record would be otherwise.

MS. FINAMORE: We were also under no

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impression that the hearings would be limited to one week and we see no reason why they should be, if we need more time and that, in fact, we do.

JUDGE MILLER: Well, that remains to be seen.

MS. FINAMORE: We think that it doesn't make much sense to limit us in advance to one and a half day cross-examination of the Applicants before we have seen how quickly this cross-examination can proceed.

JUDGE MILLER: Well, that may be true in a sense then, if there is an attempt to schedule, it would be tentative or preliminary but, on the other hand, when it does establish goals or guidelines, it's appropriate to consider it and it doesn't seem inappropriate, as such, to the Board.

In other words, the opportunity for cross-examination is for a meaningful, specific cross-examination.

Now, I have examined the so-called written testimony and let me make another point on this while I'm thinking of it -- the Board inadvertently forgot to do what it usually does, which the Staff apparently remembered -- we wanted the testimony to be Question and Answer form.

This is testimony. It's not a speech. It's not a dissertation and, unfortunately, we have an awful lot of that in the so-called written direct testimony. We are not being critical now, because the Board should have

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and intended to think that it cleared our last session but Staff, I guess, has been with us before and they put it in Question and Answer form, which is more easily handable, which is more direct in terms of whatever objection there may be and which reminds the witnesses they are witnesses testifying as though orally and they are not making speeches.

And two monologues don't equal the dialogue and so this is one of the problems we have in this phase of the proceeding.

We trust we will not in the future, because we're asking all of you now, in the future, when you file any kind of written testimony of any kind or character, put it in Question and Answer form, please. This will help some of the problems that we're now being confronted with.

Now, as far as the proposed schedule is concerned, it does not look unreasonable but, on the other hand, it is true that we will initially see what the course of cross-examination is.

Now, insofar as your attempting, Miss Finamore, if you are, to tell the Board you are going to take a lot of time in cross-examination, it would be certainly premature to make any such judgment and the Board would be equally premature. We don't intend to have extended cross-examination which is not productive and which is not meaningful in terms of decision-making.

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Now, you are all experienced Counsel and we think both the questions and the answers and the cross-examination and the answers should be direct, focused and meaningful. To the extent that they are not,the Board will interrupt, if necessary, if there are going to be objections.

Now, handling it in that fashion, it may be more expeditious than we are now contemplating. Then, again, it may not. I'm not going to try to make a judgment in advance but the allocation of time does not appear initially to be unreasonable.

MS. FINAMORE: Well, Mr. Chairman, we have prepared a cross-examination plan and we feel that all the topics we wish to cover in that plan are meaningful and relevant and can be conducted expeditiously and even given that, we feel that one and a half days is way too short.

JUDGE MILLER: Well, one and a half days for what?

MS. FINAMORE: For Applicants and one and a half days for Staff. Expecially considering the fact that Applicants have proposed to introduce a substantial number of exhibits that we feel cannot be introduced into evidence without cross-examination as to the facts contained therein.

JUDGE MILLER: Well, all we can say or should say at this point is that we will rule specifically as we get

into it. The plan does not seem unreasonable, yet you're properly advising us that in your anticipation, you think it's going to take more time, so that's what trials are for; isn't it?

Okay. Next.

Did you have anything further on the schedule?

MS. FINAMORE: We have no objection to the order of the appearance of witnesses.

JUDGE MILLER: Okay.

I guess everyone's been -- oh, I'm sorry.

The State of Tennessee. I didn't mean to ignore you. What is your position?

MS. BRECKENRIDGE: Mr. Chairman, I have no position on the schedule.

I do have one preliminary matter which I would like to bring up, if we've concluded the others.

JUDGE MILLER: All right.

Let me just take a moment.

Is this the conclusion now of the statement you wish to make on scheduling before we go into other matters?

MR. EDGAR: I had one detail that I forgot to mention and the Board's remarks about speeches perked my memory and --

JUDGE MILLER: In a fruitful way, I trust.

MR. EDGAR: Well, I think it did. It was

something that was mentioned here but in the footnotes to the proposed schedule, gratuitously -- well, not gratuitously but I subtracted out or allocated time for redirect and recross.

The suggestion was made for oral rebuttal. We don't have a problem with that but it seems to us that in the interest of keeping an organized record, that the oral rebuttal would properly be delivered in conjunction with the redirect, rather than have arguments and confusion about what's redirect and rebuttal, it would probably make sense, as a practical matter, for the cross-examination to proceed on the testimony.Then, at the end of that and the Board questioning, do the redirect/rebuttal and then proceed to recross.

JUDGE MILLER: Well, I don't think the Board's even thinking of rebuttal at that point.

What you have described would be redirect, I take it, within the scope of matters that came out as the result of cross and whatever recross there would be, would be limited to redirect.

Isn't that what we're talking about?

MR. EDGAR: Yeah, in the normal sense but if we're going to have speeches initially --

JUDGE MILLER: What speeches? Now, wait a minute.

MR. EDGAR: I guess I'm confused. There was a statement made about oral rebuttal.

JUDGE MILLER: The question was whether rebuttal could be oral or had to be written. I said oral.

MR. EDGAR: Okay.

JUDGE MILLER: But I thought a rebuttal, now, and you so far haven't posited me any rebuttal.

MR. EDGAR: No, and I'm trying to get a sense from the Board as to when the Board wants that, in terms of time.

JUDGE MILLER: I don't know that it's necessary that any showing be made. I don't know. I think that's some time in the future. I was only asked the question about rebuttal. Rebuttal required -- rebuttal would be oral. I haven't seen any rebuttal coming along at the moment, this week, but we'll see.

All right. Next.

MR. SWANSON: Just to follow up on that so we can properly plan, it will only speak for the Staff anyway, we intended to conduct some very limited oral rebuttal in response to the Intervenor's testimony. We are prepared to conduct that either at the beginning, when the witnesses first get on the panel or at the end. In either case I think we're talking about less than fifteen minutes. So it would be fairly limited but, again, for planning

purposes --

JUDGE MILLER: That's rebuttal to what, now?

MR. SWANSON: To the Intervenor's prefiled written testimony.

JUDGE MILLER: Well, aren't they putting theirs on at the end?

MR. SWANSON: That is correct. I was thinking in terms of efficieny. If we --

JUDGE MILLER: You don't want anticipatory rebuttal; do you? Is that what you're throwing out?

MR. SWANSON: Well, okay. That would also presuppose another stipulation that I didn't get a chance to mention.

I had hoped that we might get agreement on it and that was perhaps to reach a stipulation as to the authenticity and admissability of testimony en masse. That is, the prefiled written testimony, subject to all rights of voir dire, cross-examination and motions to strike.

JUDGE MILLER: Well, try that at recess, if you haven't already done so.

MR. SWANSON: We did offer that. I think we had agreements among Staff and Applicants and Intervenors were going to further consider the matter and if we had an agreement as to --

JUDGE MILLER: You're talking about agreements

now and the Board is at a final pre-hearing conference stage.

Now, you'll have an opportunity to explore it further, if that be needed, and to apprise the Board whether or not there is stipulation or where the matter stands.

MR. SWANSON: Well, the point being if we did get one among the parties and the testimony en masse could be ruled or stipulated to be admissable, we would then have at least admissable evidence from which to conduct rebuttal as the Staff panel comes on, and --

JUDGE MILLER: That might be but I think you are anticipating a lot of things.

You are anticipating the stipulation is going to bind the Board, in the first place, which may or may not be true. It may be true ninety-percent and maybe not ten --

MR. SWANSON: Oh, it's only going to be offered to the Board; that's correct.

JUDGE MILLER: We've got to control the record, too.

MR.SWANSON: Yes.

JUDGE MILLER: And no doubt, I mean, the bulk of what you would stipulate, the Board would have no problems with, probably, but to be quite clear, the Board reserves

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the right to rule upon what is going to go into evidence in this record. We want to have a full, fair but not unnecessarily cumbered, so from that point of view, I didn't want you to anticipate the anticipation of whatever it was you were headed for as though it were carved in stone but these are matters, I think, that you should properly take up with Counsel for the other parties, and to the extent that you can proffer a stipulation, we'll sure be glad to hear it.

MR. SWANSON: Okay, and just for planning purposes, it appeared to us as though it might be most efficient, as long as, for example, when the Staff panel is already seated and sworn in, to conduct some very limited rebuttal, oral rebuttal testimony and, again, I'm talking about --

JUDGE MILLER: This is testimony by the Intervenors?

MR. SWANSON: This would be in response to the testimony of the Intervenors; that's correct.

JUDGE MILLER: I'm not so sure that sounds wise. How do we know what the cross-examination of their prime testimony is going to be?

What's going to be the state of the record when they finish putting on their case, at the point where you would normally put on rebuttal?

It might be an altogether different appearance of things.

Secondly, when you get into anticipating in advance how you're going to rebut something that's in writing, you're anticipating an awful lot.

You may want to bring a member of that panel back. I mean, the picture changes as you go along and there is the product of cross-examination.

I think that the Staff -- I'm just making a suggestion now, I'm not telling you how to try your case -- but I think you would not be wise to put on anticipatory rebuttal by anybody because you don't know what you're going to be rebutting.

MR. SWANSON: Okay. Fine. Thank you.

JUDGE MILLER: Anything further?

(No response.)

JUDGE MILLER: Okay.

Now, I think the State of Tennessee has some matters different from those we've just been discussing.

MS. BRECKENRIDGE: Mr. Chairman, the State of Tennessee may wish to participate later in the second stage of these hearings on matters that touch on environmental questions. However, it seems that perhaps our presence would not be necessary during this phase of the hearing, so, with the Board's approval, I will plan not to attend the

remainder of this week but I would like to be kept apprised on later developments so that we could participate in that second stage.

JUDGE MILLER: Very well.

Certainly leave is granted to you to leave at such time as you wish. We understand that the State does not --this is in the interest of the State now?

MS. BRECKENRIDGE: That's right.

JUDGE MILLER: Not as a party, as such?

MS. BRECKENRIDGE: That's right.

JUDGE MILLER: Of course, we give you leave to participate to the extent that you wish.

Subsequent to this week, it's a little hard for us to tell you but if you'd check Friday, I think perhaps we could indicate to you, at least in a preliminary way, what time frame we're looking at for a resumption of evidentiary hearings.

Now, the final draft supplement to the FES, I guess is the document that the Staff is working on and recirculating; is that correct, Mr. Swanson?

MR. SWANSON: That is correct.

JUDGE MILLER: And you had given us previously an estimated date, at any rate, of November 1 for the completion of that work and the filing of it with the parties; is that correct?

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MR. SWANSON: That is correct and that still is the expected date .

JUDGE MILLER: It still stands?

MR. SWANSON: That is correct.

JUDGE MILLER: As far as getting into the evidentiary hearing in the environmental matters, in that regard, then, will be sometime and hopefully shortly after November 1 that we would be able to schedule those matters.

Now, I can't tell you now where we stand with reference to the site suitability issues, which are the subject of this first evidentiary hearing. If they are concluded, that's one thing. If they are not, then, prior to the November 1 date and at a date to be fixed, we would hopefully conclude that.

Does that help you as far as a rough and ready scheduling --

MS. BRECKENRIDGE: Yes. I'll keep in touch, Mr. Chairman.

JUDGE MILLER: Okay. Thank you.

MR. SWANSON: Mr. Chairman, the Staff will be glad to contact the Attorney General's Staff at the conclusion of the session pertaining to any scheduling.

JUDGE MILLER: Fine.. Maybe that will help, and save you the time.

Now, is there anything further that the

parties wish to bring up at the final pre-hearing conference on this phase of the hearing?

Mr. Edgar and Intervenors and Staff, you might identify for the record those issues and sub-issues for which you have prepared your direct estimony and which are the subject of this week's hearing, just so we'll have the scorecard, so to speak.

I guess Applicant ought to go first, if you're going to lead.

MR. EDGAR: Yeah.

As our pre-filed testimony consists of two separate pieces of testimony, --

JUDGE MILLER: First, before you tell me about that, what are the contentions?

MR. EDGAR: Right.

The contentions that we are addressing through both pieces of testimony are Contentions 1, 2 through --

JUDGE MILLER: All of 1?

MR. EDGAR: All of 1.

All of 2. And all of 3.

JUDGE MILLER: All of 2 and all of 3.

MR. EDGAR: As subject, of course, to the Board's April 22nd, 1982 order.

Now, I should explain that we have pre-filed direct testimony in one package which consists of matters

addressing everything in Contention 1, 2 and 3, except for Contention 2-E, which relates to the site suitability dose guidelines.

We have a separate package of testimony, which addresses the site suitability dose guidelines. We intend to present two witness panels.

The first panel would address, with their prepared written direct, the contentions in 1,2 and 3, with exception of 2-E, the dose guidelines.

The second panel would address the testimony concerning Contention 2-E, the dose guidelines.

JUDGE MILLER: All right. Let's see who is next on that. The Staff, then, I guess would follow?

MR. EDGAR: Yes.

Before we begin, I want to make sure the Board understands and has no concern with the proposal; that is, that Applicant will put on both of those panels before we go on to the next party. The reason being that these issues have been considered as a single, rather large issue by the Staff and will be treated as such and, in fact, will be put on as testimony by one panel.

JUDGE MILLER: Yes. That was what we, the Board, had planned, unless there is some strong objection.

We planned that the Applicants would go first with both their panels with the projected testimony to the

2-17

Conter ions thus described.

MR. EDGAR: Yes.

JUDGE MILLER: And then the Staff will go forward with --

MR. EDGAR: Yes. Okay .

The Staff will go forward, also addressing Contentions 1, 2 and 3, as limited by the Board's April orders, which means that the testimony will adress 1-A, 2-- what -- all of Contention 2 and then 3-B,C, D.

Now, we also have two testimony packages. However,because of the interconnections between the various issues and the fact that any one panel would almost inevitably have to call on the expertise of someone from the other panel in the process of responding to questioning, we propose that the most expeditious and I think most efficient way to allow examination, is to put both panels on together, at one time, so the Staff at one time would be then putting both packages of pre-filed testimony and put its witnesses up on the witness stand at one time.

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Now, just by way of restatement, the Staff's testimony would consist of the two testimony packages addressing those contentions.

JUDGE MILLER: One panel?

MR. SWANSON: Yes, it would be one panel of the witnesses for both packages, and we will also offer the Staff's 1982 site suitability report, and for purposes of showing compliance with the Commission's regulations, we will also introduce the ACRS letter addressing site suitability matters.

JUDGE MILLER: Intervenors.

MS. FINAMORE: We intend to produce two panels as well.

JUDGE MILLER: Two panels?

MS. FINAMORE: Two panels. The first panel will consist of Dr. Cochran and Frank von Hippel.

JUDGE MILLER: Pardon me. Which contention, the same as the others you've described?

MS. FINAMORE: No, Mr. Chairman. The first panel will discuss the matters contained in the testimony of Dr. Cochran, Part 1 --

JUDGE MILLER: Pardon me. I'm not asking now about the testimony. I'm asking about the contentions that will be addressed, however --

MS. FINAMORE: That testimony discusses

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Contentions 1-A --

JUDGE MILLER: 1-A.

MS. FINAMORE: -- and 3-B --

JUDGE MILLER: 3-B.

MS. FINAMORE: -- and 3-D.

JUDGE MILLER: 3-B and D.

MS. FINAMORE: We felt that those were sufficiently related that they could be treated together and --

JUDGE MILLER: We're trying now to get all contentions, no matter how many panels. I mean, we're not breaking down the evidentiary form now, we're trying to locate the contentions the parties will be addressing, and so forth.

Now, I have so far 1-A and 3-B and D.

MS. FINAMORE: We will also be discussing all of Contention 2 --

JUDGE MILLER: 2.

MS. FINAMORE: And Contention 3-C.

JUDGE MILLER: 3-C. Okay. Is that the extent now of the direct testimony, however -- in whatever form it takes, however many panels, that's the testimony that the Intervenors intend to address.

MS. FINAMORE: We would also like to point out that as our Contention 2-E is written --

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JUDGE MILLER: Pardon me. 2-E what?

MS. FINAMORE: Contention 2-E contains Contention 11-D. If you read Contention 2-E, it states as follows: "As set forth" --

JUDGE MILLER: Well, I'm familiar with that.

MS. FINAMORE: As far as panels are concerned, Contentions 2 and 3-C will be addressed in a second panel, consisting of Dr. Cochran, Dr. Karl Morgan and Dr. John Cobb.

JUDGE MILLER: Okay. Does that cover it?

MS. FINAMORE: That covers it.

MR. EDGAR: Did you say 2-E? I didn't hear you.

MS. FINAMORE: I said all of Contention 2, which includes 2-E.

MR. EDGAR: In the second panel?

MS. FINAMORE: That's right. That corresponds with the second part of Dr. Cochran's testimony.

JUDGE MILLER: Okay. Mr. Swanson.

MR. SWANSON: Perhaps this is a little preliminary, but I just want to react to the statement that was made. You indicated that 2-E incorporates all of 11-D, or did you mean as limited by 2-E? In other words, 2-E brings up a discrete issue. It says, as stated in 11-D, and then states a discrete issue. 11-D encompasses quite a few issues, including some, which I think you would admit are environmental issues, which we were not to get into,

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such as low level effects of radiation, et cetera, but I think --

JUDGE MILLER: Let me straighten out my memory. Which portions of 11 did we say were subsumed in -- this appears to be 2-E; are we talking about that, in other words, or is it some other subsection of 11?

MS. FINAMORE: Only 11-D, Mr. Chairman.

JUDGE MILLER: D.

MS. FINAMORE: I believe that the environmental issues Mr. Swanson is referring to are covered by other portions of Contention 11 and will not be treated here.

JUDGE MILLER: I see. Well, then, is 11-D to be treated here, Mr. Edgar and Staff? I didn't hear you mentioning those when you addressed contentions.

MR. EDGAR: Our testimony, which is addressing Contention 2-E in the first two pages, correlates 2-E and 11-D, and intends to address both, in that 2-E corss-references right to 11-D.

The issue -- I don't how to say it any plainer than the question is the adequacy of the site suitability dose guidelines under 10 CFR 100.11(a), that's what we've addressed.

JUDGE MILLER: The same for the Staff?

MR. SWANSON: Yes. Certainly, as stated by Mr. Edgar, I think one could put 2-E and 11-D together

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side by side and make an argument anyway that 11-D is broader than 2-E.

The Staff testimony addresses 2-E as stated that the accuracy of the site suitability dose guideline values.

JUDGE MILLER: I see. All right. I guess we'll get it squared away.

Anything further now on the contentions?

I was just going through the ground rules that we wanted to discuss before we move into the evidentiary.

There's one ALAB-600 that I'd like to bring to your attention, and had intended to earlier. This is the Diablo Canyon case, Pacific Gas & Electric Company, ALAB-600, decided July 15, 1980, which may be cited as 12 NRC 3, Page 12, (1980), and I wish to direct your attention to and read into the record numbered Paragraph 6 at Page 12 of that Appeal Board decision, as follows:

"All direct testimony shall be filed in question and answer form. The use of this format should remind counsel and their witnesses to avoid broad and general answers to vague and general questions. Rather, specific narrowly drawn questions and precise answers should be the watchword. Expert witnesses who will present opinion evidence are to be reminded by counsel that they are not advocates. Rather, such witnesses should retain

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their professional objectivity during cross-examination and during questioning by us" -- meaning the Board. "A witness' views which differ from those of his colleagues should be acknowledged, with appropriate explanation for those differences."

Now, these are the guidelines which this Board -- well, this Board, at any rate, generally follows, and I had intended, as I said, to bring it to your attention earlier, but I think that this will contain some cautionary matters that we wish counsel would bring to the attention of the witnesses, insofar as the witnesses are not here present; namely, we don't want witnesses to be advocates, arguing the case, defending unto the death what is written on a script. We want them to testify fully and fairly, to answer reasonably and directly, not to feel compelled to give long-winded explanations when asked something that could be readily answered yes or no, perhaps, or perhaps not, with some limited explanation. We don't want witnesses to think that they can figure out what's coming next and then yes but, and we don't want this thing full of yes but to go on and on and on. You can waste two days out of five that way.

We're raising the question with you now. We request that we take it up with your witnesses to the extent that the matter starts getting into this "yes but" business, the Board will interrupt. I'll tell you that quite frankly

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right now.

And on the question of interruption, let me explain also that, as I've told you before, now, we're going into an adversarial trial type of proceeding, adjudicatory in nature, and we follow generally, by analogy, the Federal Rules of Practice, the Federal Rules of Evidence.

When the Board wishes to zero in on something that counsel are saying, whether it be in discussion, hearing from counsel, or what not, please stop talking and let whoever, whichever Board member is asking ask. We reserve the right to interrupt, to put it very bluntly. This is not meant as a discourtesy. We'll try to do it in a reasonable fashion, but whether you think it's reasonable or not, stop when the Board wants to ask, because we have found it is much better to have you focus on something, or perhaps to explain something that you've just said, as you go along.

This is not a public hearing in the sense that we have Congressional hearings or zoning hearings; nobody owns the floor. In other words, somebody with a microphone -- counsel knows this, but I'm speaking for the benefit of everybody, you don't own the floor and you've got a right to finish ten minutes later, for a number of reasons, but one of them is that the Board wishes to focus, we wish to hear from and to communicate with counsel, and

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we ask to hear from you, or we ask the grounds of your objection, for example. We don't want speeches. We'll interrupt speeches, and we will communicate much better if we do it that way.

Now, we're explaining because sometimes members of the public sitting in attendance, and so forth, don't understand that we're conducting a trial type adversary proceeding, and when we interrupt we're not trying to rattle counsel or urge a point of view one way or the other, but we're trying to focus as quickly as we can, rather than have a lot of time go on. We don't want you to wind up. Get right to the heart of the matter. If you're going to have to get background, put the background in the background; get the foreground first, and then that saves us all a lot of time and trouble.

These are just general observations and you've seen them in practice, and we've conferred with you, but I'm reminding you once again that they both apply and that they're going to be more quickly pointed out, since we're in the trial type proceeding.

As far as the written testimony is concerned, we've already indicated that we wish to have it and them assigned numbers, first of all, for identification, and then ultimately, if you wish, and you probably will wish to offer them into evidence.

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Now, the written testimony will be supplied to the reporter. It will be incorporated in and part of the transcript, and I want to make very clear both to the reporter and to her assistants, as well as to the parties, that when the direct written testimony of Joe Witness so and so, 1 through 27, is handed in and then come back in the form of a transcript reference, would be 1,000 and something or other and will continue right as part of the transcript. It won't be a numberless thing, or won't be following page so and so, and then you have to paw through the transcript.

In other words, the direct testimony is going to be put right in the transcript, it's going to have a transcript number which will supersede any numbering that you might have on it initially; 1 through 20 is going to become 2,047, 2,048, and so forth, should we get that high.

Is this clear to everybody?

Okay. I don't -- let the Board confer for a moment to see if we have anything further now, on either ground rules or matters that we wish to take up at this time before we get into the trial type proceeding.

(Discussion off the record.)

JUDGE MILLER: Is there anything further that the parties or counsel have? The Board has conferred, and we've covered all the points that we wish to bring up.

MR. EDGAR: I think perhaps counsel ought to

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confer on agreement on numbering systems on exhibits and --

JUDGE MILLER: Fine. What we plan to do very shortly is to conclude this final prehearing conference. We'll give you about a ten or fifteen-minute recess and then we'll go right into the trial, or evidentiary hearing.

Is there anyone here now who wishes to make an oral limited appearance statement? I read the names a while ago. I think I've got two who asked to be heard when we resume at about 1:15 or 1:30, the afternoon session. Is there anyone else now who is here who wants to make an oral limited appearance statement?

I think you know that written limited appearance statements may be filed at any time. They will be reviewed by the Board and by the counsel for the parties, so you don't have to make an oral statement to make an effective statement, which will be a part of the record.

All right, hearing none, unless there's some further matter -- is there anything further? All right, the final prehearing conference in this proceeding is hereby concluded and adjourned.

We'll take a 15-minute recess, and we will then start with the evidentiary hearing, the presentation of evidence, and the like.

(A short recess was taken.)

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JUDGE MILLER: All right. The evidentiary hearing in the Clinch River proceeding will now convene, please.

I have been asked by the Reporter to remind you that at the time that you proffer exhibits which are the direct testimony, she will need 15 copies then, not later, or not tomorrow. But she needs 15 copies.

So when you hand them out, be sure to give the Reporter the requisite number of copies of the testimony which will be bound into the transcript and given transcript numbers.

Is there anything preliminarily before we get into the first witnesses?

MR. EDGAR: Yes.

Counsel for NRDC, NRC Staff and Applicants conferred, as we had previously indicated we would. We discussed the procedural question and a stipulation concerning authenticity of the direct testimony and the exhibits.

We have agreed that we would stipulate on authenticity. Of course, the parties will, as indicated by the Board earlier this morning, have their reservation of right to strike on admissibility on other grounds.

There is one reservation on the part of NRDC that I should note; and that is, they would like to have the opportunity to review the PSAR sections that were identified in Applicant's exhibit list and to assure their accuracy,

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but we have no objection to that.

We would note that reservation on their part. They also indicated no objection to the documents identified on the exhibit list as to authenticity, CRBR-3, and WARD-D-0185.

JUDGE MILLER: Wait a minute. What were the others now?

MR. EDGAR: Well, I'll try to get a little better organized, too. I have given the Reporter a marked-up copy of the document that I handed out to the Board and the parties entitled "Applicants' Exhibits," and provided a sequential numbering system to the Reporter, which identifies Applicant's Exhibit 1 as "Applicant's Direct Testimony Concerning NRDC Contentions 1, 2 and 3."

JUDGE MILLER: Applicants' testimony concerning NRDC Contentions 1, 2 and 3 previously filed becomes Applicants' Exhibit --

MR. EDGAR: Exhibit 1.

JUDGE MILLER: Thank you.

MR. EDGAR: Now, if you will refer to the Applicants' exhibit list, under the heading arabic one, PSAR, there are a list of PSAR sections.

We would propose to number each such section individually and ask that they be marked as Applicants' Exhibits 2 through 14.

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JUDGE MILLER: 2.3, "Meteorology" becomes 2 --

MR. EDGAR: Becomes 2. And at the end of the list, Section 15-Alpha becomes Applicants' Exhibit 14.

JUDGE MILLER: Okay. It will be so marked then for identification.

(The documents above-referred to were marked as Applicants' Exhibits Nos. 1 through 14 for identification.)

MR. EDGAR: Next, reading down on the list, under the heading arabic two, CRBR-3, Hypothetical Core Disruptive Accident Considerations in CRBRP, then under Volume 1 there are four sections noted, starting with Section 4.0.

We would ask that they be marked respectively as Applicants' Exhibits 15 through 18.

JUDGE MILLER: So marked.

(The documents above-referred to were marked as Applicants' Exhibits Nos. 15 through 18 for identification.)

MR. EDGAR: Then under the next heading, Volume 2, we have four sections of Volume 2 identified, and Appendix A to CRBR-3, Volume 2.

I would ask that the sections identified in sequence as 2.0 through Appendix C be marked for

identification --

JUDGE MILLER: C?

MR. EDGAR: I'm sorry. I misspoke myself. Appendix A.

JUDGE MILLER: All right.

MR. EDGAR: -- be marked for identification in sequence as Applicants' Exhibits 19 through 23.

JUDGE MILLER: It will be so marked.

(The documents above-referred to were marked as Applicants' Exhibits Nos. 19 through 23 for identification.)

MR. EDGAR: Next, there is a document under -- or next to the heading arabic three, which is identified as a report, WARD-D-0185, "Primary Piping Integrity Report."

I would ask that that be marked for identification as Exhibit 24 -- Applicants' Exhibit 24.

JUDGE MILLER: It will be so marked.

(The document above-referred to was marked as Applicants' Exhibit No. 24 for identification.)

MR. EDGAR: Finally, after the presentation of the first panel, we will present a second panel which will present or sponsor Applicants' direct testimony

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concerning NRDC Contention 2(e), which is the testimony prefiled on August 16, 1982.

I would ask that that be marked for identification as Applicants' Exhibit 25.

JUDGE MILLER: Which one is 25 now?

(Bench conference.)

JUDGE MILLER: Very well. I have it now.

That will be marked for identification as Applicants' Exhibit No. 25.

(The document above-referred to was marked as Applicants' Exhibit No. 25 for identification.)

MR. EDGAR: That's correct.

Now, I have given the Reporter a marked-up copy of the exhibit list so that we can have some assurance of accuracy on the numbers.

JUDGE MILLER: Yes. Our Reporter is very accurate. She will be our primary scorekeeper on numbering and straighten us out later in the week when we've forgotten.

MR. EDGAR: I would also note for the record that I have given the Board and parties copies of Applicants' Exhibits 2 through 24. I have furnished the Reporter with four sets of Applicants' Exhibits 2 through 24, which are contained in four bound volumes.

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JUDGE MILLER: The record will so reflect.

MR. EDGAR: And just to note one other point for the record: Those documents -- Applicants' Exhibits 2 through 24 as marked for identification -- are all documents which are referenced in Applicants' direct testimony concerning Contentions 1, 2 and 3, which has been marked for identification as Applicants' Exhibit 1.

JUDGE MILLER: Anything further?

MR. EDGAR: No.

JUDGE MILLER: Would you call your witnesses?

MR. SWANSON: Mr. Chairman --

JUDGE MILLER: Yes.

MR. SWANSON: If I could just bring up one preliminary matter that we also discussed during the break.

Unfortunately, the Staff has one witness with a scheduling restriction. His name is Mr. Farouk Eltawila.

He also has to appear at the Shoreham hearing this week. Now we worked out an accommodation with the Shoreham hearing. He can be available either Wednesday of this week or Friday of this week.

We discussed it informally among counsel, and it appears as though perhaps the preferred date might be Friday. But I wanted to seek the Board's permission to schedule the Staff's testimony or response to

4-7

cross-examination.

This would be on Contention 2(d) for a specified time, either Wednesday or Friday, with probably Friday being the preferred time.

Counsel for the other parties have indicated that that is acceptable to them.

That deals with containment analysis, the adequacy of the Staff's containment analysis in terms of site suitability analysis.

And if it were acceptable to the Board and parties, then if it turns out that when that individual comes, it is out of turn with the rest of the Staff's testimony, that, in fact, it could be taken up during that time.

JUDGE MILLER: The Board has no problem with granting leave to call a witness out of order if necessary for reasons such as those, after the reasons have been discussed with opposing counsel.

I take it there are no objections by counsel.

MR. EDGAR: None.

MS. FINAMORE: No objections.

JUDGE MILLER: Let me inquire: Does the appearance of this particular witness impact upon the entire panel?

MR. SWANSON: It's a discrete issue in terms of

the adequacy of the containment, the feasibility of having a containment to achieve a given leak rate, etc. I believe that questions in that area could be segregated in a discrete batch of questioning.

Now we do have a witness who is more generally familiar with that subject matter who will be available during the week.

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MR. SWANSON: But I think the specific questions in that area would more properly go to Mr. Eltawila.

Now, as I indicated, we could accommodate him either Wednesday or Friday. If the Board has a strong preference, the Staff would appreciate knowing that also. But for scheduling purposes with the Shoreham hearing, we, of course, wanted to get an agreement among the Board and parties this morning if possible.

JUDGE MILLER: Yes. Well, the Board, as I say, has no problem. I have conferred with my colleague -- we have no problem with scheduling out of order where there are unusual circumstances, such as this.

The only question we have is whether the impact of his appearance Friday rather than Wednesday would otherwise impede the taking of evidence on that or other issues.

MR. SWANSON: As I indicated, it appears to be a matter which could be separated out from the rest of the testimony of the panel. We're, of course, playing percentages, I guess.

There's a good chance it would turn out to be out of turn on either of those two dates --

JUDGE MILLER: I'm assuming that, yes, but to what extent would it impede the going forward with either the cross-examination or direct testimony?

MR. SWANSON: Well, there's definitely a

4-10

relationship between the various issues.

The Intervenors indicated that they think that that would be an objectionable problem, to separate that issue out.

Now, if -- as I mentioned -- some general questioning could go forward, if the Staff panel -- if the questioning started on the Staff panel before Friday on containment analysis, general questioning could be handled by some of the people on the panel.

But if it came down to specific questions about feasibility of containments for specific purposes, it would then have to be deferred on that specific area, that's correct.

But it does appear to be a discrete area that -- for which questioning could be separated.

(Bench conference.)

JUDGE MILLER: Let me inquire of the Intervenors, because I suppose that it most directly affects your case. Is this going to interfere, impede or slow down in any way the taking of evidence?

MS. FINAMORE: Counsel for the Staff informed us of the problem of witness availability several days ago. We have scheduled and arranged our cross-examination of the Staff witnesses so that that particular part of the cross-examination can, in fact, be segregated out and will

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not impede the taking of evidence on other issues.

JUDGE MILLER: All right. So the witness appearing Friday then rather than Wednesday will not impair your going ahead, as far as the Intervenors can anticipate?

MS. FINAMORE: No, Mr. Chairman.

JUDGE MILLER: Is the same true of Applicants?

MR. EDGAR: That's correct.

JUDGE MILLER: All right. In that event, the Board will permit that this witness be called out of order. It appears now that handling it in a discrete manner, and his attendance at any rate on Friday should not slow down the proceeding, at least in a general way; that the panel could cover at least a portion of the anticipated cross-examination prior thereto, if that is the order in which it comes up.

Is that where we stand?

MR. SWANSON: That's correct.

If, as a result of cross-examination prior to that, the Intervenor can identify individuals that they think that they would like to appear at the same time as that individual, we will, of course, accommodate that request and proffer those individuals.

JUDGE MILLER: Very well. Leave is granted.

MR. SWANSON: Thank you.

Call your witnesses.

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MR. EDGAR: Applicants call Mr. George Clare, Mr. Neil Brown, Dr. Vencil O'Block, Mr. Lee Strawbridge and Dr. Walter Deitrich to the witness stand in regard to NRDC's Contentions 1, 2 and 3 and Applicants' Exhibit 1.

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Whereupon,

NEIL W. BROWN

GEORGE H. CLARE

LAWRENCE WALTER DEITRICH

VENCIL S. O'BLOCK

and

LEE E. STRAWBRIDGE

called as witnesses by Counsel for Project Management Corporations, having first been duly sworn by the Chairman, were examined and testified as follows:

DIRECT EXAMINATION

BY MR. EDGAR:

Q. I would ask you to introduce yourselves, starting with Dr. Deitrich on the left.

BY WITNESS DEITRICH:

A. My name is Lawrence Walter Deitrich. I am Associate Director of the Reactor Analysis and Safety Division of Argon National Laboratory.

BY WITNESS STRAWBRIDGE:

A. I am Lee Strawbridge, Manager of Nuclear Safety and Licensing of Westinghouse Advanced Reactors Division.

BY WITNESS CLARE:

A. I am George Clare. I'm Manager of Licensing for the CRBRP Project at Westinghouse Advanced Reactors Division.

BY WITNESS BROWN:

A. Neil Brown. I'm Licensing Specialist on assignment to Westinghouse Licensing Coordination office in Bethesda, Maryland.

BY WITNESS O'BLOCK:

A. I am Vencil O'Block. I am the Technical Assistant to the Systems Integration Manager for the Westinghouse Advanced Reactors Division on Clinch River in Oak Ridge.

MR. EDGAR: Judge MIller, you have asked that in making our proffer, that I identify the expertise of these witnesses and the areas of expertise.

JUDGE MILLER: Yes.

MR. EDGAR: May I refer to the Board in terms of their specific technical qualifications to Applicants' exhibit 1 at Pages 74 and 75 of Applicant's Exhibit 1, Mr. Brown's qualifications appear. They are actually -- the witnesses are in alphabetical order in that portion of the testimony.

Mr. Clare at Page 76.

Dr. Deitrich at Pages 77 through 78.

Dr. O'Block at Pages 79 through 80.

And Mr. Strawbridge at Pages 81 through 82.

The witnesses are respectively, in terms of their areas of testimony, Mr. Clare is an expert in overall CRBRP System Designs,his primary expertise relates to

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Any voir dire?

MR. SWANSON: Staff has none.

JUDGE MILLER: Intervenors?

MS. FINAMORE: We do not wish to conduct voir dire but we ask the Board whether this is an appropriate time to move to strike portions of the testimony, which we believe are beyond the scope of this proceeding under the Board's April 22nd order.

JUDGE MILLER: Well, normally it wouldn't unless you think this is a jurisdictional-type of threshhold question. Normally, we would await your concluding of cross-examination and whatever motions you wish to make.

It sounds to the Board as though you are asking about something other than that kind of motion and, if so, we will inquire as to what it consists of, when you're ready.

MS. FINAMORE: We believe this motion goes to the jurisdiction of the Board, as it stated in its April 22nd motion (sic) and we believe that dealing with this matter at th is time might save us a lot of time on cross-examination.

JUDGE MILLER: What is the motion?

MS. FINAMORE: This is entitled Intervenors Motion to Strike Portions of the Testimony and Exhibits of Applicants.

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We will hand this motion out to the Board and the parties and the Reporter at this time but I will also endeavor to explain it orally.

On April 22nd of this year, as you are aware, the Licensing Board issued an order ruling on the scope of the LWA Hearings, particularly the scope of Contentions 1, 2 and 3 dealing with the suitability of the proposed CRBRP site, and the Board ruled as to what the scope of the inquiry into those Contentions would be at the limited work authorization stage, as opposed to the construction permit stage, for which they were originally written.

Now, in the order and in the April 20th conference with the parties, in which the order memorializes, the Board ruled that:

> "A full scale inquiry into the specific design of the Clinch River Breeder Reactor is inappropriate at the LWA stage."

At that point, the Board limited the consideration of the Intervenors Contention 1(a), 2(a),2(b),2(c),2(d), 3(b), 3(c) and 3(d), which all deal with core disruptive accidents, to the following questions at the LWA stage:

1. The major classes of accident initiators portentially leading to HCDA's.

2. The relevant criteria to be imposed for CRBRP.

3. The state of technology as it relates to applicable design characteristics or criteria. And,

4. The general characteristics of the CRBRP design, e.g. redundant, diverse shutdown systems.

In addition, the Board deferred consideration of ntions 1(b) and 3(a) until after the LWA stage is eted.

I might note that 1(b) dealt with the adequacy of cants' reliability program, which was designed to in hat the safety systems used in the Clinch River Pl uld actually function as designed.

Contention 3(a), which was also deferred, de th the existence of a WASH-1400 type analysis which wo dicate what specific initiators of core disruptive ac s would exist for a plant such as the Clinch River Re

The Board deferred these two Contentions be it felt that they went into detailed design specifics of linch River Design, which were not adequate or

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appropriate for discussion at this stage.

In addition, the Board ruled that Contentions 2(f), 2(g) and 2(h) would be the basis for a discovery at the LWA 1 stage but has not yet ruled on their admissability or appropriateness for discussion at the LWA proceeding.

Contentions 2(f), 2(g) and 2(h) dealt with the Applicants' and Staff's use of computer codes and models and other input data to determine what the energetics of a core disruptive accident, once initiated, would be.

The Board did not rule at that time whether that also would be considered detailed design information beyond the scope of this LWA hearing, since discovery on those particular sections had already been substantially completed.

On August 16th of 1982, Intervenors received Applicants pre-trial testimony, which contains ubiquitous references to very specific CRBR design details and analyses thereof, contained in the PSAR, the document entitled Hypothetical Core Discruptive Accident Considerations in CRBRP, which is known as CRBRP-3 and a document from Westinghouse which, I believe, was written in 1977 entitled Primary Piping Integrity Report, Numbered WARD-D-0185.

On August 19th of 1982, Intervenors received Applicants' list of exhibits, which comprises the same

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CRBR design specifics material and includes all of the references, tables, charts, graphs, computer codes etcetera that are referenced in the pre-filed testimony.

It is clear from the use of these detailed design specifics materials in Applicants' testimony, that they are not simply listed as background or reference material.

In fact, the Applicants' have just now proffered their use as exhibits and wishes them to be part of the actual record of this proceeding, upon which the Board will rely in making its findings.

In addition, they are repeatedly used as the basis for Applicants' general conclusions that specific general CRBR safety features are adequately designed and will perform as intended, to either make CDA sufficiently improbable or to mitigate their consequences if they occur.

It could not be more clear that these CRBR detailed design specific passages in the Applicants' testimony and exhibits are beyond the scope of this LWA proceeding as defined in the Board's April 22nd order and as discussed by the Board during the April 20th conference with the parties.

By no stretch of the imagination could these design details be deemed general characteristics of the CRBR design or the state of technology of breeder reactor

design.

Those are two of the four factors which are appropriate for discussion at this stage. However, these references,which we believe are inappropriate, clearly refer to the very specific design details and technology of the CRBR that the Board previously ruled beyond the scope.

Moreover, Applicants cannot bootstrap these detail designs specific materials into the scope of the LWA proceeding merely because they deal with the same subjects as are treated in the site suitability report.

As you recall, the Board on the August 5th counsel -- conference with the parties -- excuse me.

At the August 2nd conference with the parties and at the August 5th order memorializing that conference, indicated that the scope of this LWA site suitability portion of the hearings would be limited to the scope of the site suitability report.

During the August 2nd conference, the Applicants agreed with that limitation but, apparently, believed that these detailed design considerations are within the scope of the site suitability report.

We disagree.

The site suitability report,as well as the Staff's testimony on that subject, treats only general

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design characteristics and confidence that the state of technology in a general way will be capable of handling the CDA problem.

Applicants attempt to offer detailed design specifics data and analyses in support of their conclusions concerning CDA's.

These extensive details cannot be admitted by this Board under its previous rulings on the scope of this proceeding.

At the time of the Board's ruling on the scope of Intervenors Contentions at the LWA stage, Intervenors stated our desire to attack the Applicants' and the Staff's conclusions concerning core disruptive accidents by questioning both the reliabilities and the failure rates of the safety systems on which the Applicants and the Staff relied, and our intentions were noted on the transcript of the April 20th conference at Pages 533 to '34, 543, 551 to '52 and 553 to '55.

The Board ruled, however, that those matters were detailed design specifics and so beyond the scope of the LWA proceedings.

In other words, the Board ruled that we are not permitted to question in detail what the reliability of the four safety systems that Applicants and Staff rely upon, in any detailed manner at this stage of the

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proceedings.

The Board also ruled that we cannot question using detailed design information, what the failure rates are of these particular safety systems at this stage of the LWA proceeding.

Now, that the Applicants have succeeded in excluding all design specific information which might be harmful to their case, such as reliability and failure rates of safety systems, they have made a complete turnaround and are trying to offer into evidence all the detailed design specific information which supports their case. Such as the information in the Preliminary Safety Analysis Report and CRBRP-3 and the WARD document on the Integrity of the Primary Piping.

We clearly warned the Board during the April 20th conference that this would probably occur and, indeed, it has. The very situation which we have been seeking to avoid for several months.

The instant situation is directly analagous to that in the case of Tennessee Valley Authority, Hartsville Nuclear Plant, Units 1(a), 2(a), 1(b) and 2(b), ALAB-463 7-NRC-341, decided in 1978.

In the Hartsville Case, the Atomic Safety and Licensing Appeal Board held that it was error for the Licensing Board to have relied on Applicants' general

conclusions concerning CS-137 doses without allowing Intervenors to inspect and question the method of calculation of those doses.

JUDGE MILLER: It is simply the rule where a witness testifies in a conclusary matter of opinion, cross-examination is entitled to have revealed in advance by discovery and covered by cross-examination the underlying documents, including computation. That's all that case holds; isn't it?

MS. FINAMORE: Mr. Chairman, we are --

JUDGE MILLER: First of all, are we seeing eye to eye on the Hartsville Case?

They amended the computations used which were underlying documents leading to the conclusions which were opinion evidence by expert witnesses and the Appeal Board followed the standard rule, both in our practice and as well as in Courts, that underlying documents which formed the basis or foundation for opinions are requisite for both discovery and interrogation.

And that was the extent of the holding, as I remember that case.

Now, are you intending to go further than that?

MS. FINAMORE: From what I understand you just said, I don't think we have any disagreement.

JUDGE MILLER: Okay.

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MS.FINAMORE: What our disagreement is and what we believe the problem will be here, is that if the Applicants do, in fact, offer these exhibits, 2 through 25, into evidence now --

JUDGE MILLER: Yes.

MS. FINAMORE: -- that we feel they should not be received into evidence without the Intervenors having adequate opportunity to test, through cross-examination, all the assertions, calculations, methods etcetera and conclusions in those underlying documents.

However, we feel that if we do attempt to test those assertions, conclusions, methods, numbers etcetera in cross-examination they, in turn, will be as detailed design specific as the documents themselves and that they, in fact, will also be beyond the scope of this proceeding and may, in fact, be ruled outside of cross-examination and I think they should be as consistent with the Board's --

JUDGE MILLER: Now, wait a minute.

Let's get to Hartsville, which is where I started asking you questions.

Your objection is the converse of the Hartsville docket; isn't it? Hartsville holding that the underlying documents, which are the foundation for the expression of expert opinion, should be produced.

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Now, your concern is that they are producing documents, rather than withholding them, as requested in Hartsville.

You've got the converse of Hartsville.

You're being offered the documents which were withheld in Hartsville.

MS. FINAMORE: Another problem --

JUDGE MILLER: I believe from your description -- I'm not trying to get into the details of it.

MS. FINAMORE: Another problem --

MS. FINAMORE: Another problem we have with being able to cross-examine on these documents is since this level of detail of the specifics of the CRBRP design was ruled beyond the scope way back in April, we did not make any attempt to discover the contents of those documents, although they were in our possession because we were under the impression that those levels of safety design and detail were beyond the scope; nor did we discuss them in any way in our testimony in reliance upon the Board's order that it was beyond the scope.

JUDGE MILLER: All right. Now let us find out. We've read your offering. So you needn't repeat it. I don't want to cut you off, but we now, I think, understand the bases of your objections.

I'm going to find out by asking other counsel now what their position is, so we might as well get to grips expediently with the essential differences.

Do you have anything further that's not contained in your written presentation and the attachments or exhibits and the numbering and so forth? We've examined it, so we're familiar with the details.

MS. FINAMORE: I think the main point we're trying to make here is that the Applicants are trying to introduce into evidence very specific design detail on four safety systems that the Board ruled weren't, in fact,

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a proper subject at this point in this hearing.

If you look at our Appendix A, you can get some flavor of just how detailed these design specific documents are.

The main --

JUDGE MILLER: We have examined your Appendix A.

MS. FINAMORE: The main thrust of our case has always been and will continue to be that no matter how well these safety systems are designed to perform, that every safety design does have a particular failure rate, which has not been discussed in Applicants' testimony, and, in fact, was ruled beyond the scope of this proceeding.

Now we --

JUDGE MILLER: What we're interested in now, preliminarily, in accordance with your motion is to see whether or not the material that you have set forth and well described in your motion is or is not beyond the scope of this hearing.

We're not trying to get into the merits now or the details. I think we have in mind your point, but I want to be sure before we see what other counsel have to say on this matter.

MS. FINAMORE: Our main difficulty is that we were not permitted to conduct any discovery or to discuss in our testimony what the failure rates of those specific

systems were and are and --

JUDGE MILLER: Do you intend in your testimony and in your cross-examination to get into that subject -- in other words, failure rate?

Do you intend to address it?

MS. FINAMORE: We intend to go into that subject in the general manner envisioned by the Board.

JUDGE MILLER: All right.

MS. FINAMORE: -- but without -- We are not able to go into those subjects in the same --

JUDGE MILLER: Well, we're inquiring now about --

MS. FINAMORE: -- level of detail --

JUDGE MILLER: Pardon me. Remember what I said: She can't get both of us at once.

Secondly, we want to find out what you're saying, and we want to talk to you. Two monologues don't equal a dialogue. Okay?

Now, what we're interested in is whether or not you're prejudiced in any way by not being able to go into the detail of A, B and C if, as you tell us -- and we're not trying to express a view -- you do intend to offer some testimony or evidence, or to cross-examine on the general subject, let us say, of which these and others might be illustrative.

We're trying to find out what is the aegis of the broad scope that you're presenting to us.

MS. FINAMORE: Yes. We feel we would be irreparably injured --

JUDGE MILLER: How?

MS. FINAMORE: -- by having these documents introduced into evidence now.

JUDGE MILLER: Well, how? That's the question?

MS. FINAMORE: If these documents are introduced into evidence, that means that the Board can rely upon those --

JUDGE MILLER: Now, wait a minute. We're -- Don't mix up different subjects. We're not getting into now what the Board can rely on in other phases if, indeed, you were getting into matters that the Board said would be deferred, as we understand your argument in references to our order. That's not what we're looking at.

That -- You could be protected as to that. We're trying to find out simply -- and in a short span -- how, if at all, you or your client would be injured by the use of this material if, in fact, you are addressing it -- not with that specificity, but in terms of types of objections. That's what we wish you to focus on now because we now wish to move into the other aspects insofar now as you've presented your case -- your objection and your

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motion.

MS. FINAMORE: May I have a moment to confer?

JUDGE MILLER: Sure.

(Pause while counsel confer.)

MS. FINAMORE: We're ready to proceed, Mr. Chairman.

JUDGE MILLER: We're not quite. We're only two-thirds ready.

Okay. You may proceed now.

MS. FINAMORE: Our main prejudice from proceeding in this manner is the incredible imbalance between the cross-examination that we were told that we could proceed with and the discovery that we were told that we could proceed with, and, in fact, the testimony that we have been able to prepare within the limits of the Board's previous ruling, and the cross-examination that we could have proceeded with and the discovery that we could have conducted if, in fact, we knew all along that this level of design detail would, in fact, be appropriate, which, again, I don't see how that can be, given the Board's previous ruling.

I think it might be instructive to give you one example. Concerning the failure rate of the reactor shutdown system, I will show you what we did discuss in our testimony and what we could have discussed, if we were able

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to prepare cross-examination on these five volumes -- excuse me -- four volumes that the Applicants have given us at the eleventh hour.

In our testimony which is not yet introduced into evidence, but which I will just quote from at this time, we questioned whether the Applicants have, in fact, proven that the reactor shutdown system will have a low enough failure rate that it can exclude CVA's from the category of credible accidents.

The only level of proof that we were able to find that is general enough under this Board's order was the statements of the Nuclear Regulatory Commission in its proposed rule on anticipated transients without scram. Now that deals with failure to shut down, in a very general way, for all light water reactors.

We feel that's very probative evidence, but, in fact, it has no bearing to the details of the Clinch River design itself. We were able to quote the following: The very high level of reliability required, it's difficult to demonstrate with confidence because it depends on accurately determining the rate of common cause failures.

We also cite quotations from people at Westinghouse, which are the prime contractor for CRBRP to the effect that common cause failures have the potential to significantly impact the ability of an entire safety system

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to function when required.

Our Contention 1(b) originally went into much more detail than this. We questioned the use of the fault tree and a event tree analysis in the Applicants' reliability program, which, indeed, goes into specific detail on what the reliability and failure rates of this reactor shutdown system is.

We wanted to look at those event tree and fault tree analyses and the inputs to those analyses, see if they do, in fact, prove that this reactor shutdown is going to work when it's needed.

The Board said, "No, no, you can't look at those detailed designs. This is an LWA-1 hearing. We're just going to look at the reactor shutdown system in a very general way, to see if it's feasible to design them within a particular failure rate. We do not want you to look at anything specific."

Now, in contrast, we have the Applicants' testimony which refers to the reactor shutdown system and its adequacy. And they make the blanket assertion that Section 15.3 of the PSAR demonstrates the adequacy of the reactor shutdown and shutdown heat removal systems to re-establish the balance between heat removal and heat generation.

They don't say it demonstrates it with a

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particular degree of reliability. They say it demonstrates the adequacy.

When one moves to Section 15.3 of the PSAR, one gets the following types of quotes. On Page 15.3-2 of the PSAR, I quote: "A conservative 200-millisecond delay between the trip signal and the control rod insertion was used for these analyses."

In Section 4.2.3 of the PSAR, the requirement for the scram speed is that this delay be less than 100 milliseconds.

The additional 100-plus-millisecond delay over the required value results in higher clad temperatures and, thus, a worse condition.

On the following page, I quote: "Three sigma hot channel factors were used for all of the analyses. The temperatures shown are at the mid-wall of the hot rod cladding at the highest temperature position, both axially and circumferentially, on the fuel rod (position is under wire wrap)."

JUDGE MILLER: When was that filed, by the way? The material you're quoting from, the PSAR, when was that filed? Approximately.

MS. FINAMORE: That is Amendment 61 to the PSAR filed in September of 1981.

This is the material that the Applicants are

using for their construction permit analysis.

JUDGE MILLER: Well, I suppose -- I don't want to interrupt your argument -- but I suppose that information was available to you then and to others then in September of '81.

Why would that not have a reasonable bearing upon the broad issue, as you've described it, of whether or not that it's a feasibility?

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MS. FINAMORE: The reason is twofold. First, the Board held that we were not permitted to go into the details of whether or not that analysis is correct, or to find out the underlying reasons in discovery for why those calculations were made and those results were reached.

Second, we were not able to --

JUDGE MILLER: Pardon me. But what were you permitted to go into? You were permitted to go into, in discovery, were you not -- into those matters which bear upon feasibility, whether or not it could be so designed and so forth.

And then the second question -- I'll just put it to you now -- if it could be, why is not this an example of how it not only could be but would be?

In other words, how does that prejudice you is what I'm trying to get you to address now?

MS. FINAMORE: The way it prejudices us is because our testimony -- since Applicants and Staff were intending to prove that it will be feasible, our testimony --

JUDGE MILLER: Will be feasible, yes.

MS. FINAMORE: Our testimony is to prove that it cannot be feasible. The only way we can prove it cannot be feasible is to prove that the failure rates are higher than those shown by Applicants is to go into the details of the Staff's reliability program. That is the

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only way that we could match the level of detail that Applicants intend to introduce at this stage of the proceeding on an equal level.

We --

JUDGE MILLER: Well, pardon me. Let me see if I'm following you correctly now. You are concerned about the Applicants' use of certain specific materials, let us say, relating to design, but they will have proven something in the future, and that the Board in the future will rely on it; is that the basis of where you think it hurts you?

MS. FINAMORE: No, Mr. Chairman. We believe that if these documents are introduced into evidence at this time, the Applicants intend to introduce them for their truth. In --

JUDGE MILLER: Well, now wait a minute, wait a minute. That's what I asked you.

MS. FINAMORE: At this stage of the proceeding --

JUDGE MILLER: Well, you can be protected by an appropriate order from the Board then as to the effect of their receipt at this time for what you would regard as limited purposes.

In other words, if it's not going to be for the merits of it in the future, at the CP or a later stage, then presently it would simply be illustrative, just as you would be using, I presume, illustrative or analytical

methods to show the contrary.

MS. FINAMORE: No. The Board has specifically ruled out the use of any detailed material for illustrative purposes in the --

JUDGE MILLER: I think details --

MS. FINAMORE: -- April 10 order.

JUDGE MILLER: -- is where we're not quite following you.

Of course, you can use detail if it's necessary, if it's part of a logical process of challenging a general proposition or conclusion.

The detail --

MS. FINAMORE: Mr. Chairman, we --

JUDGE MILLER: -- is not the issue, in other words, is why I'm not following you.

MS. FINAMORE: No. Mr. Chairman, we believe that that would be substantially prejudiced to us at this time to introduce those documents for any purpose whatsoever --

JUDGE MILLER: Well, why? I have asked you if the Board protected you by fashioning a limitation -- and you as a lawyer know very well that documents can be admitted for limited purposes, to show the terrain, but not as bearing on negligence, let us say, or to show ownership in a railroad crossing -- limited purpose. It doesn't

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show truth or falsity of that, but for a different purpose.

Now that's what I'm calling your attention to as a lawyer.

MS. FINAMORE: That's where we feel that even for that purpose --

JUDGE MILLER: That's why I want you to spell it out. Even for that purpose -- why? I asked you 15 minutes ago, and you have given me the arguments on the merits, and you're re-arguing your motion which we've read and which raises perfectly good grounds. We're not being critical of that.

But you're not addressing yourself to how and in what way that there would be prejudice to your client if, for limited purposes, these documents were admitted.

MS. FINAMORE: For example, you give the example of documents to show the ownership of a railroad --

JUDGE MILLER: Of a crossing situation. Period. But it doesn't show whether or not the subsequent repairs are admissible in a death case. It's not that at all.

The jury is told, "Now you're shown this crossing because the railroad has questioned whether or not they control." That purpose only. Don't look at those cross-arms or the accident. It has nothing to do with the merits. You've seen this many times -- limited to the

purpose of exhibits being offered or photographs, in that example.

MS. FINAMORE: Even under that example, if during the period of discovery on that railroad crossing case, the person opposing the use of that document were denied discovery on the very facts in that document, it might prove that it was riddled with falsities and exaggerations.

We feel that it's --

JUDGE MILLER: All right. Let's find out. I get your point. Let us find out what the record shows.

I get your position now.

I'm going to hear from other counsel, but I want to be sure that I understood -- I think now we do understand the thrust of your series of objections.

MS. FINAMORE: But we feel that the main -- even to use them for illustrative purposes at this time -- results in an imbalance between the way Applicants are able to present their case --

JUDGE MILLER: Well, I don't think that the imbalance argument is going to get you very far. That's why I'm trying to save time.

But you may have something on the other. We want to hear from counsel. I think you had better bring your argument to an end, unless you've got some new

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material, because we want to hear everybody's point of view.

MS. FINAMORE: Chairman Miller, in my example that I just used, I said that it might be true, in fact, that this preliminary safety analysis report is not accurate and should not be used for illustrative purposes, because maybe in fact it contains analyses that are not backed up by sufficient evidence; it contains exaggerations; it omits certain important details and the like.

JUDGE MILLER: Maybe so.

MS. FINAMORE: You have just said that we can find out through cross-examination whether or not this is true, and to decide at the end of cross-examination whether or not it is reliable enough that it should be introduced --

JUDGE MILLER: I haven't said that.

MS. FINAMORE: -- for illustrative purposes.

JUDGE MILLER: I haven't said that.

MS. FINAMORE: Excuse me if I misunderstood you.

JUDGE MILLER: You misunderstood me if you thought I said that.

MS. FINAMORE: In any case --

JUDGE MILLER: We're having to rule now -- you've raised an objection, you've got a motion, which to the Board is last minute also, you know -- you could have

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filed this, I presume, before today, Monday. You've got a fair amount of research in here. Your exhibit shows it, and your citation -- or the one case which we previously discussed -- indicates to me that you could have filed this in Washington last week.

MS. FINAMORE: It was just completed on Saturday, Mr. Chairman.

JUDGE MILLER: Completed on Saturday? Well, not the issue --

MS. FINAMORE: Mr. Chairman, if I --

JUDGE MILLER: The issue wasn't completed Saturday. It may have been that some of the details -- however, I'm not going to prejudice you -- but I'm pointing out that you, too, are coming in at the last minute with a motion challenging jurisdiction on certain matters. I'm going to have to cut you off, because you've had a lot of time. I have not yet heard from other parties.

If you have something --

MS. FINAMORE: If I may make two --

JUDGE MILLER: -- that you haven't addressed on this motion --

MS. FINAMORE: I have two more points.

One is as we noted in the motion, you say we might have been able to complete this last week, we only received Applicants' list of exhibits on the 19th of

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August.

So there is no way before the 19th of August, which was only four days ago, that we had any idea that Applicants planned to introduce these exhibits.

Secondly, if I may just close with this --

JUDGE MILLER: Go ahead.

MS. FINAMORE: We are unable at this time to cross-examine these witnesses on facts and details of the PSAR that might reveal that it should not be used for even illustrative purposes because discovery on those sections of the PSAR and the other documents were closed to us under the Board's April order.

That's why, since we are not able to conduct sufficient cross-examination at this time, to prove that these should not be used even for illustrative purposes, we feel that we would be irreparably and substantially prejudiced by their use for any purpose whatsoever.

JUDGE MILLER: Very well. Applicant?

We'll want to hear from Staff on this. I presume you expect to address it.

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MR. EDGAR: As we see the objection, the objection relates to the introduction of the documents in question.

Now, let me explain why we're making this offer. We prepared the testimony. It is expert testimony that attempts to show that the four general design features of Clinch River that are relevant to HCDA prevention make the case that the HCDA should not be a design basis accident.

Now, in preparing that, it is important to cite to underlying documentation. We looked at the Hartsville case and it says if you've got underlying documentation you should provide it. We went to provide that, and that's exactly what we've done.

JUDGE MILLER: When did you provide it? She's raised a question about the time.

MR. EDGAR: Well, we called the Intervenors last week. I believe it would have been the 19th.

JUDGE MILLER: Thursday?

MR. EDGAR: Yes. However, on the 16th the testimony was filed. It contains all of these references. It is no mystery that this is the underlying information.

JUDGE MILLER: Now, when was the testimony which contained the citations to these underlying documents served upon the Intervenors?

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MR. EDGAR: The 16th.

JUDGE MILLER: Monday?

MR. EDGAR: Yes. And these underlying documents have been available for as long as they have existed. The SAR has been continually updated since 1974. That's just one example.

JUDGE MILLER: Well, what about the argument that -- or understanding that the Intervenors had was under the scope limitations of the Board's Order that they were precluded from going into it?

MR. EDGAR: Well, the Intervenors' scope limitations are simply not correct. The way they have construed the Board's ruling in this regard is to attempt to make it unworkable. There has never been a limitation on discovery in connection with these underlying documents, and let me be more specific on that.

For example, in our responses to NRDC's 18th set of interrogatories, and that was dated May 4th, 1982, we were asked what documents and what portions of certain documents we were going to rely on the for the LWA-1. We identified the PSAR, CRBR-3, the GEFR 0523 document on HCDA's. All of this information --

JUDGE MILLER: You identify there in your response all of the PSAR exhibits contained in your Exhibits 2 through at least 14, if not more?

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MR. EDGAR: We identified more than that.

JUDGE MILLER: Well, did you identify those specifically?

MR. EDGAR: In the broad -- we identified tne PSAR but not those sections. We reduced the scope when we prepared the testimony. We were going to rely on CRBR-3 entirely. We have reduced that and we have made a very selective use of the PSAR in CRBR-3. We have used only those actions that relate directly to the testimony and which, in addition, relate to the scope of the Staff site suitability report, which is, as the Board has ordered, the scope of these hearings.

The site suitability report at Pages II-5 through II-12 describes the four design features that are important to prevention of an HCDA, the reactor shutdown system, the decay removal system, design features to assure primary piping integrity, and finally, design features to assure that there won't be fuel failure propogations from local areas to core-wide involvement.

Now, each of those four features essentially are encompassed in our testimony, Section 3. Then you go to the containment, and that's Pages II-13 through II-17 of the SSR. That corresponds to our discussion in Chapter 4, or Section 4 of our testimony.

Finally, you go to Page II-18 through II-19 of

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the SSR and there's discussion by the Staff for accommodation of core melt and disruptive accidents. That in turn corresponds to our Chapter 5.

Now, there hasn't been a discovery limitation. We have tried to provide the documentation which underlies our testimony. There is always a reservation of a motion to strike.

As to the question of detail and as to the question of whether our testimony is too specific, why, I don't think, at least in my experience as an engineer, that that testimony would be known or considered by Mr. Linenberger, for example, as terribly detailed. What we are trying to do is cite the underlying basis.

Now, as to this point that counsel made in regard to failure rates and what NRDC had originally thought of putting in their testimony and what they didn't, I would note, among other things, that Dr. Cochran's testimony, Part 1, Page 32, makes explicit reference to a superseded version of the Clinch River reliability program, which is now set forth in Appendix C.

Further, if you read down into Page 41 of the same testimony, there is reference made to the Clinch River Breeder Reactor Plant Project studies of common cause failure.

We are not relying on the reliability program.

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Nowhere in our testimony do you see a reference to Appendix C of the PSAR. We believe we have remained faithful to the Board's Order which deferred Contention 1(b). We believe we have been very selective in use of information. We have cast our testimony around the four major design features which are discussed in Section 3 of this testimony. We have cast our discussion around the specific site suitability calculations, which correspond to the Staff's site suitability calculations that are contained in Section 4 of the testimony.

Finally, we have addressed the question which is raised in the SSR on Pages II-18 through 19 concerning a combination of core melt and disruptive accidents. We have made a proffer of the testimony. Our witnesses are prepared to respond to questions.

We have made a proffer of selected sections of the PSAR, CRBR-3 and the Westinghouse report on primary piping integrity. Those document support the testimony.

We are prepared to respond to cross-examination, and I suggest at this time that we move forward.

JUDGE MILLER: Staff.

MR. SWANSON: Thank you, Mr. Chairman. In discussing the motion, or the responses, I think we have to start with the Board's framework that it laid out in its April 22nd Order for this hearing, and in fact they did --

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the Board did limit the scope of the hearing and the discovery that would lead up to this hearing. We are in fact limited in two general characteristics, feasibility, et cetera, of the general systems, and the Board gave the example of the redundant, or shutdown systems, and indicated that a full scale into the specific design of CRBR is inappropriate at the LWA stage, and in fact the Staff's review tracks this finding by the Board because we do not come into this hearing with any position as to the acceptability of the detailed review of the Clinch River.

We do come into this hearing, however, come in with an obligation to discuss general size and type reactor and the considerations that go into the site suitability findings that must be made in order to grant an LWA for this proposal.

In that context the Staff, in its site suitability report, has had to consider the PSAR to the extent that it has to define for itself what a general size and type reactor is, and an example can be given by the Intervenors' own testimony when they reference Appendix A, I believe it is, to Chapter 15, in an attempt to define the core inventory at the end of a first run for the purpose of then determining fission products and in turn developing a site suitability source term.

And we think this is consistent with the approach

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that the Staff took in reviewing the PSAR for this purpose, and again for the limited purpose of defining the general size and type facility and with one additional purpose, and that is to the extent that there are arguments which are appropriate to a general size and type facility or general size and type systems subcomponents of that facility. Regarding feasibility, those arguments are indeed appropriate. The Staff --

JUDGE MILLER: Pardon me. I didn't follow that last statement.

MR. SWANSON: Okay. In addition to defining the type of reactor that we need to look at when we're focusing in on a general size and type facility, we also look to determine whether or not the Applicants may wish to glean from the PSAR certain general arguments on feasibility of engineering and implementation of specific components of a general size and type as that proposed for Clinch River, or in fact the facility as a whole, whether or not that's feasible.

So for the purpose of defining the type of animal that we're looking at, the general size and type facility, or the general type of components we're looking at and the feasibility of implementing them, we look at the PSAR.

The Staff would not propose that an analysis of

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the details of this particular plant as proposed are appropriate unless they're necessary to help define feasibility or general -- of the general size and type facility, and as I indicated, we're not prepared to discuss the -- our review of details at this time.

But for the general purposes I stated, it does appear to be appropriate to have a general reference, that being the PSAR, which explains these things, but we would assume that the introduction of these documents would be with the exclusive reservation that all parties could get into details in their discussion, examination, whatever, that the parties could get into a discussion of the details of this particular proposal at the appropriate time, which apparently would be at a CP hearing, and again within the limitations set forth by the contentions and the applicable regulations for a CP, but that it would not be appropriate to get into the kind of detailed examination of this specific proposal of Clinch River at this time.

And I think it's perhaps valuable to consider one of the Intervenors' arguments that they were -- in the context of this general proposition. They were concerned about being able to have the opportunity to disprove feasibility in terms of the reliability, and that they would then have to get into the details of the Clinch River design, examine the adequacy of the Applicants' proof in terms of

7-9

the reliability program in an attempt to disprove the ultimate conclusions of the Applicants that it's feasible to design this in that system for the Clinch River.

JUDGE MILLER: Now, that's the position that's taken by the Intervenor, is that your understanding?

MR. SWANSON: Well, that's as I understand it but we --

JUDGE MILLER: Well, what's your response to that?

MR. SWANSON: My response is that we're not bound at this point by a hard and fast set of systems as proposed by Clinch River.

In other words, the Staff, in concluding that it is feasible to implement the type of system to achieve a given result such that you can come up with a source term of a given value, we're not pinning ourselves down to a review of a specific system and if in fact we think that within an umbrella of systems which achieve a given result Applicants would have flexibility to implement any one of a number of systems which achieves that result. So if we pin ourselves down to a specific set of systems at this time we may well be talking about something entirely different later on.

The point being that these types of hearings, we contend, are not designed for the purpose of getting

7-10

pinned down in detailed discussions of the exact proposal submitted by the Applicants, but rather general size and type systems, reliability of these systems and the adequacy of the development of site suitability source term and the other conclusions which go towards the site suitability finding.

The bottom line being that the Staff would submit that it would be appropriate to introduce these documents, the PSAR volumes, but with a given limitation by the Board that --

JUDGE MILLER: What limitation, now?

MR. SWANSON: Okay. The limitation we would submit is that it be -- the documents be admitted and examination be permitted for the general purposes of defining the limits of what we're talking about in terms of a general size and type facility and the subcomponents thereof.

To the extent Applicants wish to draw on arguments in those PSAR's for their general feasibility arguments about the general size and type facility or the subcomponents thereof, that would be appropriate, but that the parties would not be expected to nor would they be prejudiced by failing to go into a detailed examination of the specific proposed systems of the Clinch River, and if that in fact would be an appropriate topic for examination

7-11

at the CP hearings.

Could I have just one moment?

JUDGE MILLER: Yes.

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8-1 wbp

MR. SWANSON: Just one or two other points, if we will quickly look at the Hartsville Case. I'm not sure what the relationship is there. We were able to determine that was a CP hearing, not a Site Suitability hearing, so I'm not sure what the direct analogy is there that was proposed by Intervenors but I just wanted to note that for the record.

JUDGE MILLER: Well, we had calculations. The witnesses testified. The Appeal Board said, well, you should have let them look at the underlying calculations. It wasn't a very broad type of ruling, as I recall the Hartsville Case and, of course, you should, any witness that's giving an opinion based upon certain foundation proof or underlying documents is subject to being asked to identify the underlying documentation, calculations or whatever it may be and subject to cross-examination.

MR. SWANSON: That's correct.

That's consistent with our reading. I just wanted to indicate that I'm not sure it can be used for a broader proposition that a site suitability hearing is in any way limited or expanded by that ruling in Hartsville.

JUDGE MILLER: I think it's important to my understanding. I think Ms. Finamore agreed, as to the holding in that particular case.

Anything further? From Staff?

MR. SWANSON: No. Thank you.

JUDGE MILLER: Any response?

MS. FINAMORE: Yes. I'd like to respond briefly, Mr. Chairman.

JUDGE MILLER: Yes.

MS. FINAMORE: First of all, the reason that we brought up the Hartsville Case is because of the reasons given by the Appeal Board apply to any full-scale Administrative Hearing, whether it be LWA or CP and that reason is given on Page 352 of the Hartsville Case and I'll paraphrase it briefly:

The reason that the Board felt that the underlying documents should be produced is so that the opponents of the documents' introducers would have an opportunity to impeach it by cross-examination or to rebut it with other evidence.

Our main problem here is that --

JUDGE MILLER: Now, wait a minute.

What was the document? You've got it there. Those were calculations; weren't they?

MS. FINAMORE: That's exactly what's contained in the PSAR references.

JUDGE MILLER: My question was to you was not about PSAR. Was it Hartsville, the documents in question which should have been permitted be interrogated were

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computations?

MS. FINAMORE: That's exactly what is in this PSAR document, including references to at least half a dozen --

JUDGE MILLER: Well, now, twice you evaded answering me. Why don't you just say yes, that's what the computation was of the underlying documents discussed in Hartsville. Yes or no, you don't agree with that.

MS. FINAMORE: Yes. And I went on to say that those were the same --

JUDGE MILLER: Okay.

Are you finding an analogy here that --

MS. FINAMORE: Our problem here is that we have been denied an opportunity to prepare for cross-examination or rebuttal on those particular documents.

JUDGE MILLER: Why were you denied an opportunity? Now, this is what I've asked everybody and you've the heard the response of the Applicant.

You weren't denied any opportunity to make discovery within the limitations or parameters that were described by the Staff; were you?

MS. FINAMORE: Yes, we were, Mr. Chairman.

First of all, in the order of April 22nd, the Board stated that a full-scale inquiry into the specific design of the CRBR --

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JUDGE MILLER: Is inappropriate at the LWA-1 stage. See. I've got it right here. I've read it. I wrote it. I know what you're talking about.

Now, how does that preclude you --

MS. FINAMORE: Second of all, I might quote from the transcript of the April 20th, the statement of Mr.Cochran.

"Now, I fear, I desparately fear that when I ask questions on discovery that really go to the issues of feasibility for a reactor of the general size and type but I am seeking in determining that feasibility, seeking data with respect to a specific design, that is, the best data we have got for a general reactor of this size and type that Staff and Applicants are going to come back to you and say 'No, that is beyond the scope.'

And Judge Miller responds:

We could give you the short answer. It would be beyond the scope, so don't bother to ask it in 1 Sub-10 interrogatory."

That is why we felt we were precluded from

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asking specific detailed design information on the material contained in the PSAR during the discovery phase.

In addition, we feel that we were precluded discovery and cross-examination and preparation of testimony on the very evidence that we can use to rebut the information contained in the PSAR, whether it be used for illustrative, descriptive purposes or any other purposes, and that's the material in the PSAR Appendix C, the Reliability Program.

The Applicants stated that they selected certain portions of the PSAR that they felt were helpful to their case.

We wish to select certain portions of the PSAR that were helpful to our case; namely, the Reliability Programs. In particular, we wanted to get discovery on what documents the Applicants used in writing up Appendix C. We were precluded discovery on those underlying documents.

The other main area that we wish to have discovery on to rebut the material that is contained in this PSAR document, the CRBRP-1 and we were denied discovery on that.

JUDGE MILLER: Pardon me.

In what way were you denied discovery on that area of inquiry?

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Did you have interrogatories, for example or how did you go about it?

MS. FINAMORE: In the Board's order of April 22nd --

JUDGE MILLER: Well, my question was, how did you attempt to do it? Did you file any interrogatories or otherwise raise the question before you get to the Board's order.

If you didn't do it, tell me that. If you did do it, tell me where and how.

MS. FINAMORE: We did file interrogatories at a previous stage of this proceeding. The Staff and the Applicants did not update the answers to those questions.

JUDGE MILLER: Well, that was in 1977, wasn't it?

Hold it, now.

You see, I told you before, when we want to ask you something, we can't both talk at the same time and I'm afraid when I want to ask you something, you're going to have to stop talking. Okay.

Now, you say it was in a previous stage.

Are you talking about a 1976-1977 stage or one subsequent to that?

MS. FINAMORE: I'm talking about the 1976 to 1977 stage, because before discovery began in the 1982 stage, the Board ruled that all discovery relating to Contention

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1(b) and 3(a) were beyond the scope and not appropriate for discovery. We relied on the Board's order and did not prefer any discovery on those matters, because the Board specifically ruled them outside the scope of the proceeding and we were relying upon those Board rulings.

JUDGE MILLER: Well, first of all, let me think about that a moment.

The Board's direction that a full-scale inquiry into the specific design of the CRBR is inappropriate at the LWA-1 stage. Now, the question that the Board has and has asked you, Staff and others is, why would that ruling or direction preclude an effort, if you felt that there was material in PSAR, for example, which did have a bearing upon the permitted question or issue of a reactor of the general size and type proposed?

We don't know where you were denied an effort to get into the latter matter. You could go into the PSAR if you wanted to, provided it were appropriate.

You haven't told us -- now, maybe you can identify your interrogatory or your source of the position that you've taken.

You've heard the Staff's position. I think the Applicants', too, on that question. So I want to give you -- we're going to recess shortly so we can consider these matters -- and I want to give you a chance to address

very specifically the opposing contentions.

MS. FINAMORE: The Reliability Program of the Applicants is discussed in Appendix C of the PSAR. That is the section on which we were specifically precluded discovery and that was the section that was ruled specifically outside the scope of the LWA hearing.

MR. EDGAR: May I respond to that? Maybe I can help on that.

JUDGE MILLER: All right.

MR. EDGAR: We're now talking about Appendix C of the Reliability Program and the Intervenors being precluded from discovery on Appendix C.

The fact is, the Board deferred Contention 1(b) in its April 22nd order and said, "We don't have to get into the Reliability Program at this stage."

Now, in our testimony we have not relied on Appendix C of the PSAR.

The information we have presented in the proffered exhibits does not include Appendix C of the PSAR. That issue is totally irrelevant to the discussion here.

The question is, should the testimony be cross-examined upon? Should the documents be admitted?

We are not relying on Appendix C or the Reliability Program in our testimony. We have just -- I've suddenly realized -- started to reorder, reargue the

Board's April 22nd order. There is no possible prejudice that can flow from introduction of these documents in relation to the Appendix C of issue.

We're not offering it.

MS. FINAMORE: Mr. Chairman --

JUDGE MILLER: Yes.

MS. FINAMORE: -- we feel it's irrelevant that the Applicants did not rely upon Appendix C in their case-in-chief.

The fact of the matter is that Intervenors wish to rely upon Appendix C for their rebuttal evidence and they have been denied --

JUDGE MILLER: Well, Appendix C, considerations the Board did defer; didn't it?

MS. FINAMORE: That's correct. That's the material upon which the Intervenors intended to rely.

JUDGE MILLER: That's under the Board's order at Page 5, Contention 1(b)?

MS. FINAMORE: We wish to use this information to rebut the kind of material that the Applicants now wish to introduce. We were precluded --

JUDGE MILLER: Well, the material that the Applicants are seeking to instroduce or, at least with the limitations described by the Board, are insofar and only insofar as pertains to the issue of a reactor of the general

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size and type proposed.

MS. FINAMORE: I would like to point out one thing.

JUDGE MILLER: Now, wait a minute. Are you going to abandon C? Let's get that one concluded before you get to something else.

What's your position now in regard to this present issue; whether or not a deferred matter reflected in C, not relied upon according to Mr. Edgar, somehow or other is something that prejudices you in th is LWA-1 hearing?

MS. FINAMORE: Oh, absolute, Mr. Chairman.

The matters that have been deferred were the matters we wished to use for cross-examination of the direct case of the Applicants. For that reason, we're -- it's as if we're having a decision based on a direct case but will defer the cross-examination until later, after the decision has been made.

JUDGE MILLER: No. Pardon me.

Their direct case, as I understand it, in that respect does not rely upon or otherwise refer to C.

MS. FINAMORE: Well, the purpose of the Reliability Program is to show that the safety systems upon which Applicants do rely for their --

JUDGE MILLER: Or may rely or might rely or

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feasibly could rely, that's the scope of this issue here.

So trying to narrow it to the base or to the point of the pyramid, doesn't mean that you can stand the pyramid on its head.

MS. FINAMORE: Mr. Chairman, the Applicants are not relying on whether or not its feasible to construct a reactor that has certain safety systems that are not yet identified.

The Applicants case is, that they have designed the Clinch River in a particular way, with particular systems and that those systems are adequate.

JUDGE MILLER: Now, just a minute. Just a minute. Just a minute.

That's three times now. I can't stop you.

You heard what the Staff said in that regard, which is somewhat different from what you're quoting that the Applicant said. Now, you can't ignore the Staff's position, I don't believe, logically, because you're just giving an argument that is not addressing itself to the limitations and to the purpose that the Staff has presented this.

That's what I'm requesting you now to address.

Now, go ahead.

MS. FINAMORE: Okay.

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We are not ignoring the Staff's position. In fact, we have developed cross-examination of the Staff's position in a very different manner.

What we're concerned about right now is our ability to qu estion the Applicants position in the manner in which they have presented it. They have not limited their use of these four volumes of exhibits to whether or not --

JUDGE MILLER: General size and type?

MS. FINAMORE: -- it's general size and type.

JUDGE MILLER: Suppose we did? Suppose we put a limitation, which I'd asked originally and then the Staff, I think, sharpened it a bit by pointing out that the testimony or documents can be admitted for a limited purpose only and that's what I've been asking you to address, because that's what the Board originally had in mind and the Staff has discussed and you haven't alluded to it.

Now, we're going to recess shortly, so if you want to be heard on that, I think you ought to get to it.

MS. FINAMORE: The main problem is this.

In Applicants' testimony, they say, for example, that Section 15-2 of the PSAR demonstrates the adequacy of the reactor shutdown system and the shutdown's heat removal system. They are not using this to illustrate the

mechanics --

JUDGE MILLER: Well, suppose the Board regards it as being merely illustrative and puts an appropriate limitation? That is the issue that I keep presenting to you and you keep avoiding.

Yes?

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MS. FINAMORE: Mr. Chairman --

JUDGE MILLER: Yes.

MS. FINAMORE: I'll close this now briefly. I would just like to point out that, first of all, I think we would still be substantially prejudiced if they're used for illustrative purposes only, or even for purposes of general arguments on feasibility, because we feel those general arguments are based on specific analyses and computer codes which we have not been able to address in discovery or in our testimony.

Second of all, we feel that if the Board were to rule that these documents and the PSAR sections should be used for illustrative purposes only, then Applicants should be required to amend their testimony so that these documents are referred to for illustrative purposes only, which they do in several portions of their testimony.

JUDGE MILLER: Well, you want them -- In that event, you want them to amend their testimony. As I understand it, you want them to pitch most of it out anyway. You're going to move to strike it.

MS. FINAMORE: Yes, we still move to strike it. We rely upon our arguments --

JUDGE MILLER: But, in any event, I understand that you want them to have it limited appropriately, if that be the ruling.

MS. FINAMORE: Can I give you one example?

JUDGE MILLER: Yes.

MS. FINAMORE: On Page 28 of their testimony, the fourth line from the top, Applicants state: "Further description of the RSS may be found in PSAR Sections 4.2.3 and 7.1.2."

Although we still disagree with the Board's ruling, we think that --

JUDGE MILLER: We haven't ruled yet. We're just approaching it.

MS. FINAMORE: -- approaching ruling. We feel that this type of statement would fall within that ruling.

However, we do not believe that sentences such as that, and on Page 25, the third full paragraph, starting on Line 4, is appropriate under that anticipated ruling.

And I quote: "PSAR Sections 15.1.4 and 15.2 demonstrate the adequacy of the reactor shutdown and the shutdown heat removal systems to re-establish the balance between heat removal and heat generation."

It's a far cry from saying that the PSAR describes these systems in a particular section and the PSAR demonstrates that they're adequate. That's where we were unable to counter those assertions with that -- within the scope of the Board's ruling.

JUDGE MILLER: Okay. That's fair and understandable. There may be others -- I understand.

Okay. We'll take about a ten-minute recess.

(A short recess was taken.)

JUDGE MILLER: The Board has conferred and has decided that it will rule, as we almost indicated preliminarily, that we believe that the evidence and documents and exhibits proffered will be admitted, but will be admitted for the limited purpose of being illustrative of the, quote, reactor of the general size and type proposed, closed quote, as that term or those words appear on Page 4 of the Board's order of April 22, 1982.

We feel that for the purpose of this phase of the hearings, such illustrative material is reasonable because in order to discuss -- put on evidence as to the feasibility of anything, you have to have certain specific aspects or everybody makes speeches of a subject that remains in a vacuum.

I think that insofar as any of the testimony appears to go beyond the illustrative or limited nature of this, Mr. Edgar, that we would expect you, if you can, in any way to reword it or it will be subject to appropriate modification. Perhaps conveniently you might be making some changes of that kind which might even be picked up by the witnesses, if you have the opportunity.

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And to be entirely clear now, these documents, the PSAR references and the like, are not now addmited and will not be used by the Board now or in the future for specific matters pertaining to this proposed reactor, but rather to the general size and type proposed limitation, which is exactly what the Board quoted in its order.

It will be consistent, as we understand it, with the limitation which the Staff informed us, they had imposed pretty much upon themselves in their preparation and approach of the case.

And with that limitation, the motion is granted to the extent that there are matters which are not so limited, and appropriate changes and amendments will be made in the testimony -- or will be the subject of appropriate motion by the Intervenors.

With that statement, the balance then of the motion will be denied.

Now I think we're ready to proceed, and we've got the panel. They have been sworn and have been waiting patiently for a while.

You may proceed if you wish, Mr. Edgar.

MR. EDGAR: We have stipulated to authenticity, Mr. Chairman, and we -- I'm assuming that there's no additional need for foundation questions and the panel is ready for cross-examination.

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JUDGE MILLER: You are offering into evidence the --

MR. EDGAR: Exhibit 1.

JUDGE MILLER: Exhibit 1, which consists of the testimony of the panel.

There has been no request for voir dire, so, therefore, the panel is available for cross-examination.

Intervenors.

MS. FINAMORE: It was our understanding that the Staff would be performing cross-examination first since they are --

JUDGE MILLER: No, the order of proof was that order. But we have had no indication that the Staff's views are different from the testimony given, and that their examination would be limited in nature and short.

Is that correct, Mr. Swanson?

MR. SWANSON: Yes. Actually I just have one narrow line that I wanted to pursue.

JUDGE MILLER: So, therefore, we think it would be better if the Intervenors -- are the opponents of the testimony, so in order to get the entire matter up for consideration, we're ready for you.

If there should be anything in the Staff's interrogation which puts you at a disadvantage, we will let you cover it. But we think that your questions are going to be the broadest of this panel.

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CROSS-EXAMINATION

BY MS. FINAMORE:

Q. I'd like to begin with a few questions of Mr. Brown, since his statement of qualifications was first in the Applicants' testimony concerning NRDC Contentions 1, 2 and 3.

Then I will continue alphabetically with the other witnesses.

Just a couple of questions, Mr. Brown. You are a Specialist, CRBRP Licensing for the General Electric Company; is that correct?

BY WITNESS BROWN:

A. That's correct.

Q. And you are assigned to Westinghouse LMFBR Licensing Coordination Office in Bethesda, Maryland; is that correct?

BY WITNESS BROWN:

A. That's correct.

Q. Can you explain to me briefly what that assignment entails?

BY WITNESS BROWN:

A. It includes in part preparing the testimony and supporting that. Also I did a fair amount of the work in updating the interrogatory, since I was familiar and was originally the preparer of the original interrogatory

answers in many areas.

And also I had been interacting in a small way with coordination of questions from the Staff as to material needed to complete their CP review and obtain that from other participants in the project.

Q. How long will you be on this assignment to Westinghouse?

BY WITNESS BROWN:

A. It's planned for two years right now.

Q. From?

BY WITNESS BROWN:

A. It started in about the first of May.

Q. Westinghouse is a prime contractor for the Applicants; is that correct?

BY WITNESS BROWN:

A. For the nuclear island, that's right.

Q. What do you mean by the "nuclear island"?

BY WITNESS BROWN:

A. Well, they are not the architect engineer. For the reactor manufacturer portion, they are the prime contractor.

Q. And General Electric Company is a subcontractor of Westinghouse; is that correct?

BY WITNESS BROWN:

A. That's correct.

Q. And what portions of the nuclear islands will be affected by the design which is the subject of Intervenors' Contentions 1, 2 and 3?

BY WITNESS BROWN:

A. The four particular safety areas that we've addressed -- the shutdown system -- the shutdown heat removal system, those features that preclude pipe breaks and the prevention of propagation of fuel failures as HCD A initiators.

MR. EDGAR: May I interpose? I thought that we weren't having voir dire on this testimony. Now we're going through everyone's qualifications. I thought that had been waived, and we were going to proceed on the merits.

JUDGE MILLER: Well, the qualifications were offered for voir dire examination. I don't recall any being availed. But that is true. That was the purpose of the voir dire qualifications, so you could proceed, (a), to the qualifications, and if not, then directly into the testimony.

MS. FINAMORE: Mr. Chairman, I'm not intending to question the qualifications of any of these experts. I'm merely going into these matters for purposes of credibility since they are -- they all appear to be employed by Applicants or contractors of the Applicants.

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That's a separate matter from voir dire on the purpose of whether they are called as expert witnesses.

JUDGE MILLER: Voir dire includes not only expertise, but it includes matters which go to the testimony and the foundation proof. That's why I proffered them to you.

I would expect you to go into them, if you're going to get into matters -- sure, I mean you -- ask him the one question. They're all employed by somebody, but we're not going -- You've been now almost five minutes just asking them who they worked for. This is not a productive use of your time or our time.

MS. FINAMORE: I just have a few brief questions of each of the --

JUDGE MILLER: Well, however brief, you're going contrary to procedure. Now get off the qualifications and into the subject matter, please.

MS. FINAMORE: Is it possible just for me to get on the record the specific areas with which each person is employed in --

JUDGE MILLER: Well, you know that, don't you, from the written qualifications?

MS. FINAMORE: No, there are a couple of matters that Mr. Brown just pointed out that were not in his statement of qualifications, that describe in a little

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more detail just how he is involved in the proceeding on which he is testifying as an expert witness.

JUDGE MILLER: All right. That may be true, but what difference does it make?

MS. FINAMORE: I think these matters are important for purposes of credibility.

JUDGE MILLER: Well, I know why you think they're important, but I'm asking you in what way should we take the time to get them in the record?

MS. FINAMORE: I don't think they'll take very long, Mr. Chairman.

JUDGE MILLER: You're like the lady in literature about the child and the question -- (Laughter) -- and she said, "But it's such a small one."

Okay. Take 30 seconds and see what you can put in the record. You can probably ask them en masse.

MS. FINAMORE: Well, I'm through with Mr. Brown, Mr. Chairman.

JUDGE MILLER: Okay. One down, four to go.

BY MS. FINAMORE:

Q Mr. Clare, your statement of qualifications state that you are employed by Westinghouse; is that correct?

BY WITNESS CLARE:

A That's correct.

Q. And can you tell me what portions of Intervenors Contentions 1, 2 and 3 directly impact the kind of work that you are doing for Westinghouse?

BY WITNESS CLARE:

A. My responsibility is in the general area of licensing. And since this is all part of the licensing process, I would say my responsibility covers the entire area.

Q. So your responsibilities at Westinghouse are to do everything that you can to make sure that the plant is licensed; is that correct?

BY WITNESS CLARE:

A. My responsibilities at Westinghouse are to manage and coordinate the licensing activities within Westinghouse and its subcontractors.

Q. And Westinghouse is interested in getting the plant licensed; is that correct?

BY WITNESS CLARE:

A. That's correct.

Q. Mr. Deitrich, am I correct that you are employed by Argonne National Laboratory?

BY WITNESS DEITRICH:

A. That's correct.

Q. And you're in its Reactor Analysis and Safety Division; is that correct?

BY WITNESS DEITRICH:

A. Yes. I am Associate Director of the Reactor Analysis and Safety Division.

Q. Isn't it true that Argonne National Laboratory is completely owned by the Applicants?

BY WITNESS DEITRICH:

A. The physical facilities of the laboratory are owned by the Department of Energy. The staff is employed and the programs are carried out by the University of Chicago as the operating contractor of the Laboratory.

Q. So they're a contractor of the Department of Energy?

BY WITNESS DEITRICH:

A. That's correct.

Q. Mr. Deitrich, can you explain to me where your duties are involved or impacted by the material covered in Applicants' testimony on NRDC Contentions 1, 2 and 3?

BY WITNESS DEITRICH:

A. My duties include supervision and direction of the activities which are responsible for development and application of HCDA accident analysis codes and methods.

Q. And that's the subject of Contention --

BY WITNESS DEITRICH:

A. Contention 2.

Q. Mr. O'Block, am I correct that you are a Technical

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Assistant to the Westinghouse Oak Ridge Manager of Systems Integration?

BY WITNESS O'BLOCK:

A. Yes.

Q. And Westinghouse, as I stated before, is a prime contractor of the Applicants; is that correct?

BY WITNESS O'BLOCK:

A. For the nuclear island, yes.

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Q. And can you explain to me how your duties are impacted by the material covered in Intervenors' Contentions 1, 2 and 3?

BY WITNESS O'BLOCK:

A. Well, in the design aspects.

Q. Can you elaborate on that?

BY WITNESS O'BLOCK:

A. Section 3 of our testimony.

Q. Mr. Strawbridge, you're also employed by Westinghouse; is that correct?

BY WITNESS STRAWBRIDGE:

A. Yes.

Q. And you are the manager of the Nuclear Safety and Licensing Branch?

BY WITNESS STRAWBRIDGE:

A. Yes.

Q. Can you explain what that involves, if you would?

BY WITNESS STRAWBRIDGE:

A. For the portion of the Clinch River activities that are performed at the Waltz Mill site, I have responsibility for directing the safety and licensing activities.

Q. So you are also interested in -- or your job entails doing everything you can to make sure that this reactor is licensed; is that correct?

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BY WITNESS STRAWBRIDGE:

A. My job includes nuclear safety and licensing. So my job is to make sure that the nuclear plant is safe and is licensed.

Q. Okay. And that's the material on which you're testifying today, that it is safe and that it can be licensed; is that correct?

BY WITNESS STRAWBRIDGE:

A. I'm testifying on the material that has been presented in our testimony.

Q. And that is the inclusion of that testimony, is it not?

BY WITNESS STRAWBRIDGE:

A. The testimony bears on specific contentions. It does not bear on the broader question of overall safety and licensing.

Q. But does not the conclusions in that testimony lead to a conclusion that the plant is safe and that it can be licensed, and that these contentions are inaccurate?

BY WITNESS STRAWBRIDGE:

A. That's a broader statement than what the contentions address. The testimony addresses the contentions.

Q. Mr. Edgar gave a very general overview of which sections of the testimony each of you were responsible for. I would like to just go into that for a couple of minutes more, if

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I may, to make sure that I understand exactly who to ask for each portion of the testimony.

Mr. Clare, if I am correct, you were responsible for every portion of the testimony, as well as Section 3; is that correct?

BY WITNESS CLARE:

A. I participated in the drafting -- in development of the entire testimony, as did essentially everyone on the panel.

Q. Did you write an initial draft of Section 2 of this testimony? Excuse me --

JUDGE MILLER: What Section 2? What page is that of the exhibit?

WITNESS CLARE: That's on Page 6.

JUDGE MILLER: Thank you.

MS. FINAMORE: Mr. Chairman, before we proceed, I'd like to ask that all of the witnesses answer these questions separately and that there be no conferring off the record. I would like to hear all the statements which the Applicants wish to make individually.

Therefore, if one person has something they would like to add to any of the questions that I'm asking another witness, I would prefer that they wait until that witness is finished and then add separately whether or not they agree or disagree.

JUDGE MILLER: Well, have you had any conferences

among the witnesses? I haven't noticed any --

MS. FINAMORE: Just this second.

JUDGE MILLER: All right. In any event, answer individually; answer specifically and succinctly to tersely phrased questions.

Proceed.

MR. EDGAR: Judge Miller, can I raise one point here? If -- At this juncture we don't have a problem with that. When we get into technical details, there is always going to be a question as to who is the right person to answer. We will make better time here if the witnesses are allowed to have a conference to determine who should answer.

Otherwise, we can go through five people until we find out who knows.

MS. FINAMORE: Mr. Chairman, the reason --

JUDGE MILLER: Well, I think they're entitled to have -- You've put them on as a panel, that's permitted. But I think she's entitled to have individual answers.

It's up to her if she wants to do it -- you claim it's more efficient for them to confer. Well, that may be. But we can't require any counsel to conduct his or her law suit a particular way.

If she wants individual answers, why she'll get them.

MS. FINAMORE: Mr. Chairman, that's why I'm

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attempting to find out now who was responsible for each portion of the testimony so --

JUDGE MILLER: Well, they're telling you. You've got a number one, he says that he was responsible for practically all of it as were others. So we'll strike "as were others," but we'll let stand his statement that he is responsible for practically all of the testimony.

Now, next.

BY MS. FINAMORE:

Q. So you did not write the first draft of Part 2; is that correct?

BY WITNESS CLARE:

A. I did not write the first draft of Section 2.

Q. Did you write any later drafts of Section 2?

BY WITNESS CLARE:

A. Yes.

Q. Can you explain that for me, please?

BY WITNESS CLARE:

A. There was an initial draft prepared, and following review among the panel members, it was decided that there should be a subsequent draft which I did then prepare.

Q. Did you prepare that on your own?

BY WITNESS CLARE:

A. I believe I prepared that subsequent draft on my own, yes.

Q. Were there any later drafts of Section 2 prepared?

BY WITNESS CLARE:

A. There were several revisions to Section 2 of the testimony. I don't recall that there was any wholesale redrafting of Section 2.

Q. Can you tell me who performed those subsequent changes to the draft that you wrote on Section 2?

BY WITNESS CLARE:

A. The witness panel represented here.

Q. Okay. I'll get to them in a minute.

Did you write the first draft for Section 3?

BY WITNESS CLARE:

A. No.

Q. Did you write any other drafts of Section 3?

BY WITNESS CLARE:

A. I prepared certain revisions to Section 3.

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Q. Can you tell me what those revisions are, briefly?

BY WITNESS CLARE:

A. They span essentially all parts of Section 3.

Q. Were those the final revisions to that section that you prepared?

BY WITNESS CLARE:

A. I participated in the drafting of the final versions. I did not do so independently.

Q. Can you tell me who else participated in those final revisions to Section 3?

BY WITNESS CLARE:

A. Yes; the witness panel and others who participated for picking up typographical errors and that sort of thing.

Q. Am I correct that the only other persons who performed substantive revisions to Section 3 are here today on the witness panel?

BY WITNESS CLARE:

A. Yes.

Q. If anyone disagrees with Mr. Clare's characterization of how these drafts were prepared, I would hope that you would inform me --

JUDGE MILLER: No. No, you wanted it singly; you're going to get it singly. We're not going to have any

10-2

commonality of answers with regard --

MS. FINAMORE: I'm just saying that when I get to them individually they will --

JUDGE MILLER: Well, when you get to them individually, you address it. You wanted it individual, just keep it individual.

BY MS. FINAMORE:

Q Mr. Clare, did you write the first draft of Section 4?

BY WITNESS CLARE:

A No.

Q Did you prepare any further drafts of Section 4?

BY WITNESS CLARE:

A No.

Q Were you involved in editing Section 4 in any way?

BY WITNESS CLARE:

A Yes.

Q Can you explain that extent of your involvement to me?

BY WITNESS CLARE:

A I did participate in the review and development of Section 4 after it was initially prepared. I did not prepare any substantial revisions to Section 4 as an independent contributor.

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Q So you just made suggestions as to how Section 4 should be changed, is that correct?

BY WITNESS CLARE:

A Yes, and participated with the rest of the panel in determining what those revisions should finally be.

Q But you did not put those revisions into the draft itself, is that correct?

BY WITNESS CLARE:

A I don't recall who specifically wrote the words down on paper.

Q Can you tell me what those suggestions were, briefly?

BY WITNESS CLARE:

A No, I don't recall the specific changes.

Q Can you recall any changes that you made or recommended to Section 4?

BY WITNESS CLARE:

A I believe I recommended that the figure on Page 50 of the testimony should be inserted.

Q Do you recall any other changes you suggested to Section 4?

BY WITNESS CLARE:

A No, I don't recall any other specifics.

Q Did you prepare the first draft to Section 5, Mr. Clare?

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BY WITNESS CLARE:

A. No.

Q. Did you prepare any subsequent drafts to Section 5?

BY WITNESS CLARE:

A. No.

Q. Did you -- were you involved in the preparation of Section 5 in any way?

BY WITNESS CLARE:

A. Yes, as suggested for Section 4, I did participate in the review of that section with the other panel members, and we worked together developing the final version of that section.

Q. But you did not make any of the changes to the draft itself in Section 5, is that correct?

BY WITNESS CLARE:

A. I don't recall, again, who specifically wrote which words on which pieces of paper.

Q. Did you write any words on any pieces of paper?

BY WITNESS CLARE:

A. I suppose I did from one time to the next.

Q. So you did prepare -- you did edit certain portions of that?

BY WITNESS CLARE:

A. I participated in that, yes.

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Q. And did you make any changes in Section 4? You said you didn't, but now you say you prepared Section 5 in the same manner as Section 4.

BY WITNESS CLARE:

A. I said that I prepared -- I participated in the preparation of Section 4 with the other panel members. I did not independently prepare portions to Section 4. The same is true for Section 5.

Q. But on both those sections you did make some changes in writing?

BY WITNESS CLARE:

A. I participated with the panel in making changes to those sections.

Q. I'm asking you if that participation included making actual wording changes.

BY WITNESS CLARE:

A. We made those -- did that editing, made those changes as a group. To the extent that I participated in the group, I made those changes.

Q. Can you recall what, if any, suggestions you made to earlier drafts of Section 5?

BY WITNESS CLARE:

A. No, I don't recall those details.

Q. You can't recall any changes or suggestions that you made to Section 5?

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BY WITNESS CLARE:

A. Not the specifics.

Q. Any general changes?

JUDGE MILLER: Well, now, what's a general change? We're talking about a document. That's meaningless.

MS. FINAMORE: Any general recom --

JUDGE MILLER: You already had an answer no; you've had a negative twice.

BY MS. FINAMORE:

Q. Mr. Deitrich, I believe that Mr. Edgar stated that you were responsible for Section 5 of this testimony.

BY WITNESS DEITRICH:

A. I had the lead responsibility for pulling Section 5 together, that's correct.

Q. Did you participate in any other sections of Applicants' testimony?

BY WITNESS DEITRICH:

A. Only to the extent that the panel collectively participated in reviewing and exchanging suggestions for those sections, yes.

Q. So you did make suggestions for each of the other sections, is that correct?

BY WITNESS DEITRICH:

A. I believe at one time or another I made suggestions for each of the others, yes.

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Q. Did you draft or edit any of those other sections?

BY WITNESS DEITRICH:

A. No.

Q. In terms of Section 5, you say you were the lead person responsible for pulling it together, and did you write -- am I correct?

BY WITNESS DEITRICH:

A. Yes.

Q. Did you write the first draft of Section 5?

BY WITNESS DEITRICH:

A. No, I believe I did not write the first draft of Section 5.

Q. Who did write the first draft?

BY WITNESS DEITRICH:

A. Mr. Brown pulled together a very early draft.

Q. And then am I correct that you reviewed that draft yourself?

BY WITNESS DEITRICH:

A. Yes, at that point I assumed the responsibility for further drafting Section 5.

Q. So you wrote the second draft?

BY WITNESS DEITRICH:

A. I believe it was the second draft, yes.

Q. Did you write any further drafts?

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BY WITNESS DEITRICH:

A. Beyond the second draft it was largely revisions.

Q. That you performed?

BY WITNESS DEITRICH:

A. Yes.

Q. Who did you get suggestions from in revising your second draft to Section 5?

BY WITNESS DEITRICH:

A. Mr. Strawbridge provided me some material which I incorporated. In fact, that was incorporated into the first draft that I wrote. I received suggestions from the other members of the panel.

Q. Did you receive any suggestions from anyone else?

BY WITNESS DEITRICH:

A. I had certain other people in my organization review one of the later drafts for accuracy, but they didn't make any suggestions for changes.

Q. So you're pretty much responsible for everything in Section 5 and are prepared to answer questions as to the basis for all the assertions in that section?

BY WITNESS DEITRICH:

A. I believe I would have to have some help from Mr. Strawbridge. He provided me substantial sections of

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that testimony and I incorporated them.

Q. Can you tell me which sections?

BY WITNESS DEITRICH:

A. Principally the material on the accommodation of core melting and the radiological consequences.

Q. Can you give me the section numbers that you're referring to?

BY WITNESS DEITRICH:

A. Those are part of Section 3.3 and beginning on Page 65.

Q. You mean 5.3, don't you?

BY WITNESS DEITRICH:

A. I'm sorry, 5.3.

Q. So am I correct that Mr. Strawbridge gave you the material starting with the heading "Accommodation of Whole Core Melting" on Page 65, and continuing on --

BY WITNESS DEITRICH:

A. Yes, that's correct.

Q. -- to Page 73 of the testimony, the end of the testimony?

BY WITNESS DEITRICH:

A. Yes, I believe that's correct.

Q. Did you have any input to those sections after they were given to you by Mr. Strawbridge?

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BY WITNESS DEITRICH:

A. I suppose I may have made some wording changes. I don't believe I changed anything substantive.

Q. But are you -- do you have any basis for accepting the numbers in these analyses in that sections and the conclusions reached in those sections other than the fact that they were given to you by Mr. Strawbridge?

BY WITNESS DEITRICH: .

A. Mr. Strawbridge attested to me that those are correct numbers, but that's my basis, yes.

Q. You have no independent basis for verifying those statements and the numbers?

BY WITNESS DEITRICH:

A. That's correct.

Q. Mr. Strawbridge, do you agree with the statements that Mr. Deitrich just made about your involvement with Section 5?

BY WITNESS STRAWBRIDGE:

A. Yes, ma'am.

Q. I believe that Mr. Edgar stated you are responsible for Sections 4 and 5 of the testimony.

BY WITNESS STRAWBRIDGE:

A. 4 and portions of 5, as explained by Dr. Deitrich.

Q. Can you explain to me what portions of Section 4 you were involved with?

10-11

BY WITNESS STRAWBRIDGE:

A. All sections -- all parts of Section 4.

Q. Did you write the first draft of Section 4?

BY WITNESS STRAWBRIDGE:

A. No.

Q. Did you write any further drafts of Section 4?

BY WITNESS STRAWBRIDGE:

A. Yes, I did.

Q. Can you explain to me what drafts you wrote up?

BY WITNESS STRAWBRIDGE:

A. I believe it was the second draft, and that formed the basis for what is here, with minor changes.

Q. Can you tell me who wrote the first draft?

BY WITNESS STRAWBRIDGE:

A. Mr. Brown.

Q. So you wrote the second draft, is that correct?

BY WITNESS STRAWBRIDGE:

A. Yes.

Q. Were you involved in any further work on Section 4?

BY WITNESS STRAWBRIDGE:

A. Yes.

Q. Can you explain to me what that was?

BY WITNESS STRAWBRIDGE:

A. As a panel we met and reviewed the information

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and prepared further drafts based on those reviews. I participated in those reviews.

A. Am I correct that after second drafts of each section were performed that the panel met together and made further revisions as a team?

BY WITNESS STRAWBRIDGE:

A. Yes, that's correct.

Q. Can you tell me when that was?

BY WITNESS STRAWBRIDGE:

A. A series of meetings over a number of months.

Q. When did you prepare the section indicated by Mr. Deitrich on Section 5? Was that after he had prepared the first draft of the other sections or before?

BY WITNESS STRAWBRIDGE:

A. I think Dr. Deitrich explained that Mr. Brown had prepared the first draft of Section 5. I prepared the sections that Dr. Deitrich indicated as a second draft of Section 5.

Q. That was in addition to what had originally been the first draft of Section 5?

JUDGE MILLER: Well, Counsel, I hate to interrupt, but you've taken now almost half an hour assuming to find out who wrote what and when the panel conferred. Now, it's very interesting. You're certainly entitled to find who wrote what, but you're going to find

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youself short of time on the schedule if this is the way you use your time. I'm merely making a cautionary note now, because later on when you get to more substantive matters you may regret this.

MS. FINAMORE: I'm hoping this will speed up the cross-examination in the long run.

JUDGE MILLER: Well, if that speeds it up, I've got to see it, but go ahead. However, it doesn't take this long to find out who wrote what, when they conferred as a panel or when individually. I could do it in five minutes. You're taking 35.

BY MS. FINAMORE:

Q Mr. O'Block, I believe Mr. Edgar indicated that you were involved in Sections 3 and 4.

BY WITNESS O'BLOCK:

A Just Section 3.

Q Section 3, excuse me. Can you explain to me what the extent of your participation was in Section 3?

BY WITNESS O'BLOCK:

A A review of the whole section and of the whole testimony, and reduce the whole core heat removal and shutdown heat removal systems. I prepared the insert portion of the draft testimony on that.

Q Can you tell me what section you're referring to in the testimony?

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BY WITNESS O'BLOCK:

A. Section 3.

Q. What portion of Section 3?

BY WITNESS O'BLOCK:

A. I just said the reduced whole core heat removal section, part of that, and the shutdown heat removal systems in the initial draft within Section 3. I also participated, as the rest of us did, in the meetings and review of the whole testimony.

Q. Can you tell me who prepared the first draft of Section 3?

BY WITNESS O'BLOCK:

A. If I recall correctly, I think Mr. Brown said he did.

JUDGE MILLER: Well, do you know?

WITNESS O'BLOCK: No, I do not.

JUDGE MILLER: In that event, just say "I don't know" and the answer will be stricken. Go ahead.

WITNESS O'BLOCK: I don't know.

BY MS. FINAMORE:

Q. Mr. Brown, can you tell me what sections of the testimony you prepared the first draft of?

BY WITNESS BROWN:

A. Sections 2, 3, 4 and 5.

Q. And when were these sections prepared?

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BY WITNESS BROWN:

A. I didn't quite hear what you said.

Q. When were these drafts prepared?

BY WITNESS BROWN:

A. This first draft?

Q. Yes.

BY WITNESS BROWN:

A. I believe it was about the first of April.

Q. And can you explain your participation in this testimony after you wrote the first drafts?

BY WITNESS BROWN:

A. In Sections 2, 3 and 5 I participated in the review of those sections, as well as Section 4, but in 2, 3 and 5 there were paragraphs that I added revisions to after other individuals had prepared the second draft, and I continued in reviewing those in the subsequent drafts.

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BY MS. FINAMORE:

Q Mr. Brown, did you send out your first drafts for review to anyone at the Project or to anyone else outside of Westinghouse or GE?

BY WITNESS BROWN:

A. As I recall, the initial drafts were sent to everyone on the panel, other than Dr. O'Block, as well as people within Westinghouse who might have had information to further comment on the details, but I don't recall the other individuals. I think I sent them only to people on the panel and Counsel for comment.

Q And you received comments from Counsel?

MR. EDGAR: Objection.

I don't think the nature of any comments or inquiry into discussions between Counsel and the witness is proper. The witnesses are entitled to assert a privilege in that regard.

JUDGE MILLER: Sustained.

I don't think it's the witness who asserts the privilege but I think the objection is sustainable.

BY MS. FINAMORE:

Q Can you briefly identify the major general design features of the Clinch River Breeder Reactor Plant that you feel are necessary to evaluate to determine whether core disruptive accidents should be considered credible?

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BY WITNESS CLARE:

A. The four major design features that are provided in the plant are identified in Section 3.3 of our testimony and in the last paragraph of Section 3.2, on Page 26, specifically enumerated, Reactor Shutdown Systems, the Shutdown Heat Removal Systems, the means to prevent PHTS pipe leaks larger than the design basis leaks and features to prevent local imbalance between heat generation and heat removal.

Q. Is it possible, Mr. Clare, for the reactor shutdown system to fail?

BY WITNESS CLARE:

A. Yes.

Q. Is it possible for the shutdown heat removal system to fail?

BY WITNESS CLARE:

A. Yes.

Q. Is it possible for the means used to prevent PHTS pipe leaks larger than the design basis leaks, to fail?

BY WITNESS CLARE:

A. Yes. It is possible for the aspects of the design that are discussed in that area to fail.

Q. Is it possible to have a leak in the primary heat transport system piping larger than the design basis

leak?

BY WITNESS CLARE:

A. It is physically possible for that to occur, yes.

Q. Is it possible to have a doubled ended pipe break of the primary heat transport system piping?

BY WITNESS CLARE:

A. It is possible in the sense that are there no physical laws that would be violated were such a failure to occur.

Q. Is it possible that the features you've mentioned to prevent local imbalance between heat generation and heat removal could fail?

BY WITNESS CLARE:

A. Yes. As I indicated, for the features to prevent larger pipe leaks, there is a range of features that are involved in preventing the local imbalance and it is possible, again, in a theoretical sense. It does not violate the laws of physics for one or more of those features to fail.

Q. Is it possible for each of those features to fail?

BY WITNESS CLARE:

A. Yes.

Q. You earlier referred to the word "prevent";

that these features could prevent local imbalance between heat generation and heat removal.

What do you mean by prevent if you just admitted they could fail?

BY WITNESS CLARE:

A Prevent means to reduce to an extremely low likelihood the possibility that that would occur in recognition of the fact that it is theoretically possible for them to fail.

Q Is that your definition of "prevent" throughout your testimony?

BY WITNESS CLARE:

A We have used the word prevent in a number of areas in the testimony.

With respect to preventing in HCDA, as applied to the four features, again, addressed in the last paragraph of Section 3.2, that's what we mean when we say prevent in HCDA.

Q You mean reduce the probability to a very low likelihood? Were those your words?

BY WITNESS CLARE:

A Reduce it to a low likelihood; yes.

Q Didn't you say extremely low likelihood a minute ago?

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BY WITNESS CLARE:

A. Yes. I didn't draw a particular distinction.

Q. Am I correct, also, Mr. Clare, that when you say, on Page 26 of the testimony, the means to prevent larger pipe leaks are necessary to prevent leaks beyond the design basis, you do not mean that it will prevent such leaks beyond the design basis one hundred percent of the time but that it will only reduce the probability of leaks beyond the design basis?

I'm referring to --

MR.EDGAR: I'll object to the form of the question. That's a --

JUDGE MILLER: It's argumentative. Sustained.

BY MS. FINAMORE:

Q. Well, can you explain to me, Mr. Clare, what you mean by prevent in the sentence on Page 26? The sentence starting on line 11:

"The means to prevent larger pipe leaks are necessary to prevent leaks beyond the design basis."

BY WITNESS CLARE:

A. I believe my answer to your earlier question responded to this question.

When we have used the word "prevent" in HCDA or HCDA initiation, which is what we're referring to in this

particular paragraph, we mean to suggest that the likelihood of occurrence of those initiators, because of the operation of these four features, reduces the likelihood of that occurrence to a very low level.

Q. Would you have the same definition of prevent in the sentence on Page 45, second full paragraph, final sentence:

> "Further inherent protection to prevent propogation from one sub-assembly to a second sub-assembly is provided by the steel hexagonal sub-assembly ducts that enclose each fuel rod bundle."

BY WITNESS CLARE:

A. Yes. Here we're talking about one of the aspects of the design that serve to prevent the local imbalances and to the extent that that particular design feature contributes to the overall prevention of those imbalances, that's what we mean by the word prevent here.

Q. And on Page 45 of your testimony, second full paragraph -- excuse me. 43 of your testimony, second full paragraph, third line from the bottom, you state:

> "The CRBRP design includes features and inherent capabilities to prevent the occurrence of these theoretical

HCDA initiators."

Am I correct that you do not intend to mean that you will make impossible the occurrence of these theoretical HCDA initiators?

BY WITNESS CLARE:

A. In a theoretical sense, we will not prove that the HCDA initiators are impossible.

Q. Isn't it true that you cannot, in a practical manner ever, prove that these theoretical HCDA initiators could not occur?

BY WITNESS CLARE:

A. We've not set out to do so.

Q. Mr. Clare, you stated earlier that each of the four general systems referred to on Page 27 of your testimony could fail.

Is it possible for the reactor shutdown system to fail due to human error?

BY WITNESS CLARE:

A. Yes, although we designed the reactor shutdown system to be essentially independent of human error. The entire system functions automatically, in the event it would be required.

Q. Although you have designed a system to be essentially independent of human error, isn't it true that the reactor shutdown system could still fail, due to human error?

Q. And why is that?

BY WITNESS CLARE:

A. Yes. There are aspects of the reactor shutdown system which are maintained, constructed by human beings and the human beings do have some -- there is some possibility that they would fail in their interface with the reactor shutdown system and although we have taken measures to avoid that, it is theoretically possible that there would be a sufficient number of such failures that the system would fail.

Q. Is it possible for the reactor shutdown system to fail due to operator error?

BY WITNESS CLARE:

A. Would you repeat the question?

Q. Is it possible for the reactor shutdown system to fail due to operator error?

MR. EDGAR: Objection. Asked and answered.

JUDGE MILLER: I thought it was asked and answered, unless you're going into some aspect beyond.

MS. FINAMORE: He said it could fail due to human error and he mentioned maintenance and construction error.

JUDGE MILLER: Well, aren't operators human?

You've established human error could do it. Isn't that your purpose?

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MS. FINAMORE: Well, he gave me two examples.

JUDGE MILLER: All right. Go ahead.

BY MS. FINAMORE:

Q. I wondered if a third example might be that the reactor shutdown system could fail due to operator error?

BY WITNESS CLARE:

A. Operators are a sub-category of those human beings I referred to before. They do perform the maintenance and calibration on the reactor shutdown systems.

Q. Is it possible the reactor shutdown system could fail due to design error?

BY WITNESS CLARE:

A. It is theoretically possible that that would be the case.

Q. Is it possible for the reactor shutdown system to be inadvertently turned off and thus to be inoperative?

BY WITNESS CLARE:

A. No.

Q. There's no way that anyone at the plant could turn off the reactor shutdown system?

BY WITNESS CLARE:

A. To the best of my knowledge, there is no way to turn off the reactor shutdown system.

Q. Even deliberately?

BY WITNESS CLARE:

A. Deliberately or not deliberately.

Q. Is it possible for someone to sabotage the reactor shutdown system?

MR. EDGAR: Objection. That contention -- I don't know where that ties into relevance in the context of this testimony.

JUDGE MILLER: Sustained.

MS. FINAMORE: Your Honor, I feel that --

BY MS. FINAMORE:

Q. Mr. Clare, do you believe that your conclusions regarding the potential for failure due to human error, regarding the reactor shutdown system, can also be applied to the redundant and diverse shutdown heat removal system?

BY WITNESS CLARE:

A. In a general sense, my statements as to the potential for human interaction with the reactor shutdown system that might cause its failure, could be extrapolated to the shutdown heat removal system.

Q. In a general sense.

Are there any specifics in which it differs?

BY WITNESS CLARE:

A. I'm sure there are many. None that stands out as other than some detail of the design.

Q. For example, is it possible for someone to

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inactivate the redundant and diverse shutdown heat removal system?

BY WITNESS CLARE:

A. It's possible for an operator to turn off the various portions of the shutdown heat removal system.

Q. Do you feel that the means to prevent a doubled ended rupture of the reactor vessel inlet pipe could fail, due to human error?

BY WITNESS CLARE:

A. The means to prevent the double ended rupture of the inlet pipe are fundamental physical materials properties, properties of coolants et cetera. It is conceivable that a human could interfere in some way that might affect the means to prevent double ended rupture.

I don't see how a human could interfere with the fundamental physics that we've relied on in our argument.

Q. Is there a possibility for a design error? In the pipe design?

BY WITNESS CLARE:

A. Yes.

Q. That might cause a double ended pipe rupture?

BY WITNESS CLARE:

A. That's theoretically possible.

Q. Is it possible for a construction error to cause a double ended rupture of the primary piping?

BY WITNESS CLARE:

A. It's theoretically possible.

Q. Is it possible for a maintenance error to cause a double ended pipe break of the primary piping?

BY WITNESS CLARE:

A. It's theoretically possible.

Q. Do you feel that a failure of the means to maintain individual sub-assembly heat generation and removal balance could fail, due to human error?

BY WITNESS CLARE:

A. Well, as I stated in the case of the means to prevent double ended piping rupture, much of that means to prevent local imbalance relies on fundamental physical properties of, for example, the sodium coolant. I don't see anyway for human operators to interfere with those fundamental physical laws but to the extent to which the humans are involved in the design and construction of those plant features that are important, yes, it is possible.

Q. Isn't it true that operator action is required after those means of imbalance between individual sub-assembly heat generation are detected?

BY WITNESS CLARE:

A. There are several levels of protection against the imbalance, any local imbalance between heat generation and heat removal.

11-13

If one postulates that one has, in essence, failed the first few levels of protection and one, in fact, gets some significant local blockage, so that there is a fuel failure or fuel failure from some other reason that might propogate over the longer time frame, it is necessary and would be necessary for the operator to recognize that condition and terminate plant operation at the appropriate time.

Q. Would it be possible for that operator to fail to recognize or to terminate the condition at that time?

BY WITNESS CLARE:

A. Yes, that's theoretically possible.

Q. Is it possible for the operator to exacerbate the condition after it is detected?

BY WITNESS CLARE:

A. I don't know.

Q. Does anyone else know?

JUDGE MILLER: Wait a minute.

We will take an hour for lunch and we will return at 1:30, please.

(Whereupon, the luncheon recess was taken from 12:30 p.m. to 1:30 p.m.)

AFTERNOON SESSION

1:30 p.m.

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bm

JUDGE MILLER: Take your places.

I think we have had a request for a limited appearance statement from Mr. Bates at 1:30; is that correct? Is Mr. Bates here?

Mr. Albert Bates, Director of PLENTY.

MR. WILLIAMS: He was here. He was here before.

JUDGE MILLER: All right. Do you want to go now? Come right up and you can have five minutes.

MR. WILLIAMS: Could we wait about --

JUDGE MILLER: No, we don't wait for anything. We're an express train. Come on up if you want to talk.

Anyway, you've testified before, haven't you?

Just take a seat at one of the microphones. Take about five minutes, if you would, please, and we'll be glad to hear from you.

As you well remember, you give us your name, your address and then you tell us what you think we ought to know.

STATEMENT OF LOUIS G. WILLIAMS

MR. WILLIAMS: I'm Louis G. Williams, Emeritus Professor of Ecology, University of Alabama and I represent the State Safe Energy Alliance and a number of other organizations.

As you mentioned, I made a limited appearance last February at these hearings.

JUDGE MILLER: Yes, Mr. Williams. We're glad to hear from you.

MR. WILLIAMS: Dealing with Westinghouse Corporation and its application for a license to build a nuclear fuel fabrication plant in Prattville, I've had vast experience in trying to deal with engineers, lawyers, NRC, the public; and I've become exasperated.

I guess so has the government because apparently there's not going to be any more public hearings. So I'm wondering how people like me can have an input.

But I have a number of mimeographed sheets which I have mailed to and had response from the Nuclear Regulatory Commission dealing with how the Westinghouse Corporation and the lawyer and myself and witnesses handled that public hearing which was in Montgomery, Alabama.

We had a public hearing, and we had all of these contentions and so forth. This is -- You're only going to give me five minutes.

So in order to be able to have something that could be stipulated and could be referred to, I have given to the lawyers -- the attorneys associated with the NRC, the attorney for the Safe Energy Alliance of Central Alabama, June Phillips, and just a general handout to anybody, because in a public hearing democracy, everybody has a right to know.

JUDGE MILLER: If you would like to have that

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marked as an exhibit that you'd file in this hearing, we'd be glad to receive it, Mr. Williams.

MR. WILLIAMS: Thank you. I had that in mind.

JUDGE MILLER: Okay.

MR. WILLIAMS: And I'm going to give you a set -- as a document.

JUDGE MILLER: Fine.

MR. WILLIAMS: These are already documents, and they're under U. S. NRC Document No. 70-2909, which was the -- is the -- Westinghouse withdrew its application for permitting.

However, I'm not sure that this is a dead issue yet.

Now on March 4th I presented this mimeographed handout. But in dealing with the attorneys for -- engineers and attorneys for both Westinghouse, SEACA, I find that I'm not a very good communicator; and I find trouble, as has today been indicated, in communication because I'm a trained scientist in some areas. When I try to talk to scientists, they understand me.

But I'm having difficulty communicating. I don't know whose fault it is.

So by printing this, I'm trying to pinpoint exactly what the problems are. So I'm not going to read all of these. It would take hours, because there have been many, but I want these to be admitted, because they do have pertinence to this

12-4

hearing because I think the same kind of situation exists here. If we're not going to have public hearings, then we're still going to have to have some other way to get the public informed as to the real dangers and hazards of such things as the proposed Clinch River sodium breeder reactor.

At the last hearing I mailed you a copy of these --

JUDGE MILLER: Yes, I remember receiving that.

MR. WILLIAMS: But the other things here I did write, and I asked for permission to be an Intervenor; and I have an answer from the Nuclear Regulatory Commission. This answer came on May 14, 1981.

I was denied Intervenorship. But now that that whole situation has been withdrawn, I would like to be an Intervenor or something in this hearing here, that I am supporting the petition of Jean Hanaker and Albert Bates, the attorney who will represent that case here today, because I live in the Southeast and I've done a lot of research here in the Clinch River, the Tennessee River.

I've worked on the uptake of radionuclides in the major waterways of the United States and have a number of publications.

I find that the standards on which hazards are based are not realistic, and that how we determine the tests for hazards to humans and other biota is no good. I said this at the last hearing, you remember, about the lymphocytes.

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There is a very sensitive technique that accumulates and will measure the dose that is damaging either to a whole ecosystem, to community organisms or to one individual. And even though this is a little difficult to do, a trained technician can do it. It shows chromosome aberrations, which can be counted. And above a certain count, undoubted some place you've got to draw the line that this is admissible as causing cancers, birth defects and many other -- in whole ecosystems.

The increase in cancers all over the world -- carcinogens from chemicals and now from ionizing materials are certainly something we've got to look at. So I tend to agree that low-level radiation hasn't been properly examined.

Also, the allowable amounts of ionizing materials to go into the environment is not a good basis because the organisms haven't, and they concentrate these -- average -- in my organisms 70,000 times.

That's a variance. So, therefore, you should multiply what you're putting into the rivers and lakes by some factor that is meaningful.

The Clinch River, the Tennessee River, below the Savannah River Project and out in the Washington -- Hanford reactor, there are examples of this occurring. And yet this is the environment.

So at the other hearing I said that we needed to look at what is in the environment. The Clinch River breeder,

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if it were built here, would be putting out ionizing by-products that would undoubtedly -- they always do -- get into the river. They do at the nuclear power plants.

And some of these accumulate; some have long physical half lives. Some have pretty long biological half lives. And also we tend to measure the dose, perhaps to the whole body or to what is received on the outside of the body, or if a dose is received from drinking. What we need is to know that when radionuclides get into the human organism or other organisms, they are very selective and concentrate at very high levels.

And it's these levels that we need to look at. So the Clinch River and its bottom sediments, the deep sediments, the radionuclides that have been there ever since the Manhattan Project and are being added every time there are heavy rains and the water level rises above the Conestoga Shelf -- floor and goes into the Clinch River, so there's an added radionuclide burden from many years ago already.

This is going to continue. The same thing has happened from leaks all around the country. So we already have a contaminated environment, but we're not measuring the right things.

And being a trained ecologist, I developed a technique for putting living organisms in perforated polyethylene bags, and I did it in the Clinch River, as published

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in "Science."

A lot of scientists use this. I also deal with a whole community of tiny organisms, the kind of organisms that I work with make up the largest biomasses on earth, not humans, not trees.

The oceans are the biggest part of the earth. There's more volume of water for planktonic and small organisms. These make up the biggest biomasses, and they tend to concentrate materials very highly. They move up in the food webs.

We're not even studying the ecosystem approach. This is the real approach, and I have trouble communicating this. I don't have trouble with my fellow ecologists, but I have trouble at these hearings.

And they think that -- most of them won't do the things that I've been doing for years. I have published many papers. I have spoken many times at ecological meetings, trying to get the ivory-tower scientists to come out and take positions.

In the meantime a jargon has come up, in dealing with hearings. So there's really no good communication. And this is substantiated. [illegible] these things that I've put out here, you can read for yourself to see -- and it's documented -- that the things I talk about are true, and nobody is paying any attention to them.

Now, that's as plain as I can say it. I have

12-8

documents for what I'm saying. And I can get support for this.

Now I know we need the security and the national defense and maybe we need hydrogen bombs and atom bombs and uranium bombs, or whatever. Maybe we need these.

But we do not need to dig out uranium ore from the earth where it's not causing any damage to the ecosystem and create brand new products and proliferate these all over the earth.

We don't need to do that. There are better ways to supply the energy needs of this country. We need to look at this, and we've got to look at it from the purely scientific standpoint and where the real high levels of ionizing radiation are. And it looks like the proposals are going to go right into making these greater, instead of lesser.

Now as a trained ecologist, I'm not a lawyer; and, therefore, I have trouble communicating with attorneys, and they know that. But I can say that's not my fault. That's partly their fault, for I'd love to be able to communicate with them.

Because I've got a set of documents that I've got to stick with, the regulations, there's no way to get the truth across. In the State of Alabama, Westinghouse came in there and orchestrated everything they wanted through the legislature -- just as ignorant and stupid as the rest of the citizens of Alabama.

And I shouldn't say not only Alabama, all around

12-9

the citizens don't know the dangers of fission and what it's going to do.

So I certainly agree with Jean Hanaker, and I will agree with Albert Bates, attorney for the Natural Rights Center, that the nuclear fuel cycle, if we can't do any better than we've been doing, it's going to close us down. Why don't we close it down?

I think I have substantial data to prove this, the articles in "Science" to show it. I'm not a dooms day type person. If we can come up with a source of nuclear energy, maybe using thorium and plutonium and something else, but not get into these fission products.

I was all for the peaceful uses of nuclear energy, and I've learned that here at Oak Ridge. I also learned about it at the University of Berkley Radiation Laboratory.

But then when I kept seeing the accumulation of radwaste and it building up in food chains, and every time I try to correct this, it seems like I was just frustrated. There was no way to communicate it.

But that doesn't mean I don't know what I'm talking about.

JUDGE MILLER: I'm sure that's true, Mr. Williams. You've gone over -- double the time alloted you. We're glad to hear from you. I wish now that you would turn in as limited appearance statements the documentations that you referred to,

except the one that you previously sent us. We received that.

But any that you haven't yet submitted, I wish that you would submit them, and they will be made --

MR. WILLIAMS: However, I have an answer from the NRC which said that they went through all the legal ways, and the answer is no, they wouldn't let me be an intervenor and --

JUDGE MILLER: Well, that's another matter. We're not --

MR. WILLIAMS: But this is the same kind of thing.

JUDGE MILLER: No, we're not going into intervention.

The time for intervenors to petition in this case has long since passed. I know you're not asking that --

MR. WILLIAMS: No.

JUDGE MILLER: However, we are going to -- not only listen and hear your statement, we're also going to make part of the record the written documents that you have there that you wish to have considered by the Board and the counsel, and if and where relevant, addressed by the Board. So you may submit them to the reporter.

MR. WILLIAMS: I have eight pieces of paper here, and it's like you said -- it would require hours and hours to read it, but it picks out the exact rules and how you can't win through the system.

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Now somebody is at fault --

JUDGE MILLER: Well, now you've exceeded your time three complete folds, sir. I appreciate hearing from you again, but I think I'm going to have to proceed with the evidentiary hearing.

But if you'll submit those, leave them with the reporter here at the table, we will see that they are made part of the record in the proceeding and be addressed where appropriate.

MR. WILLIAMS: The hazardous waste siting congresses that I have attended, they don't work either.

JUDGE MILLER: They don't.

MR. WILLIAMS: The Atlanta one didn't, and the regional things don't work. There's nobody who will agree to anything.

JUDGE MILLER: Well, we'll read it -- them. So if you'd just hand them in, we'd appreciate it.

MR. WILLIAMS: And I thank you so much.

JUDGE MILLER: Not at all. We'll probably see you next time we're here.

Thank you, Mr. Williams.

(The documents given to the reporter by Mr. Williams are as follows.)

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Prattville Fuel Plant Valid Contentions.

March 4, 1981.

From: Louis G. Williams, Ph.D., Aquatic Ecologist and Science, Advisor for the Safe Energy Alliance of Central Alabama (SEACA), 1246 Northwood Lake, Northport, Alabama 35476

Via: Mr. Julian L. McPhillips, Jr., Attorney for SEACA, P. O. Box 64, Montgomery, AL 36101

To: The Atomic Safety and Licensing Bd., U. S. Nuclear Regulatory Commission, Washington, D. C. 20555

In the matter of the application of the Westinghouse Electric Corporation for a special Nuclear Material License for the Alabama Nuclear Fuel Fabrication Plant, U. S. NRC Docket No. 70-2909.

This is a conditional application to file for leave to intervene (Docket 70-2909) according to 10 CFR 2.714 (a)(1), for Louis G. Williams. I am certain that the Commission is aware of the degree of my participation (see enclosed release of handouts).

Should the attorney for SEACA, Mr. Julian McPhillips, agree to modify his contentions, using the below stated suggestions, with concurrence of Westinghouse and the Atomic Safety and Licensing Board, then no intervention on my part will be necessary, and I will withdraw this request.

SOME SUGGESTED MODIFICATIONS and/or CHANGES.

Regarding Stipulations Number 2, filed on February 25, 1981 and received on Feb. 28, dealing with Deferred Contentions in Attachment C, now supersedes all previous filings. These deferred contentions should be thoroughly discussed in this license application because they deal with vital areas of health and safety of atomic workers and the citizens of the affected area and with deferred costs to the area and perhaps to the taxpayers.

Putting off these controversies until after Westinghouse files the needed information (i.e., NRC issuing a license) will be too late to make a judgment. The public may never be told that the NRC and Westinghouse, and by agreement, the state of Alabama, are not looking after the citizens' vital interest in such areas as (1) security, (2) decontamination and decommissioning, (3) use of Prattville sewage treatment plant to handle Westinghouse wastewater contaminated with radioactive materials from its laundry and waste from water of the cooling towers, (4) use of huge amounts of water from the Prattville Water Treatment Plant, (5) lack of civilian evacuation procedures for accidents, sabotage, geological upheaval, etc., (6) spills of radioactive materials and/or highly toxic materials within or near the plant or on Alabama highways or into the Alabama River from barge

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traffic, (7) lack of adequate monitoring for criticality potential, (8) security planning, and emergency evacuation planning for atomic workers and citizens, and (9) the precisely spelled-out the role of the state of Alabama as an "AGREEMENT" state, which concerns where lies responsibility and liability for unwanted costs and dangers.

UNSTIPULATED CONTENTIONS. The following deal with the Memorandum in support of the unstipulated contentions by the Safe Energy Alliance of Central Alabama (SEACA), as proposed by SEACA's attorney, Mr. Julian McPhillips, filed on February 25, 1981. Attachment B, pages 1 - 10, is a list of these contentions. The Nuclear Regulatory Commission's Safety and Licensing Board may find that some of these contentions ARE NOT ADMISSIBLE, which means that they WILL NOT be debated at the formal hearing.

Page 5, paragraph 9 of this memorandum in support of unstipulated contentions deals with ionizing radiation dose models. The writing is confusing. The most hazardous of the radionuclides during the normal operation will be particulates and aerosols of all isotopes of uranium, including U-238, U-233, U-234, and U-235, and perhaps thorium-232, as one of the ingredients in the "mixed oxides" as referred to in the Westinghouse

Environmental Report and license application (and perhaps plutonium dioxide?). If Westinghouse is allowed to do this and should this meet requirements as set forth in 10 CFR 70.23(a)(3) and (4), then the NRC rules should be challenged.

Paragraph 14, page 6 of the unstipulated conditions, support for, deals with a prototype, but fails to spell out that this is "new" and perhaps unproven dry process. We do not know whether the kiln (furnace) can or will be operated safely. Will it contribute hazards: (1) to atomic workers and the surrounding environment from (1) fluorine and fluoride, (2) from heavy metals derived from the corrosion of the walls of the furnace, (3) from inability to control the precision of the chemical reactions between the conversion of UF_6 to UO_2 using gaseous oxygen and hydrogen, and the freeing of fluorine.

Paragraph 19, p. 7, apparently the ALARA principle or standard is a direct challenge to 10 CFR 70.23(a), so SEACA should state that it is an invalid rule or standard, so that it may be turned down by the NRC so that litigation in the courts may begin.

Paragraph 22, p. 8, misses the point. There are three serious threats to the Alabama River and the Mobile Bay Estuary. These are unacceptable concentrations of

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radionuclides, nitrates, and heavy metals. "Both" radioactive materials tne especially compounds of nitrogen, mostly nitrates, will degrade environmental quality. Does Westinghouse propose to "sell" or "give" its nitrate wastes to a papermill; perhaps the nearby Union Camp Paper Mill? These proposed nitrate by-products from the Westinghouse operation will serve as nutrients for the organisms degrading the paper mill wastes from their nitrate content, which would help the paper mill effluent to meet the EPA standards by reducing significantly its organic load. However, these nitrates from Westinghouse may be "named" nonradioactive and therefore acceptable. Will the heavy metal content of the effluent to the Alabama River be acceptable? Would not the paper mill and NOT Westinghouse be responsible for the contamination from the radwastes and the heavy metals?

Paragraph 29, page 9. Support of the memorandum of unstipulated contentions by SEACA attorney, Julian McPhillips (continued), There is no way to "DEGRADE" uranium-235, except by natural decay of U-235 to its daughter nuclei, or to fission products in a chain reaction. What degradation as done here "means" the adding of more unwanted U-238, U-233, and U-234. This adds to the total uranium content, therefore, this should not be allowed by Westinghouse, the state of Alabama, nor the

NRC.

Paragraph 34, page 9. Personnel Dosimetry, dealing with both uranium oxides and plutonium oxides as now practiced fail to take into consideration measurements from dosimeters or any otherway from emissions of alpha particulates, that are known to be internal emitters following inhalation. Workers have these alpha omitters while both on duty as well as when off duty as at home. Uranium-235 does not give off betas nor gammas, and the dosimeters do not, therefore, accurately measure their very high ionization from alpha radioactivity within the body.

Paragraph 35, page 9, and paragraph 37 page 10: Westinghouse seeks an exemption from the "increase" in uranium concentrations in the air (NOT "normal" concentrations of uranium). Again, how will these airborne concentrations be measured? Surely not from particulates trapped in HEPA filters, where aerosols are missed and where spikes or high concentrations, cannot be measured. Certainly there must be some kind of a continuous accurate system for monitoring the actual quantities of these bad alpha emitters.

Paragraph 38, page 10: The radiological monitoring of solid waste materials may contain very high concentrations of uranium by the process of adding "depleted uranium." Certainly this large addition of uranium

material will be more hazardous to people and the environment than just disposal in a safe manner of the waste without adding more uranium in the disguise that it is "depleted" of uranium.

Paragraph 39, p. 10: The exemptions from beta and gamma exposure limits will not be a major problem during the perfect operation of the proposed Prattville Fuel Plant, except during those times when accidents of "small" and "LARGE" (excursions) occur.

Because small masses (about five pounds of oxides and over) of U-235 and U-233 are a critical mass. This low criticality does occur when spacing, masses, and isolation barriers are inadequate. Also, generally misunderstood is the fact that huge amounts of fertile U-238 can be converted to unwanted fissle plutonium-239 to increase criticality once it is started by U-235. The gammas and betas from these "small" criticalities would indicate that workers could be exposed to unsafe ionization levels during otherwise normal operation of the plant. The "normal" or ambient air content of uranium can be determined prior to the beginning of the plant operation.

Paragraph 41, page 10: Using the average dose-equivalents is totally inadequate, because workers and citizens become contaminated far more during the high spike of ionizing radiation than from the average of a

collected mass of uranium (or other ionizzation) average from one sample over a period of time. Again continuing recording of ionization is essential.

Paragraphs 45, 46, 47 and 48: These paragraphs deal with the request by Westinghouse to be exempted from certain safety codes of the Federal Regulations. These involve, respectively: (a) notification requirements dealing with respiratory equipment, (b) caution signs, (c) waste disposal requirements, (d) criticality accident requirements. The NRC and the State of Alabama should disallow these exemptions because they will pose no undue burden, but will allow the affected workers and the citizens of the area needed notice of unsafe conditions.

AUTHORITY FOR REVIEW OF STIPULATIONS: In stipulations, on page 3, paragraph 7, which states that "Nothing in this stipulation shall be deemed to prevent the petitioner (SEACA) from filing new or amended contentions upon showing of good cause as required by 10 CFR 2.714 of the Commission's regulation" unquote. Therefore, the (1) stipulations, (2) unstipulated contentions, and the (3) memorandum in support of the unstipulated contentions should be reworded in light of these comments to better reflect the real situation regarding matter for the next NRC-Westinghouse-SEACA hearing.

In mimeographed handouts by me to NRC, Westinghouse,

and Mr. Julian McPhillips (SEACA attorney) I have cited on November 24, 1980, February 11, 1981, and in a questionnaire to selected specialists on December 31, 1980, concerning (1) inadequacy of the Westinghouse environmental report, (2) how do we keep river organisms from violating the Code of Federal Regulations by concentrating radionuclides to unacceptable high levels? (3) inspectable and uninspectable portions of the proposed Westinghouse facility, (4) will final uranium-235 content be diluted by the addition of fertile isotopes, and depleted uranium? (5) Should the Department of Energy and the NRC-EPA rule that spent fuel will be reprocessed, may Westinghouse after this be allowed to use plutonium at the Prattville site?, (6) Will spent fuel and clean and dirty scrap be brought from overseas and Columbia, SC to Prattville? (7) Will Westinghouse request to reprocess uranium scrap in Prattville be allowed by NRC? (7)Will Westinghouse's request to package uranium and saleable products, finished and unfinished be permitted by NRC?, (8) Could fissile materials be processed by Westinghouse for nuclear weapons, such as neutron bomb materials in Prattville? (9) Will the final Westinghouse Environmental Impact Statement meet NEPA and OSHA requirements?

RECOMMENDATIONS: Therefore, from the above treatment, it is herewith suggested that the three parties

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(Westinghouse, NRC and SEACA) incorporate the above suggested changes and give new consideration to upgrading the proposed SEACA valid contentions by incorporating them as far as possible as stipulated contentions, and by changing deferred contentions for NOW considerations.

If the above suggestion is disallowed by the NRC, I would like to apply to the Atomic Safety and Licensing Board of the NRC for leave to intervene in my own behalf. This request is made because I feel that I have been a "large" part of the SEACA's petition, but that I feel that much of my input (as suggested from the above) has been inadequately treated in the final set of stiulations, etc. Also, the regulations of the NRC does permit intervention by a person who does not establish his right to become a party to the proceeding, where the presiding officer or chairman of the Atomic Safety and Licensing Board, determines in his discretion that such a result is appropriate as in 10 CFR 2.714(a)(1) and 2.714(d).

SUPPORT FOR TRUE INTERVENORSHIP

May 8, 1981

To the U. S. Nuclear Regulatory Commission, Before the Atomic Safety and Licensing Board, U. S. Nuclear Regulatory Commission, Washington, D. C. 20555

Docket No. 70-2909

In the Matter of: Application of Westinghouse Electric Corporation for a Special Nuclear Material License for the Alabama Nuclear Fuel Fabrication Plant (ANFFP) to be located near Prattville, Alabama.

Via: Mr. Sherwin E. Turk, Counsel for NRC, U. S. Nuclear Regulatory Commission, Washington, D. C. 20555

Also to all parties of the above-captioned proceeding.

From: Louis G. Williams, Ph.D., Science Advisor to Mr. Julian L. McPhillips, Jr., Attorney for the Safe Energy Alliance of Central Alabama (SEACA), 516 South Perry Avenue, Montgomery, Alabama 36101.

Louis Williams (address), 1246 Northwood Lake, NORTHPORT, Alabama, 35476. Phone 205-339-1535.

Reference: NRC Staff's Answer to Petition for Leave to Intervene Filed by Louis G. Williams, dated 03/04/81 and NRC Staff answer, dated 04/20/81 and Letter from Williams to Mr. Bart COWAN, attorney for Westinghouse dated on December 3, 1980.

I regret that my untimely official "writing" to file to petition for leave to intervene (Docket No. 70-2909) was not formerly done officially much earlier. However, I hoped to resolve my obligations to SEACA as science advisor to Mr. McPhillips through normal discussions with meetings of designated personnel of NRC, SEACA

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and Westinghouse.

Now I feel that my mistaken and much ignored communications during informal (but official) meetings of WEC-NRC-SEACA and my mimeographed handouts have been to no avail. The discussions on October 1, 1980 and on November 6, 1981 (not November 6 and 7), in the law office of Julian McPhillips in Montgomery, Albama was among staffs from NRC, Westinghouse, and SEACA, including lawyers and engineers and PR personnel from Westinghouse, and lawyers and engineers from the NRC. I am neither a lawyer nor engineer, but no nuclear engineer could be found to represent SEACA. I am unpaid for my services to SEACA.

I am aware that I have no official input at hearings, as SEACA's attorney (McPhillips) may or may not use my input.

On December 3, 1980, I wrote a letter to Mr. Bart COWAN, attorney for Westinghouse, regarding my dissatisfaction with the draft set of contentions and conditions arising out of the NRC-SEACA-WEC conference on November 6, 1980. At that time I was aware that the time deadline for filing for final contentions was December 15, 1980. Since then I have learned (02/25/1981, Draft Stipulations page 3, paragraph 7, that SEACA can still file new or amended contentions upon a showing of good cause in accordance with 10 CFR 2.714 of the Commission's

regulations). At the time the only method that I could see would be to get the conference group to subsequently modify the draft contentions of No. 18 from the conference meeting of November 6, 1981.

WESTINGHOUSE ATTORNEY - BART COWAN. Mr. Turk, attorney for NRC, has been prompt in responding to my letters to him. The NRC said we could set up phone calls long distance to work out conference problems following the meetings in Montgomery.

Westinghouse Attorney, Bart COWAN, failed to answer my letter to him of December 3, 1980 (a photocopy of this letter of 12/03/80 is being mailed to the NRC staff in Washington). Mr. Cowan phoned SEACA attorney about my letter, but he did not answer my letter to him of 12/03/80. By the time I heard from Julian McPhillips that Cowan would not reply to my letter, I was too late to meet the suggested deadline for filing for petition to intervene for myself.

NRC-WEC-SEACA CONTENTIONS. In my opinion the stipulations that were authorized by the NRC and formed by "authorized" personnel of SEACA, WEC and NRC filed on February 25, 1981 (received by me on Feb. 28) do not represent the "conference" consensus, because they fail to include much of my "advisory" advice. This is not against the NRC regulations nor illegal, because the

attorneys for NRC, WEC, and SEACA formulate the final stipulations and contentions, etc.

I have noticed that Westinghouse has flooded the TV, newspapers, and radio mass media with the advantages of the proposed Westinghouse fuel plant. So I tried to bring some "outside" pressure to support my viewpoints by using mimeographed releases to show that the contentions of the NRC-WEC-SEACA (filed 02/25/81) WERE unsatisfactory in helping SEACA to win its case. I still feel this way. Westinghouse has gone public to win the public and the Alabama legislature. I am unable to get the same media attention. I do not believe that the citizens of Alabama are aware of the disadvantages of the proposed Westinghouse fuel plant for Prattville.

MIMEOGRAPHED NEWS RELEASES. My releases were not covered by the media, even though I mailed them to the principal radio, TV and newsprint media. However, the NRC has made them a part of the record (I hope). My mimeographed news release of March 13, 1981 was mistakenly dated Feb. 13, 1981. However, I had cited correspondence dated March 4 and 9, 1981, which made March 13 look plausible. However, I feel that the contents of my mimeographed releases as well as my letters to conferrees of the NRC-WEC-SEACA are proper, valid and significant. The wording of the contentions of February 25, 1981 tends

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to hurt SEACA and help Westinghouse, and there are numerous items that were discussed during conferences that have not been included in the final draft contentions.

RECOMMENDATIONS. In my advisory capacity to attorney, Mr. McPhillips for SEACA, I can now only hope that the NRC staff will now reconsider my request that the final set of stipulations and contentions be worded to include my past conference and mimeographed input.

Please read the overside of this sheet to see how I feel some of the contentions should be overhauled.

NEED OF OVERHAUL: NRC-WEC-SEACA contentions stipulated and unstipulated, and deferred need a vast overhaul. For example: Attachment A begins with "2Design." My copy does not have part "1".

Paragraph 2d under design says that " ... free fluorine could be formed in the equipment and could burn through the equipment or explode ..." What I have said is that gaseous oxygen and gaseous hydrogen could cause explosions which could set off many kinds of unwanted chemical and atomic chain reactions, including the release of fluorine and explosives as well as set conditions for criticality excursions (not explosions).

The footnote of A* reports conferences between staff, applicant and petitioner on Oct. 7-8 and Nov. 6-7, 1980. However, there was no meeting on Nov. 7, but there

was one on Nov. 6, 1981. I do not feel that adequate time was available to cover the many issues involving the "real" issues that were revealed in my various mimeographed handouts, and that they were brought up to SEACA's attorney and during the SEACA-NRC-WEC conferences.

Page 2, attachment A, paragraph 5 on HEPA filters: I have made numerous statements that these high efficient particulate air filters (HEPA) are 99.999% effective in removing larger particulates, when working according to their design, but that one of the chief air contaminants of uranium fuel plants is uranium, whose particle size allows an aerosal of uranium to pass through the HEPA filters. The 99.999% effectiveness refers to the "larger" particulates and not to the ones that go through the pores of the HEPA filters. So, the filters are NOT 99.999% effecient. Also, HEPA filters have a bad history of leaking around the seals and when damaged, etc.

Page 3, attachment A, Paragraph 15 which deals with criticality reads of a "devastating explosion." I have repeatedly said that this would not happen from fissile materials. However, oxygen and/or hydrogen gases could begain a criticality set of conditions by changing geometry and masses of fissile materials, such as U-235, U-233 or Pu-239, to produce an excursion having devastating effects worse than any U. S. commercial

11-28

nuclear power plant, because more fissile material would be on hand for fissile criticality. The atomic force would be about 25% of an atomic bomb, but the amount of deadly fallout fission materials and plutonium would be greater and more deadly than from a nuclear power plant. Heat generated would cause a large plume to spread the fallout over a wide area of Montgomery and Prattville. Westinghouse is not telling the citizens of this aspect.

Page 4, attachment A, paragraph 1, which deals with criticality deals with a dilemma, water (or high moisture) must be present, but its presence (as steam) poses many problems during the conversion of uranium hexafluoride into uranium dioxide. Paragraph (ii) does not include one of the mixed oxides, uranium-233, which is also highly fissile and both an alpha emitter and a gamma emitter. Furthermore U-234 not fissile, but it is a gamma emitter, so personnel could be exposed to unwanted gamma ionization. Three kinds of fissile isotopes would be present -- U-235, U-233 and plutonium-239. These would produce far more fission products than at any present conventional nuclear power plants. Nuclear power plants are built to contain explosive conditions that are NOT in the design of the proposed Prattville plant.

Westinghouse is proposing to introduce thorium-232 to produce U-233 on irradiation in nuclear power plants

11-29

this is NOT like current fuel rods.

Attachment A, paragraph 36, Efficiency level for alpha survey equipment is all right for many surface situations. Something must be said about alphas from uranium and plutonium isotopes that do NOT produce betas or gammas and are internal emitters, so that inhaled or swallowed particulates of them are not measured by dosimeters for measuring their ionization. Atomic workers carry uranium home with them in their lungs and digestive system, at places where there is no monitoring of them and there is no monitor that can measure them under these conditions.

OTHER GENERALIZATIONS. The chemical hazards of fluorine, fluoride, and hydrogen, oxygen and ammonia, have been completely left out.

The burial of radwastes by degrading with "depleted" uranium is misunderstood and should not be left out. This ratio of 99.3% U-238 to 0.7% U-235 that occurs in nature fails to tell everyone that adding "depleted" uranium (left over after enrichment) really adds large amounts of unwanted uranium, including U-234 and U-238, so that it adds actually more pollutional uranium to the environment, and for disposal as radwaste in Alabama.

The burial of "huge" amounts of chemically hazardous calcium fluoride in Alabama would be unwanted. Naming

11-29

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The burial of "huge" amounts of chemically hazardous calcium fluoride in Alabama would be unwanted. Naming

11-30

this "nonradioactive" would not change it from being both radioactive as well as chemically hazardous. Attachment B, Waste Safety, fails to address the real situation.

Attachment B, page 3, paragraph 8b, discussing the need for the plant, does not adequately cover mixed oxides, but incorrectly introduces "use of plutonium." The proposed fuel plant would introduce thorium-232, which can become uranium-233 on irradiation in a nuclear fuel plant. The new concept would use fertile U-238 and thorium-232.

Attachment B, page 3, dealing with radiation dose-models is very fouled up since it confuses production of plutonium from irradiation in a power plant, not in a fuel plant. Certainly Mr. Cowan knows that we thoroughly discussed this many times in our conferences. Also, during "excurings," not normal operations, fertile U-238 and thorium-232 will become fissile.

Attachment B, page 6, neutron isolation structure needs clarification to say that chemical explosions (not atomic) could trigger forces that would blow down neutron barriers, etc., or burn them. This would then allow criticality excursions.

Attachment B, page 7 (as already discussed would NOT degrade uranium; but would increase its mass and

decrease its safety. Naming something nonradioactive by definition of 3.6×10^{-4} microcuries per gram is totally misleading since the mass is not considered of the total uranium, etc. Also, 50,000 kilograms of U-235 (W/o 95 to 5) is correctly formulated, but the same "is" not used when applied to uranium radwastes.

Attachment B, page 9, exemption from waste disposal requirements would mean that dosimeters and badges to protect workers from ionizations would not be available for future determination of the accumulated unwanted doses to working personnel, because they would either be unavailable or destroyed. This would destroy occupational safety. This stipulation should say "nothing" about danger of radioactivity of badges or paper records. They are NO danger. The danger is in not keeping permanent good records of dose levels of workers.

Attachment C (Deferred contentions) all have "NO" meaning unless they can have review prior to permitting.

(Signed) Louis G. Williams, May 8, 1981.

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PRATTVILLE "HOT" SEWAGE.

July 6, 1981.

To: Mr. William T. Manasco, Chief, Municipal Waste Control Section, Alabama Water Improvement Commission and

2) Mr. Clyde Price, Mayor of Prattville,

3) Public Hearing, City of Prattville, Prattville City Hall, 7:00 p.m., July 6, 1981, concerning the Prattville Autauga Creek Waste Treatment facility.

4) Permit Number AL0026454, under the U. S. Environmental Protection Agency (Region 4, Atlanta) for a National Pollutant Discharge Elimination System (NPDES) permit.

5) To the Solid and Hazardous Waste Div. of the Alabama State Department of Public Health for the implications for disposal of ionizing sludge from waste treatment operations over the State.

From: Louis G. Williams, Ph.D., 1246 Northwood Lake, Northport, Alabama, 35476, 205-339-1535.

Subject: Management of hazardous chemical, non-radioactive wastes, and radioactive wastes, and treatment and disposal of materials containing both chemical hazards and ionizing material hazards.

This is also addressed to a Public Hearing to be held in the auditorium of the Richard Beard Building, 1445 Federal Drive, Montgomery, Alabama, on July 9, 1981,

at 7:00 p.m. This Montgomery hearing will deal with Solid Waste Regulations for the state of Alabama. The State Board of Public has already issued the proposed regulations, which are available for study at several locations around the State.

PRATTVILLE SEWAGE TREATMENT PLANT. Apparently the above NPDES permit from the EPA has already been issued, because the Prattville domestic waste treatment plant has been in operation and has been discharging treated wastes into Autauga Creek. The request for this permit to the EPA from the Alabama Water Improvement Commission to discharge this treated waste, must have already been granted!? The request by the Alabama Water Improvement Commission is for Plan #1. This is for only ordinary domestic waste treatment plan and effluent. However, no date has been given when the permit would become effective by James W. Warr, Director of the Alabama Water Improvement Commission, when this NPDES was submitted to the EPA in Atlanta.

NATURE OF PERMIT REQUEST. Apparently all is in order for this domestic waste treatment plant to operate like an ordinary domestic waste treatment plant. No exceptions or modifications are made in the permit request. There are no exceptions or modifications for special monitoring requirements, or for the potential of a future Nuclear Fuel Plant to discharge its wastewater

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(effluent) into this domestic waste treatment plant.

Consequently, the public must assume that appropriate public hearing will take place concerning Westinghouse-like effluents when (or if) Westinghousel reapplies for a permit to build and operate the proposed Nuclear Fuel Plant? The AWIC should now state its position on such a proposal.

WESTINGHOUSE WITHDRAWAL. The Westinghouse Electric Corporation has withdrawn its request to the Nuclear Regulatory Commission for a special material (Uranium-232) license to build and operate this plant near Prattville. The citizens of Alabama, need to be told that most of the hazardous operation of this proposed plant would have to be permitted by the State of Alabama and not by NRC. The NRC is now being sued in three cases by NOT making states more responsible. Westinghouse may do well for itself by waiting for the outcome of these three suits before applying again to the NRC for a permit to operate the Prattville Nuclear Fuel Plant. Perhaps, Westinghouse may wish to use a site next time other than Prattville, such as some place along the Ten-Tom waterway to better serve its customers in this country and overseas.

FUTURE PRECAUTIONS. These hearings (in Prattville on July 6, 1931 and in Montgomery on July 9) deal mostly with the normal operation of waste management. More and

more problems are increasing as industrial wastes are being added to domestic waste treatment facilities, as could be with the Prattville domestic waste treatment plant. Citizens need toknow that domestic secondary waste treatment plants are not designed to reat industrial waste and there is no known way to treat ionizing waste to make it nonionizing.

ANSWERS NEEDED. When did or does the permit for the Prattville Sewage treatment plant become effective? (#AL0026454).

Would a new permit be needed should Westinghouse wish to connect at a later date?

Would a connection from a Westinghouse Fuel plant operation include the safeguards against the potential dangers from highly radioactive materials or corrosive materials, such as fluorine and its compounds? If the sludge for landfill is radioactive, would this be jurisdiction of the wastewater treatment plant or with solid and hazardous waste?

Which part of the State Department of Public Health has jurisdiction over ionizing wastes?

Would Westinghouse (or any other nuclear operation, such as Farley or TVA) be liable for a chemical or a radioactive spill into a domestic waste treatment plant, or when in joint discharge as with a paper mill?

Would the AWIC allow a Westinghouse discharge to a domestic waste treatment plant with pretreatment? Could "by pass" occur from the Autauga treatment plant? Monitoring for isotopes of uranium is very expensive. Who would pay for it?

The operation and decommissioning of a nuclear fuel plant and a nuclear power plant is not just another industrial operation. Who will own and be responsible for these potential future Love Canals? Could vast amounts of wastes be "left" under the PERPETUITY arrangements?

ALABAMA RESOURCES. Alabama has an abundance of high quality surface and underground water resources. Under the hazardous burial grounds in Sumpter and Green Counties is a giant aquifer.

Date: January 27, 1981.

Place: Public Hearing dealing with the Management of Chemical Hazardous Wastes. Beard Building by State Department of Health, Montgomery, Alabama, at 7:30 p.m.

From: Louis G. Williams, Ph.D., Emeritus Professor of Ecology, University of Alabama. Home Address: 1246 Northwood Lake, Northport, AL 35476.

The Safe Energy Alliance of Central Alabama (SEACA) is trying to win its case against the Westinghouse Electric Corporation (WEC), which is in the process of

getting a license from the U.S. Nuclear Regulatory Commission (NRC) to build and to operate a Nuclear Fuel Plant at Prattville, Alabam. This is U. S. NRC Docket Number 70-2909.

The State of Alabama must also issue permits or licenses for many of the safety and health aspects of this WEC operation. Jurisdiction for protection of citizens, atomic workers, emergency evacuation, decommissioning, and management of radioactive wastes rest with the STATE, not with the Nuclear Regulatory Commission.

SUBJECT. Westinghouse wishes to propose that radioactive wastes for this operation be defined as any materials having more than 3.6×10^{-4} or .00036 microcuries per gram of waste or 0.36 thousandths of a curie, per gram. Nuclear fuel with 5% enriched uranium would have 2.4 microcuries per gram of specific radioactivity from Uranium-235. Normal fuel, with 3% enriched uranium, has only 1.57 microcuries per gram.

Alabama is an AGREEMENT STATE, meaning that the State of Alabama (not NRC) may regulate what is radioactive wastes for the Westinghouse proposed nuclear fuel plant and for the Farley Nuclear Plant.

QUESTION: Westinghouse is proposing in its license application and environmental report to add depleted uranium (this is what is left after enrichment at Oak

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Ridge, or Portsmouth, after removing most of the U-235). However, depleted uranium is NOT depleted of uranium. It still has large quantities of U-238 and U-234. The U-234 is also enriched along with the fissile U-235. However, U-234 and U-238 are highly "unwanted." WEC is asking authority to dilute, which they call "degrade" their uranium wastes with depleted uranium to natural isotopic uranium content (0.7% of U-235), and to stabilize to solid cement form for burial as a hazarous (but non-radioactive) waste.

This dilution proposal is made on the assumption (p. 7-13 of Westinghouse Environmental Report) that the State Department of Health of Alabama agrees that the total uranium content is acceptable. The State Department needs to realize that this would mean a huge increase in total unwanted uranium, and a great increase in the amount of uranium-234.

This also means that "radwastes" from the Oak Ridge gaseous diffusion (enrichment) plant would be shipped to the proposed Prattville Fuel Plant and that it would be used to "dilute" the solid radwastes produced at the Prattville Fuel Plant to "dilute" it to isotopic uranium which is approximately 0.7% U-235.

This means that for every molecule of U-235 to be diluted about 99 would have to be brought in from Oak

12-68

Ridge. However, this would NOT be natural uranium mixture, since it would contain huge amounts of unwanted U-234, and more U-238, which is also a bad alpha emitter. Both U-234 and U-238 should be considered contaminants and, therefore, additional pollution to Alabama. The citizens of Alabama do not want to solve this problem by bringing in more radwastes to be buried in Alabama.

REPROCESSED SCRAP. Westinghouse is proposing to return radwastes of uranium or "scrap" for reprocessing at Prattville from all over the world. This is a dirty chemical operation, which would only contaminate Alabama (air, water and land) more.

Does the State Department of Health wish to label this kind of operation "NONRADIOACTIVE" so that these wastes may be buried either on the WEC site or in a state-approved chemical hazardous waste dump? If so, such a dump, as at Emelle, AL, in Sumpter County would then be receiving both chemical and radioactive wastes. In addition to these unwanted uranium wastes the chemical wastes from the Westinghouse operation will include "HUGE" amounts of very chemical dangerous calcium fluoride and other chemical hazardous wastes.

The transportation of hazardous materials to and from the Prattville operation will be the liability of the State of Alabama to manage. Occupational Health

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and Safety will also belong to Alabama.

Do we really want this Nuclear Fuel Plant?!

Sincerely, Louis G. Williams.

The above was a part of a public hearing in Montgomery 27, 1981.

It is presented here for hearings in Prattville and Montgomery for hearings on July 6 and July 9, respectively, for Prattville and Montgomery.

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HAZARDOUS WORKSHOP

July 9, 1981

To: Public Hearing, State Board of Health. Dealing with solid waste regulations for the State of Alabama.

Richard Beard Building, Montgomery, Alabama.

7:00 p.m., July 9, 1981.

From: Louis G. Williams, Ph.D.,

1246 Northwood Lake,

Northport, Alabama 35476.

References: Resource Conservation and Recovery Act, U.S. EPA, Region IV, Consolidated Permits Branch, 345 Courtland Street, NE, Atlanta, Ga.,30365.

(2) Public Hearing on Salid Waste REgulations to receive constructive comments in finalizing the solid waste regulations pursuant to meeting 22-27-1 Code of Alabama 1975, and to meet the ERA-RCRA criteria.

(3) For preparation of Public Hearing on August 14, 1981, by Alfred S. Chipley, Director of the Division of Solid and Hazardous wastes, at Beard Building, Montgomery, Al on Augug 14, at 10:00 a.m. to receive constructive comments and as an aid in finalizing the AWIC submissions for the Clean Water Act, and solid waste management.

(4) Proposed Discharge Permit for the Prattville (Autauga Creek) Waste Treatment Plant from hearing on July 6, 1981.

SUBJECT: Constructive comments on preliminary proposed regulations for solid and hazardous waste management from proposal prepared by the Alabama Division of Solid and Hazardous Waste Management.

JURISDICTION CLARIFICATION

For some hybrid wasts jurisdiction among the Divisions of the Alabama Department of Public Health have not been clearly defined. Where overlapping occurs, as when waste materials are to be disposed, there are combinations of (1) toxic, metallic and organic, (2) chemical hazardous, (3) radioactive or ionizing, (4) putrescible. (5) gases, liquids, and solids, (6) Promotingeutrophication substances, and (7) pathogens, bacteria, viruses, etc.

In some instances clarification has been provided as where atmospheric emissions from incineration must be governed by a permit issued by the Alabama Air Pollution Central Commission (Section 4-141, paragraph 4, page 3.)

When solid wastes, containing both dangerous levels of radioactive materials, and also chemically hazardous wastes for disposal at the same site, does this imply that one division or two divisions will have

jurisdiction? Will ALL radwastes sites be called low, intermediate and high level?

Where there is a mixture of both low-level ionizing waste and chemical hazardous waste for disposal in the same site, does th is imply that one division or two divisions will have the jurisdiction?

Where there is a mixture of wastes containing chemical waste, such as calcium fluoride and uranium and plutonium and impractical to separate, which pollutant (chemical or ionizing) for safe disposal? Will two or more divisions be responsible for safe monitoring? Will the wastewater, contaminated with radwaste, be checked by the Division of Radiological Health?

Currently the rules managing the ionizing materials are governed by the U.S. Nuclear Regulatory Commission and Occupational Safety and Health Administration and NOT by EPA. At present the regulations for ionizing materials are governed by the NRC, and the state of Alabama uses exactly the same rules. Could Alabama accept less strict standards for radwaste when mixed with chemical hazardous wastes when they are called chemical hazardous wastes?

Page 13, Section 4-150, .03(b) states that a facility or practice shall not cause a discharge that is in violation of NPDES. If such a violation occurs

by by-passing a domestic waste treatment plant, whom is responsible? The city or the industry? Also paragraph (d), When a hazardous waste management site causes non-point source and/or outfall (effluent) source pollution to a public waterway or to groundwater, which agency has the management and whom is liable?

Section 4-150 Page 14, .06 -- Siting standards that have already been violated by having established disposal in land where faults, sink holes, etc., can cause future nonpoint pollution to aquifers will fall into whose responsibility? Section 4-169, page 19 on Closure -- Where is a section dealing with perpetuity management of long-term toxic, radioactive , or chemical hazardous wastes?

EMERGENCY EVACUATION

What plants for emergency evacuation are made as when gases from a hazardous waste dump escape into the air as a gas, or into a free-flowing water as hazardous chemicals?

What precations are being promulgated when interaction among buried wastes interact to produce away from the burial site hazardous conditions?

Will regulations be promoted to prevent excessive storage of hazardous and radwastes at the point of generation?

40-1 he

BIRMINGHAM POST-HERALD

Wednesday, December 2, 1981

Apathy may bring nuclear peril into state.

The Natural Resource Council has released an analysis of 148 regulatory actions by the EPA which reports that 118 are being postponed or canceled. The subject of a public hearing by the State Department of Health in Montgomery on July 9, 1981 was hazardous waste management regulations in Alabama. I was the only person to give an oral comment at this hearing. I also presented a written statement.

Frequently I have been the only adversary at these public hearings. Apathy by the public concerning the severe impact of hazardous waste management may allow Alabama to become number one for future Love Canals, cancers, birth defects and hereditary diseases. Also, lack of interest could result in the destruction of valuagle acquifers and surface water resources in Alabama.

On December 17, 1981 at 7:30 p.m. in the Beard Building in Montgomery, the State Board of Health will hold another public hearing dealing with hazardous wastes for Alabama.

Radioactive (ionizing) materials may not be discussed (reserved for later hearing), but wastes

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having hazardous properties, such as chemical reactivity, toxicity, ignitibility and corrosivity, will be on the agenda. Some hazardous wastes are proposed by RCRA and EPA for exemption or no regulation. Hazardous materials left in containers or liners of containers would be exempt from regulation.

Some flood plains could be exempted from dupsite regulation or storage by the state, such as the proposed Westinghouse Nuclear Fuel and Reprocessing plant at Prattville.

I was the science advisor for SEACA (Safe Energy Alliance of Central Alabama) against the proposed Prattville plant. However, Westinghouse put its plans for Prattville on hold in June but indicates now are that orchestration is still underway.

When conditions are made favorable, Westinghouse may build and operate a new kind of nuclear fuel plant and perhaps bring in used (spent) nuclear fuel from reactors around the world for reprocessing in Prattville.

Reprocessing is a dangerous, dirty operation that removes isotopes of plutonium and uranium for incorporation into fuel rods but produces huge amounts of high-level radwastes (transuranics) which are

40-3

highly radioactive for millions of years. Westinghouse would like to have permission to "temporarily" store them on site in Prattville until the federal government decides on a policy of what to do with them.

The Minus bill, which recently passed by the Alabama House and Senate, would limit hazardous waste dumpsites to one per county. However, this does not solve problems, because this bill also allows industries that are operating their own disposal systems to operate (such as a large operation like Westinghouse) regardless of the number of hazardous waste sites in a county.

Leading front page news stories recently indicate that high-level radwastes would be funneled through Alabama enroute to salt domes for storage in southeastern Mississippi.

The Reagan Administration, unlike the Carter one, is pushing for both reprocessing and temporary storage for now and for permanent storage later. Temporary storage for Alabama could become a "permanent" liability to the state unless bond is collected to pay for closure and clean-up.

Reprocessing and temporary storage could occur in places like Prattville if Westinghouse or some other processor begins operation. Reprocessing is

40-4

proposed by the draft environmental report of Westinghouse for Prattville.

Westinghouse would like to introduce a new process for making nuclear fuel rods based on new technology developed in its Plutonium Fuels Development Laboratory at Cheswick, Pennsylvania. The new process would introduce thorium-232 and more uranium-238 into the fuel rods which respectively become fissile uranium-233 and fillile plutonium-239 on irradiation in a nuclear power reactor.

With this process three fissile isotopes (plutonium-239, uranium-235 and uranium-233) would produce far more heat for steam generation (and more radwastes) than at current nuclear power plants.

Westinghouse would expect a great saving in nuclear fuel cost by converting current light water reactors into using this very different and perhaps, more dangerous, nuclear fuel. The cost of the currently used fuel is skyrocketing as uranium-235 is becoming very rare and very expensive. This, plus unforeseen tendency for irradiated steel in reactors to crack and shorten reactor life, has caused electric rates to rise.

Louis G. Williams, Ph.D., 1246 Northwood Lake, Northport, Alabama 35476.

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(Titled) For Who Is Hearing?

December 17, 1981

To: Public Hearing of the Alabama State Department of Public Health, regarding the proposed revisions of the hazardouswaste management regulations, at the Beard Building, Montgomery, Alabama, at 7:30 p.m. on December 17, 1981.

From: Louis G. Williams, Ph.D., Emeritus Professor of Ecology, University of Alabama, 35486. Home address: 1246 Northwood Lake, Northport, Alabama 35476. Phone 339-1535.

DILEMMA OF UNDERSTANDING.

A large technological gap of understanding exists in Alabama between managers of hazardous wastes and the average citizen. Because most citizens do not comprehend enough chemistry and biology they must rely for their bottom-line decisions from trusting the recommendations of the few experts in government and business for their understanding of the proper position regarding the generation, management, and disposal of hazardous waste in Alabama, rich in water resources.

Generally the basis of any public hearing is set or limited to state and federal laws, and for the promulgation of regulations among state and federal

40-6

agencies, such as federal (EPA, RCRA, DOE, DOD, NRC, OSHA, etc.) and state (AWIC, Solid and Hazardous Wastes, Radiological, Surface Mining, Air Pollution Control, Agriculture, Conservation, etc.).

To attempt to reduce this malaise both the state and the federal bureaucracies are now operating with the concept of one-stop permitting and authority. This results in pushing and pulling within jurisdictions. In Alabama the Federal Department of Energy (DOE), and the Federal Department of Defense (DOD) have the highest pick order.

COST - BENEFIT APPROACH.

The cost/benefit analysis as a method for determining cost effectiveness becomes an arbitrary method of obtaining the bottom line, such as regulations and enforcement for the management. However, like Love Canals, and Three Mile Island Murphey's law prevails.

Certainly we must have law and order, both civil and scientific, but too much civil and too little science is not cost effective. Naturally, I do wish to be a law-abiding citizen. However, if anyone wishes to change unworkable rules to protect human health and the environment this kind of public hearing may not be the proper forum.

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For nearly three decades my positions at public hearings were not heard. Incorporation of my suggestions would have made official rules far more cost effective, because values by the regulations were unforeseen. I have failed by the route of public-hearing democracy to make sufficient impact.

CITIZEN'S RIGHTS.

However, the citizens (right or wrong) may accept or reject hazardous waste management plans, which have, and will continue to make Alabama the number one sought dumping site for hazardous (toxic, reactive, ignitable, and corrosive) wastes.

Also, but not on the agenda of this hearing, is what to do with low, intermediate and high-level ionizing (radioactive) wastes. These radwastes have accumulated to alarming levels around the country, and the Department of Energy (DOE) and the Nuclear Regulatory Commission (NRC) via the Environmental Protection Agency (EPA-RCRA) allow delegation to each state for the final promulgation of the rules.

When innocent citizens are hurt or their property damaged the rules allow for little or no compensation because they were not figured in the cost-benefit ratio.

/ / /

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MIXED WASTE MANAGEMENT.

Because the Reagan Administration is promoting both reprocessing of used (spent) nuclear fuel and radwastes from nuclear weapons development, as well as the development of the "breeder principle" for the fabrication of nuclear fuel for nuclear power reactors, this hearing is, indeed, the proper forum for their discussion.

Proposed nuclear fuel-making and spent fuel reprocessing (as proposed by Westinghouse) do produce huge amounts of both hazardous waste (the subject of this public hearing) and radwastes (not the subject of this hearing). This was brought up at two previous hearings by me dealing with hazardous wastes management in Alabama.

A nuclear fuel plant in San Diego, California, was forced to move to North Carolina, because California would not permit its chemically-hazardous wastes to be disposed there. Is Westinghouse still being programmed for Alabama?

ALABAMA ORCHESTRATION.

Governor Fob James has designated a large working group within the state to develop a State/EPA Agreement (SEA) with the goal of making laws and regulations cost effective. However, major

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environmental and health problems do need special attention now for survival for tomorrow in Alabama. Therefore, more negotiation between EPA and the State of Alabama (SEA) is still needed prior to putting the final stamp of approval on Alabama's course for future generation and management of both hazardous and ionizing wastes.

I feel that now is the proper time and this hearing the proper forum for bringing up "mixed" chemical and hazardous wastes. Citizens are unaware that fluorine, the most corrosive substance on earth, will be coming into Alabama in huge amounts and in very high concentrations. Bulk shipments by river barge and trucks of many hazardous and ionizing materials do need attention at THIS hearing!

/ / /

ON BREEDING PLUTONIUM-239 (Not to be confused with polonium-210, which is an alpha emitter that is found in tobacco and in some phosphate fertilizers and causing some lung cancers.

February 14, 1982.

The following concern where the Atomic Safety and Licensing Board of the U. S. Nuclear Regulatory Commission should allow the proposed nuclear breeder plant. Check one of the following:

( ) At Oak Ridge, Tennessee, and the proposed current site of TVA.

( ) In central West Alabama, in or near the chalky storage or dumpsites for hazardous and radioactive wastes.

( ) In Mississippi salt domes.

( ) Do not know.

( ) The TVA nuclear breeder program should be closed out for reasons for public safety and lack of cost effectivenss.

From: Louis G. Williams, Ph.D., Emeritus Professor of Ecology, P. O. Box 1927, University of Alabama, 35486. Home (mailing) address: 1246 Northwood Lake, Northport, Alabama, 35476. 205-339-1535.

To: Atomic Safety and Licensing Board, U. S. Nuclear Regulatory Commission, Washington, D. C. 20555.

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Subjects: (1) In the matter of the Clinch River Breeder Reactor Plant, U. S. Dept. of Energy, TVA, Docket No. 50-537.

(2) Instant licensing proceedings.

(3) Prehearing Conference, February 9-10, 1982, at Oak Ridge, TN, where I made an oral presentation before the NRC Atomic Safety and Licensing Board.

(4) President Reagan's budget request to Congress contains $252.5 million to be spent on the Clinch River Breeder Reactor Plant by the Department of Energy (DOE). Reagan also now recommends that the DOE be dismantled into departments of Commerce, Interior, and Justice. If Congress approves, the funding for the LMFBR will go to a proposed Energy Research and Technology Administration (ERTA) of the Department of Commerce. These funds for this breeder would go only for limited work authorization (LWA), such as site preparation, with no funds going for the actual construction of the breeder itself.

ALTERNATIVE SITING. The current Oak Ridge site could be rejected on the grounds that other sites, such as those in Alabama and Mississippi, would be more acceptable, or on the grounds that there is lack of suitable conditions at Oak Ridge for: (a) Emergency evacuation, (b) No suitable storage or disposal sites for used nuclear fuel rods (spent fuel) and (C) Lack of the kind of

highways to handle trucks with heavy, hazardous wastes requiring specially constructed shipping cast containers to protect thedriver and the public along the highway from irradiation and from dangerous nonradioactive chemical materials associated with the nuclear fuel cycle, (d) Lack of public confidence in the safety cost effectiveness, and performance of the U. S. breeder program, and (e) Belief that fusion, not fission, should be the long-term priority for generation of electricity.

The Board may recommend to President Reagan that the LMFB program be terminated, but that further study should be made of the converter reactor as a method of generating fissile plutonium-239 and fissile uranium-233, respectively, from fertile U-238 and thorium-232. This would greatly reduce the cost of nuclear fuel, but would put the U. S. in the plutonium economy, where plutonium could be used for making atomic weapons from current light water reactor spent fuel. President Reagan would have to decide for reprocessing for reactor fuel or warheads. A decision will have to be made for the long-term storage of transuranic wastes.

ALABAMA'S NUCLEAR ROLE. One scenario would have reprocessing and commercial fuel fabrication in Alabama, with possible fissile materials being generated for use

in atomic weapons. This is plausible because of nearby approved (?) hazardous waste dumpsites available in Alabama, and because of the proximity of permanent storage sites for transuranics in Mississippi salt domes, all in less populated areas and near to most of the nuclear reactors in the U. S. Also, Westinghouse could recover spent fuel from its reactors around the world and use barges to transport spent fuel up river in Alabama for reprocessing.

INCOMING QUANTITY OF HAZADOUS WASTE. A few years ago a hazardous waste dumpsite in Sumpter County was approved by EPA as the only toxic waste dump for the Eastern U. S. Hazardous wastes from 38 states and Puerto Rico were shipped into Alabama between March 1, 1981, and August 31, 1981, from 7644 shipments. Alabama is a champion in both football and hazardous wastes. Now orchestration seems to be underway to make Alabama number one in working with hihg-level ionizing materials (uranium hexofluoride, spent fuel, atomic wastes from weapons development, reactor fuel rods, etc.)

Are the people in Alabama aware that Alabama's nuclear future could be set by agreements between the federal government and the legislature and governor of Alabama? On a cost/benefit basis Alabama gets the benefits. Some truck drivers have told me that they could

have discharged their wastes in other states, but they preferred to bring them further to Alabama because we have the best dumpsites. Prior to November 1980, huge amounts of hazardous wastes were buried in private landfills in Alabama and Mississippi that could be in violation of the Resource Conservation and Recovery Act after November 1980. Alabama and much of the Southeast has a wonderful resource in a giant acquifer. All dumps eventually leak. To Alabama uncontaminated water resources, surface and underground, will be far more valuable to Alabama than any part of the nuclear cycle industries. A cost-to-benefit ratio would certainly help a chemical or ionizing waste generator located in New York more than Albama. Now who holds the liability forever?

PUBLIC PARTICIPATION. Some conservation and protect-the-environment groups like Waste Alert, Environmental Action, Pitch In and waste managers tend to promote unsafe methods. Some formerly effective groups become so infiltrated that they are ineffective. These groups have not sought methods of reducing the amounts of toxic, hazardous and ionizing wastes that are being generated. Waste management is a more profitable business. However, the orchestration for programs is underway to make Alabama the cloaca for both radwastes and chemical

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hazardous wastes. Finally PCB's with incineration at sea are becoming less of a threat. Projects for the future could make Love Canal and Three Mile Island small for what can take place in Alabama. Do we have to accept dangerous wastes from overseas reactors? Governor, we can bring in more tourists, but how do we make the future of Alabama beautiful?

OTHER POTENTIALITIES. If Alabama should be selected for a commercial LMFBR, instead of the TVA breeder at Oak Ridge, the project manager for the TVA LMFBR might like to use the federal handout of $252.5 million to prepare a site without reactor components that would give the city of Oak Ridge free industrial advantages.

CHANGING POLITICS. Before the Carter Administration put the breeder program on hold in 1977, the staff of the NRC hadfiled 21 contentions against the Oak Ridge LMFBR. Now the Reagan Administration is reinstituting the plutonium economy, including breeders, and reprocessing. The question now arises whether the breeder could be built without an impact statement and with instant permitting by the NRC. Many knowledgeable Oak Ridgers say they are afraid of the breeder, in spite of the blitz to promote it. Apparently the breeder could be placed in Alabama with far less opposition. The risks, which are too great for Tennessee, could be acceptable in Alabama without being

technically sound or safe, because the average citizen of Alabama is poorly informed about safety and cost effectiveness of the Breeder Program. Also, the Governor of Alabama and/or the legislature are allowed by the NRC to give the go-ahead without enough knowledge or without informing the public of the vast liabilities. Also, orchestration by the standard federal-state agreements would put Alabama, not the NRC, holding the bag for any foul-ups.

ALABAMA STATE CONSTITUTIONAL AMENDMENTS. The current session of the Alabama legislature has passed a law calling for a statewide election on March 2, 1982, for modifying the constitution of the state by six amendments. Three of these proposals (4, 5 and 6) contain sleepers that most citizens of the state would not want if they were properly interpreted and understood. These amendments are concerned with management and investment of profits from leasing fees for oil and gas exploration of Mobile Bay, and in part are a bag of worms. Everyone in the state seems to favor upgrading the state highways and roads. However, some of the funds to build some highways would help to meet federal Department of Transportation standards in order that heavy trucks with 18 wheels may haul huge quantities of heavy, high-level ionizing materials to and from various factories of the nuclear

fuel cycle and to disposal and storage dumps. One such proposal would upgrade the state highways connecting Interstates 65 and 75 in Montgomery with Interstate 59 near Eutaw. This upgrade would pass through counties having deep deposits of Selma Chalk, which has made Alabama famous for accepting toxic and hazardous waste and some levels of radwaste, but not for high-level radwaste (spent nuclear fuel, transuranics), but all right for "temporary" storage of some high-level radwaste. The feds control the interstates, so that Alabama cannot stop unsafe trucking on the interstates. This network of federal and state highways would make Alabama a funnel from other states for movement of dangerous radwaste, chemical hazardous waste, fuel rods, spent fuel, enriched fissile materials including bomb grade materials.

FLUORIDE HAZARDOUS WASTE. The average citizen of Alabama is unaware that a proposed nuclear plant would bring into the state huge quantities of fluorine, the most corrosive substance on earth, which would remain in Alabama, while the fabricated nuclear fuel rods, containing huge quantities of high-level fissile materials and other radioactive materials would be shipped out to reactors in the United States and to customers of Westinghouse reactors around the world.

Shipping containers hauled on trucks to shield

high-level ionizing materials, are constructed to withstand up to 30 miles per hour, but truck wrecks do occur above 30 miles per hour. Truck highway accidents could result in many dangerous spills, when the shipping contains crack open on impact. Steel cylinders containing highly enriched uranium hexafluoride, coming into Alabama from uranium enrichment plants on trucks are better protected, but they develop cracks from corrosion and have been known to produce explosions and chemical fires, especially if someone tries to put out the "fires" by putting water on them. Adding water only would release more hydrogen gas, adding to the fires. All along these highways private citizens would have to be able to move quickly on very short notice in a direction away from the accident and not into winds coming from the fire. These chemicals cause serious burns, etc. Schemes to give all the hauling and safety contracts under control of special conditions along highways and dumpsites by holding information from the public. The state would be responsible for maintaining clean and safe highways, but to whom does the liability belong in case of an accident?

DEREGULATION. The NRC and EPA are putting more controls under the State, leaving inadequate federal funding, monitoring and liabilities to the State. Unfortunately, innocent citizens do not know when their

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future children are contracting birth defects, cancers, etc. The victims do the paying while the benefits may go to people out of range of the serious liabilities. Before pushing the bandwagon for more nuclear activities in Alabama, perhaps Senator Denton should get us an abortion quickly. Otherwise, we could get sterility from too much ionizing radiation. We all have constitutional rights for ourselves and our grandchildren. Do children yet to be conceived have equal rights? One stop permitting on energy and environmental and safety issues could be dangerous to your health. Cost-benefit decisions could be your costs and their benefits. Historically decision-making has not looked enough at the whole ecological picture, not comprehended by many engineers and people engaged in business. Too much confidence in public hearings has now erroded because they are poorly attended, and are often staged for the media, and media personnel tend to be people not trained to report complex issues. Many action groups are now infiltrated with clever people carrying out the wills of the special interests.

Many of my statements over the years at many public hearings were not heard, but Three Mile Island and Love Canal have proved me right. Now two-thirds of the nukes are closed down in the U.S. I attended and gave testimony at first hearings on Browns Ferry, Farley Nuclear

Plant, Barton Nuclear Plant, an encirhcment plant for Dothan, and a Westinghouse nuclear fuel plant for Prattville. Three of these did not get off the ground (yet). I solved the Duckweed problem that choked the rivers from Birmingham to Mobile. While a professional ecologist for the USPHS (now EPA) I exposed Love Canal by methods using species diversity and toxicity. My research on daily dumping of 67,000 tons of iron ore tailings to Lake Superior after 18 years finally led to safe, on-shore disposal. I was the senior scientist of the newly-formed National Water Quality Laboratory in Duluth, Minn., for this study. I helped to institute a code of ethics for pure and applied ecologists. However, the applied section of the Ecological Society of America is now dominated by engineers who tend to see too much of a special interest viewpoint. There is no a strong need for a three-way marriage among honest professional lawyers, engineers and ecologists. The hybrids from this three-way fertilization could give us more effectiveness and a more wholesome environment. When do we start?

HOME FOLKS. Causes for pollution can be a state of mind. Some people believe that living and working conditions when controlled by home people will be better. This could be true for some states. Some of the income from state oil and gas leases may be used to "train"

Alabama personnel to work in extremely dangerous technology in nuclear and chemical industries, which could sacrifice people, safety and environmental quality, which is allowed by federal-state agreement. Use of publicly-owned waste treatment facilities by nuclear industries could hurt reatment and be a large subsidy from taxpayers. There is no known way to treat radioactive decay. Discharges to public waterways from cities is the city's liability.

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JUDGE MILLER: I think we will now resume the evidentiary hearing, so the witnesses will resume, please; and we'll go on with the interrogation -- cross-examination.

MR. BATES: Excuse me, Mr. Chairman --

JUDGE MILLER: Yes.

MR. BATES: My name is Albert Bates, and I wonder if I might give a limited appearance.

JUDGE MILLER: Well, I called you at 1:30, and you weren't here. Your time was taken by Mr. Williams. Now you may be heard later in the afternoon, but you weren't here, and he was. So he took your turn.

All right. We will have a bench recess --

MR. WILLIAMS: No, I didn't mean to take his turn.

JUDGE MILLER: Well, you did, whether you meant to or not. It's time to go ahead with the evidence. It's a quarter till now.

You'll have another opportunity though at the next recess, which will be around 3:00.

By the way, how long is it going to take you, Mr. Bates?

MR. BATES: Five minutes is ample, sir.

JUDGE MILLER: Okay. Five minutes you can have at, say, 3:00. How's that?

MR. BATES: That's fine.

JUDGE MILLER: All right.

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The panel is resumed.

Cross-examination may proceed.

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CROSS-EXAMINATION (continued)

BY MS. FINAMORE:

Q. Mr. Clare, you stated this morning that the reactor shutdown system did have a potential for failure. Can you tell me what the probability of failure for that reactor shutdown system is from any cause?

BY WITNESS CLARE:

A. The likelihood of failure is a very low likelihood of failure.

Q. Can you quantify that probability for me, please?

BY WITNESS CLARE:

A. No.

Q. Can you quantify the probability of failure for the decay heat removal system, the CRBR?

BY WITNESS CLARE:

A. No.

Q. Can you quantify the probability of failure for the -- can you quantify the probability of a rupture of the reactor vessel in a pipe greater than the design basis rupture?

BY WITNESS CLARE:

A. No.

Q. Can you quantify the probability of the systems to maintain individual subassembly heat generation and

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removal balance?

BY WITNESS CLARE:

A. No.

Q. Do you know what the probabilities are of any of those systems in a qualitative sense?

BY WITNESS CLARE:

A. Yes. As I just stated, qualitatively, the likelihood of the failure of those systems such as to initiate an HCDA would be very low.

Q. Without knowing the quantitative probabilities of failures of any of those systems, how do you determine what accidents are within the Clinch River breeder reactor project design basis and which ones are outside the design basis, for purposes of this LWA-1 hearing?

BY WITNESS CLARE:

A. Section 3 of our testimony, specifically Section 3.1 and Section 3.2, discuss the methodology by which we determine our design basis accidents.

Q. Can you describe that to me?

JUDGE MILLER: What pages are you referring to?

WITNESS CLARE: Beginning on Page 11 and running through Page 26.

JUDGE MILLER: Thank you.

WITNESS CLARE: Section 3.1 refers to the overall approach to the design, which includes three levels

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of safety. The second and third levels of safety involve identifying features to terminate anticipated events within the design basis, and also the provision of features to mitigate events which are not anticipated, are not expected to occur in the lifetime, but which we have postulated within the design basis to establish a conservative design.

BY MS. FINAMORE:

Q. When the Applicants made their decision as to what accidents should be considered within the design basis and which accidents should be considered without the design basis, did the Applicants rely at all on the Clinch River breeder reactor reliability program?

BY WITNESS CLARE:

A. No, we did not.

Q. Mr. Brown, when the Applicants made their decision as to what accidents should be within the design basis for the Clinch River plant and which accidents should be without the design basis for the Clinch River plant, did the Applicants rely at all on the Clinch River breeder reactor reliability program?

BY WITNESS BROWN:

A. No.

Q. Mr. Brown, did the project rely at any time upon the reliability program in order to make a decision as to which accidents should be within the design basis of

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the Clinch River plant?

BY WITNESS BROWN:

A. I don't know.

Q. Didn't the Applicants assert in 1976 that the reliability program is an integral part of the overall safety and licensing approach and it's used to assure and confirm the low probability of specific initiators not covered by precedent or regulations and thereby allow exclusion of these initiators from the design basis?

BY WITNESS BROWN:

A. You seem to be reading from something that was in the report in the past. Those type of words are in reports that I have read, that the project has written before. I don't know that they relied on them for the purposes you are suggesting.

Q. Mr. Brown, I'm handing you a report that was in fact written by the project at that time. I'd like you to read it to see if it refreshes your recollection.

MR. EDGAR: Could we have an identification of the report? And I would like to see it as well.

JUDGE MILLER: Yes.

BY MS. FINAMORE:

Q. Does that report look familiar to you at all, Mr. Brown?

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BY WITNESS BROWN:

A. This set of sheets that you've presented to me is not something that I recall at that time being familiar with. Some of the words that are written in here are words that I recall having participated in and perhaps it was an element of my work at that time, but this specific document is not something that I am very familiar with.

JUDGE MILLER: Our record does not show, other than the handing up of sheets, three or four or five in number, titled on the first page, "Clinch River Breeder Reactor Project Reliability Program," dated January 1976, et seq. Our record does not indicate what we're talking about. If you want to address it any further, you're going to have to put an identification number on it, for one thing, and then have it identified for the record.

BY MS. FINAMORE:

Q. Mr. Brown, weren't you at a meeting in April of 1976 that was held between the Clinch River breeder reactor project and the Staff to discuss the status and direction of the Clinch River breeder reactor reliability program?

BY WITNESS BROWN:

A. I could have been. I don't recall right offhand that I was there, but it's very possible at that time.

Q. Mr. Brown, I'm going to hand you the minutes of the meeting to which I just referred.

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JUDGE MILLER: Now, wait a minute. What are we going to do about the document I asked you to identify? You've handed it up. It isn't just going to lie here. It's not going to get any better. Either identify it for the record or take it back.

MS. FINAMORE: Well, I'd like to identify this document for the record as Intervenors' Exhibit 1.

JUDGE MILLER: Exhibit what?

MS. FINAMORE: One.

JUDGE MILLER: Okay.

MS. FINAMORE: Entitled "Clinch River Breeder Reactor Project Reliability Program."

JUDGE MILLER: It will be marked for identification as Intervenors' Exhibit 1.

(The document referred to was marked Intervenors' Exhibit No. 1 for identification.)

JUDGE MILLER: Now, what does it purport to be?

MS. FINAMORE: This report purports to describe the CRBRP reliability program activities.

JUDGE MILLER: Well, what's its source? What's the basis of it? What is it, or what do you want to represent that it is?

MR. EDGAR: It says January 1976 on the lower left-hand side of the cover page.

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JUDGE MILLER: I already noted that. I noted that for the record before.

MR. EDGAR: Oh, I'm sorry.

JUDGE MILLER: That's all right. That's why I'm inquiring now, just what is this 1976 document, preliminarily, and its pages apparently are selectively numbered 1, 6, 7 and 8, so it's a portion or something. Now, what is it?

MS. FINAMORE: I would also like to mark for identification --

JUDGE MILLER: Now, wait a minute. Before you do that, take care of Intervenors' for identification Exhibit 1.

MS. FINAMORE: Exhibit No. 1 was a document presented to the Staff by the Clinch River breeder reactor project at a meeting -- prior to the meeting and discussed at the meeting held on April 30th, 1976 -- excuse me, April 6th, 1976, between the Clinch River breeder reactor project and the NRC to discuss the CRBRP reliability program and related documentation.

JUDGE LINENBERGER: Excuse me, but the confusion continues, at least in my mind. You indicated this is something that was presented by somebody to somebody, and as presented, did the item presented omit Pages 2 through 5, for example, or did you select pages from something that had

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been submitted from somebody to somebody?

MS. FINAMORE: We just selected the relevant pages. It was a fairly lengthy document, Judge Linenberger. There was only one --

JUDGE MILLER: Well, you're going to have to lay a foundation, even on a representation, Ms. Finamore. You can't just hand up selectively some old document that comes from 1976 with pages that obviously have gaps in it and leave the record to flounder. Now, if you're going to present it you're going to have to lay a proper foundation, which is less than if you're putting it in evidence, but nonetheless sufficient to identify it.

You've also handed up, and I take it you're probably about to put a number on, this document which is dated April 30, 1976, File: 05.10, purports to be a letter to Mr. Roger S. Boyd, Director, from Peter S. Van Nord, General Manager.

I presume now you're going to give that a number, are you not, for identification?

MS. FINAMORE: We'd like to mark that for identification as Intervenors' Exhibit 2.

JUDGE MILLER: It will be so marked.

(The document referred to was marked Intervenors' Exhibit No. 2 for identification.)

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JUDGE MILLER: Now, we've got Intervenors' for identification 1 and 2. Now, lay a proper foundation, or at least sufficient that you may ask the witnesses and they may understandingly answer you.

BY MS. FINAMORE:

Q Mr. Brown, I'd like you to look at Intervenors' Exhibit 2. Does this document look familiar to you at all?

BY WITNESS BROWN:

A It's such an old document, but since my name is on it as attendance in the meeting and I recall at some time in the past being at a meeting of this type, I suspect that I've seen that before, yes.

Q Okay. And can you tell me what was discussed at that meeting, as far as you recollect and as this document refreshes your recollection?

JUDGE MILLER: Well, the proper method, first of all, does this document refresh your memory? Yes or no.

WITHESS BROWN: There isn't a lot in the document --

JUDGE MILLER: I know. Look it over --

WITNESS BROWN: -- to really refresh --

JUDGE MILLER: Don't give me a speech. Just look it over and tell me whether or not it refreshes your memory. You can say yes. You may say no.

WITNESS BROWN: I would say no.

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JUDGE MILLER: In that event, that's the end of that. His memory is not refreshed, so you're going to have to do something else.

BY MS. FINAMORE:

Q Mr. Brown, referring to Intervenors' Exhibit No. 1, do you recall seeing this document during the April 6th, 1976 meeting referred to in Exhibit 1 -- in Exhibit 2, excuse me.

BY WITNESS BROWN:

A I do not recall this document, Exhibit No. 1, that you've presented me, as being a part of the meeting identified in Exhibit 2.

Q So Mr. Brown, although you do recall being at that meeting, you don't recall what was discussed at that meeting, is that correct?

JUDGE MILLER: Just a minute, now. You're misquoting evidence. He says he doesn't recall being at the meeting, but since his name is on a summary he's willing to assume that he was. It's quite a different state of the evidence.

BY MS. FINAMORE:

Q Mr. Brown, do you recall ever discussing the reliability program with the NRC Staff at a time around April 6, 1976?

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BY WITNESS BROWN:

A. I was in a meeting where we discussed the reliability program. It probably was in the spring of '76, yes.

Q. And can you recall what the purpose of the reliability program was, as described to the NRC Staff at such a meeting?

BY WITNESS BROWN:

A. The meeting I'm recalling that I was at was a rather lengthy meeting, and at this date I can't recall all the information that was passed on to them in that meeting. I am sure that at some point in it we must have discussed something about --

JUDGE MILLER: Well, wait a minute, now. We don't want assumptions or what must have. If you remember, tell fairly what you remember. If you don't remember, say so.

WITNESS BROWN: I don't remember what was described as the purpose at that time.

BY MS. FINAMORE:

Q. In your recollection, was it ever mentioned at that meeting that the reliability program was an integral part of the means used by the Applicants to determine which accidents were within the CRBR design basis?

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BY WITNESS BROWN:

A. I do not recall that.

Q. Does Exhibit 1, on Page 7, refresh your recollection of that discussion in any way? Particularly the second paragraph of Page 7.

BY WITNESS BROWN:

A. No.

Q. Do you believe that that was a goal of the reliability program at that time?

BY WITNESS BROWN:

A. Whether the second paragraph -- the second paragraph, as I read it, does not sound like a goal.

Q. Do you believe, Mr. Brown, that at that time a major purpose of the reliability program was to select the design basis accidents for the Clinch River breeder reactor plant?

BY WITNESS BROWN:

A. No.

Q. Why do you say that, Mr. Brown?

BY WITNESS BROWN:

A. You said major purpose. I think that it may have been part of the purpose, but there were, in my view, much larger purposes to the reliability program as defined at that time.

Q. Do you believe that the reliability program was

13-13

used to assure and confirm the low probability of specific initiators not covered by precedent or regulation and thereby allow exclusion of these initiators from the design base?

BY WITNESS BROWN:

A. No.

Q. Why is that?

BY WITNESS BROWN:

A. At that time there was considerable discussion in the project about being able to achieve that type of objective, and therefore I don't think there was a consensus within the project such that that was a major objective of the reliability program.

Q. Do you believe it was an objective of the reliability program?

BY WITNESS BROWN:

A. I do not recall whether the project had actually at that point, in my mind, come to being a project objective. It was an objective within some people's minds within the project, but not necessarily defined as an overall project objective.

Q. Do you believe that the project told the Staff in 1976 that that was one purpose of the reliability program?

BY WITNESS BROWN:

A. I don't believe I said that.

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Q I'm asking you now.

BY WITNESS BROWN:

A I don't know.

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BY MS. FINAMORE:

Q. Do you believe that's a reasonable use of the reliability program?

BY WITNESS BROWN:

A. No.

Q. Mr. Clare, do you believe that one use of the reliability program was to select design basis accidents for the Clinch River plant?

BY WITNESS CLARE:

A. The objectives -- the goals of the reliability program, as submitted to the NRC Staff, did include statements of such an objective.

Q. So you disagree with Mr. Brown?

BY WITNESS CLARE:

A. I don't believe that I disagree with Mr. Brown. He said he didn't recall. I do recall some documents that suggested that the reliability program would be used in part as an assist in defining what accidents should be in the design basis.

Q. Mr. Clare, does the project have a complete list of design basis accidents for the Clinch River breeder reactor plant?

BY WITNESS CLARE:

A. The design basis accidents for the Clinch River breeder reactor plant are identified in Chapter 15 of the PSAR.

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Q. Is that a complete list of all the design basis accidents for the Clinch River plant?

BY WITNESS CLARE:

A. That's a complete listing of those accidents within the design basis that we have selected to analyze.

Q. Is that a final list of the design basis accidents for the Clinch River plant for a reactor of the general size and type at Clinch River?

BY WITNESS CLARE:

A. I can't -- I don't believe that it is necessarily the list of design basis accidents that would be chosen for any reactor of the general size and type. I believe it's representative of such accident.

Q. And there is no complete list of design basis accidents for a reactor of the general size and type at the Clinch River that exists today; is that correct?

BY WITNESS CLARE:

A. I don't know.

Q. Do you know, Mr. Brown?

BY WITNESS BROWN:

A. I'm not sure I understand the question, as it came through that series.

Q. Can I have the question read back?

JUDGE MILLER: No, that's -- This system we can't go back. Rephrase your question.

14-3

BY MS. FINAMORE:

Q. My question is: Does a complete list of design basis accidents for a reactor of the general size and type as that proposed exist today?

BY WITNESS BROWN:

A. Not that I know of, I guess.

Q. Do you know of any, Mr. O'Block?

BY WITNESS O'BLOCK:

A. I don't know.

Q. Do you know, Mr. Strawbridge?

BY WITNESS STRAWBRIDGE:

A. The list at Chapter 15 is an example of such a list. So that is one such list.

Q. Is that a complete list?

BY WITNESS STRAWBRIDGE:

A. That's a complete list for the Clinch River breeder reactor plant. So I would assume that's also a complete list for a reactor of the general size and type.

Q. Is that a final list of design basis accidents for a reactor of the general size and type as the Clinch River?

BY WITNESS STRAWBRIDGE:

A. I don't know.

Q. Do you know, Mr. Deitrich?

BY WITNESS DEITRICH:

A. Do I know what?

Q. Would you like for me to repeat the question for the fourth time?

BY WITNESS DEITRICH:

A. Are you -- I'm sorry, I'm not sure -- after the exchange with Mr. Strawbridge exactly what the question is.

JUDGE MILLER: That's true. Now we're having a lot of amendments, modifications and massaging of questions and partial responses.

So ask your question clearly, so that we don't have any confusion.

BY MS. FINAMORE:

Q. Mr. Deitrich, do you know whether a final list of design basis accidents for a reactor of the general size and type as the Clinch River breeder reactor exists today?

BY WITNESS DEITRICH·

A. No, I don't know.

Q. Mr. Clare, Applicants' testimony concludes that core disruptive accidents are not design basis accidents; is that correct?

JUDGE MILLER: What page are you referring to?

WITNESS CLARE: What page were you --

JUDGE MILLER: We're trying to get the page.

BY MS. FINAMORE:

Q. Does the Applicants' testimony come to the conclusion that core disruptive accidents are not design basis

accidents?

BY WITNESS CLARE:

A. The conclusion of Section 3.3 on Page 46 of our testimony states that features are incorporated in the CRBRP to prevent progression of an accident to an HCDA.

Q. And doesn't that testimony on Page 46 conclude that HCDA's need not be included within the DBA's for the CRBRP?

BY WITNESS CLARE:

A. Yes. The last phrase of the last sentence is, "and thus, that HCDAs need not be included within the DBAs for the CRBRP."

Q. In arriving at that conclusion, did the Applicants rely upon the tests of their shutdown system as a basis?

BY WITNESS CLARE:

A. In arriving at the conclusion that the HCDA's should not be design basis accidents, we did not rely on the results of any tests of those systems.

Q. Did you rely upon tests of any heat removal systems as a basis for your conclusion?

BY WITNESS CLARE:

A. We did not rely on tests of any of our shutdown heat removal systems for that purpose.

Q. Did you rely upon tests of the other two major reactor systems for your conclusion -- excuse me -- the major

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features listed on Page 27 of your testimony?

BY WITNESS CLARE:

A. We did not rely --

JUDGE MILLER: Wasn't the answer "no" to the preceding two questions? Just n-o?

WITNESS CLARE: No.

JUDGE MILLER: You mean no, it isn't no, so, therefore, it's yes? You're not going to give me a double negative now, are you?

WITNESS CLARE: Excuse me. You're correct, Mr. Chairman.

JUDGE MILLER: Okay. Thank you.

WITNESS CLARE: We did not rely on the results of tests.

BY MS. FINAMORE:

Q. In coming to the conclusion that CDA's are not within the design basis accident for the plant, did you quantify the controlling reliability threshold criterion?

BY WITNESS CLARE:

A. I'm sorry, I don't understand the question.

Q. Did you quantify any controlling reliability threshold criterion for excluding this CDA from the DBA?

BY WITNESS CLARE:

A. We do not rely on any threshold reliability criterion.

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JUDGE MILLER: Isn't that answer no again?

WITNESS CLARE: I'm not sure, Mr. Chairman --

JUDGE MILLER: It's either no or the answer is you don't know.

See, we're taking a lot of time. She asks the question and she partially reads, then you think about it and you repeat it, and you answer. Now, you know, we could save a lot of time here if you'll just -- if you can -- now if you can't answer yes or no, all right, or if you must explain, we'll let you briefly.

But let's get the answer to --

WITNESS CLARE: I'll try --

MR. EDGAR: Well, Mr. Chairman, on that particular one, I have some technical training. I don't understand that question.

JUDGE MILLER: You don't understand the --

MR. EDGAR: That's a very unclear question.

JUDGE MILLER: -- question?

WITNESS CLARE: That's right, and I asked her once --

JUDGE MILLER: All right. Rephrase the question. This is the second time now. He does not understand it as phrased.

BY MS. FINAMORE:

Q Did the project set any criterion for the

reliability of a major feature of the CRBR that must be met before core disruptive accidents can be excluded as design basis accidents?

JUDGE MILLER: Can you understand that or does it --

WITNESS: I can understand the question. I can't answer it yes or no

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JUDGE MILLER: All right. Do the best you can.

WITNESS CLARE: Such a criterion was set early in the project. The project no longer believes such a criterion is necessary, nor have we used any conclusion with regard to such a criterion in our testimony or in our conclusion that HCDA's need not be DBA's.

BY MS. FINAMORE:

Q What was that criterion?

BY WITNESS CLARE:

A The overall criterion -- and I believe it may be stated in your Exhibit 1 -- is that the probability of exceeding 10 CFR 100 guidelines shall be less than one chance in one million per reactor year.

I emphasized that was a 1976 document. Appendix C of the PSAR, which is the current description of the reliability program and supersedes this document, no longer refers to such a criterion.

JUDGE MILLER: Is the answer we did once, but we don't anymore? Am I understanding --

WITNESS CLARE: That's the answer to a relevant question, yes.

JUDGE MILLER: Thank you.

BY MS. FINAMORE:

Q Mr. Clare, in making the decision -- excuse me. In arriving at the conclusion that core disruptive accidents need

not be included within the design basis for the Clinch River plant, did you factor -- or did the Applicants factor probabilistic risk assessments into that conclusion -- excuse me -- probabilistic risk assessments regarding core destructive accident initiators?

BY WITNESS CLARE:

A. No.

Q. Have you used probabilistic risk assessments of CDA initiators at any time in deciding what the design basis for the Clinch River plant would be?

BY WITNESS CLARE:

A. No.

Q. In deciding what the design basis for the Clinch River plant should be, did the Applicants use any analysis or evaluation of the designs of plants other than the CRBR?

BY WITNESS CLARE:

A. As we've stated in Section 3.2 of our testimony, Page 13, the large paragraph in the middle, we indicated that DBA accident initiators were selected on the basis of several activities, which included consideration of DBA lists for light water reactors in the fast flux test facil[illegible]

To that extent we depended on events considered in other reactor plants.

Q. Mr. Clare, do you recall being deposed by Intervenors on Wednesday, June 16, 1982?

BY WITNESS CLARE:

A. Yes.

Q. Do you recall being asked at that time whether --

JUDGE MILLER: Would you give the page references, please?

MS. FINAMORE: I'm referring to Page 43 of the transcript of that June 16th deposition.

JUDGE MILLER: All right. Does the witness have it on front of him?

WITNESS CLARE: No.

JUDGE MILLER: You'll have to let him see what you've quoting from.

Page 43, I think counsel said.

Page 43, Ms. Finamore?

MR. TOUSLEY: Yes.

JUDGE MILLER: Thank you. Page 43.

Page 43 are you looking at now?

WITNESS CLARE: Yes.

JUDGE MILLER: Okay. Now read him what you wish to call his attention to.

BY MS. FINAMORE:

Q. The answer is on Page 43. The question is on Page 42.

JUDGE MILLER: Okay. Start with Page 42.

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BY MS. FINAMORE:

Q. Line 16 of Page 42, Mr. Clare.

Do you recall being asked: "Are your conclusions that the LWA-1 stage with regard to a general -- a reactor of the general size and type specifically as it applies to Contentions 1, 2 and 3 based solely on your analysis of the Clinch River design, not those other reactors that you have previously mentioned as reactors of the general size and type?"

JUDGE MILLER: And what was the answer? That was the question you asked him, wasn't it?

BY MS. FINAMORE:

Q. Do you recall being asked that question?

BY WITNESS CLARE:

A. I recall a question of that sort. I believe you've accurately read the transcript.

Q. And now turning to Page 43, Line 13 of that same deposition transcript, do you recall answering: "We have not used any analysis or evaluations of designs of these other plants in reaching our conclusion at the LWA-1 stage the conclusions with regard to Contentions 1, 2 and 3"?

BY WITNESS CLARE:

A. Yes. That particular response was a statement with respect to the detailed analysis, the actual analysis of an accident in another plant.

What we've indicated in Section 3.2 is that we took

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advantage of the lists of accidents, not actually the analyses of those events in the plants, but rather the lists of events that were considered as design basis accidents in developing the list for this plant.

Q. You didn't analyze any of the accidents that were in those lists for other plants in determining whether the same list should be used for the Clinch River reactor?

BY WITNESS CLARE:

A. We did not perform any analysis of the consequences of those types of events in other plants, no.

Q. So you just took a list and decided whether or not you should apply it or not without ever looking at what the consequences of the accidents were in that list?

BY WITNESS CLARE:

A. I don't believe that's what I just said. We took the lists that were developed for other plants and considered them relative to the CRBRP design. What I've said we did not do is to take those lists and consider the consequences of such accidents in other plants.

Q. In arriving at your conclusion that core disruptive accidents are not within the design basis accident for Clinch River, did you rely on the sufficiency or completeness of the CRBR design criteria, as set forth in Appendix A of the site suitability report?

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14-14

BY WITNESS CLARE:

A. No.

Q. In arriving at that same conclusion did you rely on the sufficiency or completeness of the requirements set forth in the May 6, 1976 letter from Denise DeCaffey?

BY WITNESS CLARE:

A. No.

Q. In arriving at your conclusion that core disruptive accidents are not within the design basis for Clinch River, did you rely on the sufficiency or completeness of any known set of criteria?

BY WITNESS CLARE:

A. We didn't have, at that point in time, a checklist of criteria that you might suggest we went through and checked off to be certain that we met these items called criteria.

To the extent that the information reflecting the general features of the plant, described in the testimony, in the criteria that are applied thereto, we did depend on these considerations as a sufficient set of considerations.

Q. In arriving at your conclusion that core disruptive accidents should not be considered design basis ones, did you rely on any analysis of core disruptive accidents, once they were initiated?

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14-15

BY WITNESS CLARE:

A. No.

Q. Am I correct that Section 5 of your testimony is an analysis of the core disruptive accident once initiated?

BY WITNESS CLARE:

A. Section 5 of our testimony does discuss the evaluation of HCDA's once initiated.

Q. And am I correct that in determining whether a core disruptive accident should be within the design basis for the Clinch River, you did not rely on any of the analysis in Section 5 of your testimony?

BY WITNESS CLARE:

A. That's correct.

Q. But is it then correct that you did not rely on the analysis in Section 5 of your testimony to prove whether or not the Clinch River plant meets the requirements of 10 CFR .11?

MR. EDGAR: Objection. First of all, the phrasing of the question asks for a legal conclusion. If they're asking for the witness' understanding of the technical subject matter, we don't have a problem.

But the way that was phrased, it asks for an interpretation of the regulation.

MS. FINAMORE: We're asking for the technical background.

14-16

JUDGE MILLER: You may rephrase it. The objection is sustained to the question in that form.

MS. FINAMORE: I was asking for the witness' understanding of the technical background.

JUDGE MILLER: State a question.

BY MS. FINAMORE:

Q Did you rely upon the analyses contained in Section 5 of your testimony for any conclusions related to whether the fission product release from the Clinch River breeder reactor would be less than the dose guideline value selected for the plant?

JUDGE MILLER: Do you understand that question?

WITNESS CLARE: No.

JUDGE MILLER: I don't either. You had better rephrase it.

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BY MS. FINAMORE:

Q. Mr. Clare, do the Applicants rely upon the analysis in Section 5 of their testimony to determine whether a fission product release larger than any accident considered credible for the plant, exceeds the dose guidelines values for whole body, thyroid, lung and bone selected for the Clinch River?

BY WITNESS CLARE:

A. Clarification on the question.

By does guidelines, you're referring to those specified in the Staff Site Suitability Report?

Q. That's correct.

BY WITNESS CLARE:

A. No.

JUDGE MILLER: We have a question, I think, on that.

JUDGE LINENBURGER: Mr. Clare, you explicitly asked if Ms. Finamore was referring to the guidelines in the Staff's SSR; right?

WITNESS CLARE: That's correct.

JUDGE LINENBURGER: Mrs. Finamore, is that specifically what you had in mind or did you have the Part 100 equivalent of that in mind?

MS. FINAMORE: Well, we had in mind the Staff's Site Suitability Guidelines.

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JUDGE MILLER: Okay.

MS. FINAMORE: But I'd also -- now, tnat you have raised it, like to ask if that same conclusion would apply if I were referring to the Part 100 dose guideline values.

WITNESS CLARE: Let me try to clarify, perhaps, what I meant by the site suitability -- guidelines in the Site Suitability Report.

There are the set of guidelines which are in the Site Suitability Report that include both the 10 CFR 100 guidelines and the supplements to that, that the Staff included specifically for this plant, which are typically not considered.

My prior answer that, no, this section was not used in reaching that conclusion remains correct for that.

Now, in addition, the Site Suitability Report written by the Staff includes considerations of the residual risk from a hypothetical core disruptive accident. To the extent that the reference to the Staff's guidelines on site suitability, not just the guideline dose limits, consider HCDA's, this section fully supports the Staff Site Suitability Report.

JUDGE LINENBURGER: That covers that question.

JUDGE MILLER: We'll have to move along faster than this. I realize you have a problem there and I know

15-3

you're trying to move it along but, nonetheless, we can't drag the trial simply because you and Dr. Cochran have to confer at such length. We really must have a faster pace of examination, please.

BY MS. FINAMORE:

Q. Mr. Brown, is it true that the last fast reactor licensed by the Nuclear Regulator Commission was the SEFOR Reactor? S-e-f-o-r.

BY WITNESS BROWN:

A. The last formal licensing, I believe was SEFOR, although FFTF was reviewed in the process that the Staff gives to reactors owned by DOE.

Q. But FFTF was never licensed by the NRC; is that correct?

BY WITNESS BROWN:

A. That's correct.

Q. Mr. Brown, am I correct that you worked on the SEFOR plant at one time?

BY WITNESS BROWN:

A. Yes.

Q. And isn't it true, Mr. Brown, that the core disruptive accident was a design basis accident for the SEFOR plant?

BY WITNESS BROWN:

A. At the time that SEFOR was licensed, the

distinction that was given to design basis accidents currently was not made. It is true we picked accidents that were analyzed for purposes of design.

We did not do as sharp a delineation between design basis accidents as we did at that -- as we're doing right now.

JUDGE LINENBURGER: While we're waiting, following the question from the same vein as that last answer, let me ask you for SEFOR, were energetic considerations assessed for core destructive accidents for SEFOR?

WITNESS BROWN: Yes, they were, Dr. Linenburger.

BY MS. FINAMORE:

Q. Mr. Clare, am I correct that you said earlier that when you use the word "preclude" in the testimony, you did not mean making possible but, rather, to make the likelihood extremely low?

BY WITNESS CLARE:

A. Those weren't my exact words but I said something to that effect.

JUDGE MILLER: The word also was "prevent" rather than "preclude", I think. But the concept, I take it is generally true.

BY MS. FINAMORE:

Q. Does the same concept apply to the word

"preclude", which you used in your testimony fairly frequently, as well?

BY WITNESS CLARE:

A. Yes.

Q. Don't you use the term "low likelihood" often in your testimony?

BY WITNESS CLARE:

A. We've used it in the testimony.

Q. For example, on Page 46 of your testimony, the first sentence, you state:

"The features to assure proper reactor sub-assembly location and to prevent local flow of blockages along with the inherent limitation of local failure propogation within a sub-assembly, assure the low likelihood of significant local imbalances between heat generation and heat removal."

I'd like to ask you, Mr. Clare, am I also correct that you say the CDA would have to have a low likelihood before you would consider that it can be excluded from the design basis for the reactor?

BY WITNESS CLARE:

A. We believe that the likelihood of a CDA must

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be low, it must be a low likelihood of occurrence to be excluded from the design basis accidents spectrum.

Q. Mr. Clare, how low does that likelihood have to be before the Applicants would conclude that the accident should be outside of the design basis?

BY WITNESS CLARE:

A. Low, with the kind of assurance that we have provided,as demonstrated by this testimony.

Q. If the possibility of a core disruptive accident was one in every one thousand years, would you consider that to be a low enough probability that you can exclude it from the design basis?

BY WITNESS CLARE:

A. Well, as I stated earlier today, we haven't quantified a miracle criterion such as you are suggesting.

Q. I understand, but even without such a criterion, if it were proven that the probability of a core disruptive accident was one in every one thousand years, would you, at this moment, consider that to be that very low likelihood --

MR. EDGAR: Objection on the grounds that it is a hypothetical question and no foundation in the record for the premise of the question.

MR. FINAMORE: The premise of the question --

JUDGE MILLER: While we don't think that

cross-examination requires a record premise, I think hypotheticals are permitted in cross-examination.

However, we are wondering whether this hasn't been asked and answered several times.

MR. EDGAR: I'm refraining from a lot of objections on the theory that it might go more quickly but I think that has been answered.

MR. FINAMORE: I believe I referred to a specific criteria at this time. I'm not referring to whether or not the project has a criterion at that time. I'm just asking the hypothetical question, the premise of which is, assume it has been proven that the probability of a core disruptive accident is once every thousand years, then the hypothetical question is, given that assumption, would you now conclude that the probability is low enough that it can be excluded from the design basis?

WITNESS CLARE: Again, I haven't quantified what is an acceptably low likelihood and I don't feel I can answer the question.

JUDGE MILLER: We think that that's a basis for at least three times it's been answered. They haven't quantified, therefore, you're not going to compel him to quantify by asking 1000, 2000, 500.

That's the basis upon which we did sustain the

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objection; gave you one more shot at it to see if it still stayed the same; it did, so move on, please.

BY MS. FINAMORE:

Q. Mr. Clare,on Page 12 of your testimony, you make the following statement in the first full paragraph; the final sentence:

Excuse me. Let me begin on Page 11 and 12. This portion of your testimony refers to the projects Design Approach to Safety, which consists of Consideration of Three Levels of Safety.

Is that correct, Mr. Clare?

BY WITNESS CLARE:

A. Yes.

Q. And am I correct that you described the first level of safety as:

"This level assures reliable operation and prevents accidents. This level reduces the likelihood of accident initiation and the challenges to the protective systems."

BY WITNESS CLARE:

A. Yes.

JUDGE MILLER: Well, if it says that and you read it correctly and it still says it, why do you have to ask him if your understanding is correct?

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It says it. Go ahead.

BY MS. FINAMORE:

Q. Later on, on Page 12 in that final sentence of the first paragraph, you say:

"That the consequences of DBA's available credible accidents but do not include HCDA's, since the first two levels of safety preclude their occurrence."

And you're referring to the first and second levels of safety referred to on Pages 11 to 12 in that sentence; is that right, Mr. Clare?

BY WITNESS CLARE:

A. That statement that the first two levels of safety preclude their occurrence, refers to the preventive features -- well, it refers first to the reliable operation, prevention of accidents, that's assured in the first level, combined with those preventive features, protective features provided on the second level of safety to terminate events at an early stage and prevent them from progressing to an HCDA.

Q. But am I correct in saying that the project believes that the first two levels of safety, defined in the testimony, precludes the occurrences of HCDA's?

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BY WITNESS CLARE:

A. The implementation of the first two levels of safety and, thereby, the provision of the four major features in the plant that we've discussed earlier today, does preclude HCDA's.

Q. No, that's not what your testimony says; is it? That's just your interpretation of it at this time?

MR. EDGAR: Objection on the grounds that the question is argumentative. It is by very definition. I don't even think it was a question.

JUDGE MILLER: Yes. Do you wish to amend the answer as typed there, in order to conform with what I understand to be your present testimony?

Namely, the implementation aspect?

WITNESS CLARE: No, I don't think so. I was merely referring to what I sensed the question was driving at when I emphasized the implementation.

I believe it's an accurate statement the way it's written.

JUDGE MILLER: All right.

Proceed.

BY MS. FINAMORE:

Q. Mr. Clare, I would just like to ask you a couple of questions about these three levels of safety, which is the criteria itself and not the implementation of the

criteria, and my first question is:

Isn't it true that these three levels of safety are just a very general safety philosophy which is known as defense in depth?

BY WITNESS CLARE:

A. I believe that designs which have followed the three levels of safety have been said to have defens in depth.

Q. Can you identify for me other reactor designs that have used these three levels of safety?

BY WITNESS CLARE:

A. Yes. I believe the Fast Flux Test Facility used that approach.

Q. Did SEFOR use that approach?

BY WITNESS CLARE:

A. I don't know.

Q. Mr. Brown, did SEFOR use that approach?

BY WITNESS BROWN:

A. They used the general philosophy of the defense in depth. I do not believe we separated out into what we call three levels of safety, as defined right here but there was a defense-in-depth philosophy used in SEFOR.

Q. But whether or not it was broken up into three levels, did you contain the same kind of statements that are contained in these three levels of safety?

5-12

Such as, you must assure reliable operation and prevent accidents?

BY WITNESS BROWN:

A. Yes, we did include those kind of statements.

Q. Is there any way in which you recall that the statements of the general safety approach used for the SEFOR plant differed in any way from the three levels of safety described here? Other than the fact that they might not have been three levels?

BY WITNESS BROWN:

A. My recollection is that the three levels similar to FFTF in the third level, although it wasn't called a third level in SEFOR included an accident called a maximum hypothetical accident, which was a core disruptive accident.

Q. You referred just now to the FFTF.

BY WITNESS BROWN:

A. The FFTF also had that type of accident included within its third level of safety.

Q. And that type of core disruptive accident is not included in the third level of safety for the Clinch River Plant; is that correct?

BY WITNESS BROWN:

A. That's correct.

Q. Mr. Brown, do you recall whether the similar

15-13

three levels of safety approach was used in the parallel design for the Clinch River Breeder Reactor Plant?

BY WITNESS BROWN:

A. Yes, it was used in the parallel design.

Q. And isn't it true, Mr. Brown, that the core disruptive accident was included in the third level of safety for the parallel design?

BY WITNESS BROWN:

A. I don't recall whether it was or not, at this time.

Q. Mr. Strawbridge, do you recall whether the core disruptive accident was included in the third level of safety for the parallel design of the Clinch River Plant?

BY MR. STRAWBRIDGE:

A. Yes, I do recall and it was included. By definition, the parallel design was to provide accomodation of a core disruptive accident as a design basis accident, so it was in the third level.

16-1
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Q. Mr. Strawbridge, do you know whether or not a core disruptive accident was included in any of the levels of safety for the British PFR demonstration breeder reactor?

BY WITNESS STRAWBRIDGE:

A. To the best of my knowledge, I think it was included on a basis rather like Footnote 2 on Page 12, which says it is being given consideration but beyond the third level, what would be equivalent to the third -- British equivalent to the third level.

Q. Was the core disruptive accident a design basis accidentfor the British PFR reactor?

BY WITNESS STRAWBRIDGE:

A. I don't believe so, not the way we understand design base accidents and the criteria that would have to be met by design base accidents.

Q. Do you recall -- do you agree with that, Mr. Clare?

BY WITNESS CLARE:

A. I don't know.

Q. Do you agree with that, Mr. Brown?

BY WITNESS BROWN:

A. That's my understanding also, yes.

Q. Do you agree, Mr. Deitrich?

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16-2

BY WITNESS DEITRICH:

A. I don't know.

Q. Mr. O'Block?

BY WITNESS O'BLOCK:

A. I don't know.

JUDGE MILLER: Who won?

(Laughter.)

MR. EDGAR: It's three -- well, 2-0, there are three abstentions, but we don't have a quorum.

JUDGE MILLER: On the other hand, if he had been present, how would he have voted?

(Laughter.)

BY MS. FINAMORE:

Q. Mr. Strawbridge, I'd like to read to you, and I will show it to you in a minute, a transcript of an advisory committee on reactor safeguards, subcommittee on a Clinch River breeder reactor meeting held February 3rd, 1982, in Washington, D. C. This is a statement of Mr. Dixon. He is discussing the British PFR reactor.

Oh, excuse me. I'd like to identify Mr. Dixon.

Do you know Mr. Dixon?

BY WITNESS STRAWBRIDGE:

A. If that refers to Dr. Paul Dixon, I know him.

Q. Okay. And can you give us a statement of what his position is?

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BY WITNESS STRAWBRIDGE:

A. He is the technical manager for the Clinch River breeder reactor plant, and working for Westinghouse in Oak Ridge.

Q. Okay. Mr. Dixon stated to the ACRS in discussing the British PFR plant, and I'm quoting from Pages 260 to 261 of the transcript: "I talked specifically with the British about it. One is that they said they did not feel they certainly did not want to adopt it from a safety standpoint because they felt that it did not help safety because that was not where the problem was in HCDA's, which is the only place it seemed to help. And they also have a problem in a pool reactor and the fact that their HCDA is a design basis."

I want to know if you agree with that statement of Mr. Dixon.

MR. EDGAR: I object to the question until the witness is given an opportunity to examine the transcript. We don't that that's a complete statement of Mr. Dixon's testimony, and the witness is entitled to know what the facts are.

MS. FINAMORE: We are showing that transcript to Mr. Strawbridge now.

JUDGE MILLER: We are a little curious as to the significance or materiality, in the old sense of the

16-4

term, prior to the Federal Rules of Evidence on this. Suppose it does say that. What difference does it make?

MR. EDGAR: Well, he's been asked whether he agrees with the statement.

JUDGE MILLER: We could go on forever.

MR. EDGAR: And we are going to go on forever at this pace but I --

JUDGE MILLER: We don't think it's proper. You're going far afield now. Interrogate them if you wish. Cross-examine about their testimony and their reasonable parameters, but this is going beyond the scope. We don't think it's material. We'll sustain the objection.

MS. FINAMORE: Judge Miller, a major portion of our case is the fact that CDA's are considered design basis accidents for other reactors.

JUDGE MILLER: Now you're arguing the matter, yeah, I know what your case is. I'm talking about this particular piece of evidence. Whatever the British do, what difference does it make? We'd have to put it in context. We'd have to run down collateral inquiry. We're not interested in collateral inquiry. We got enough problems right with our own contentions and proof, and so forth. You could multiply this by a thousand, I suppose.

MS. FINAMORE: Well, that goes to the weight of the evidence, not its admissibility. We feel it's

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relevant and material.

JUDGE MILLER: It goes to everything.

Objection sustained.

Give back the transcript. Let's get on to the testimony here now, the cross-examination.

BY MS. FINAMORE:

Q I would like to go back to the three levels of safety that you use as part of your argument that CDA's should be outside of the design basis for the reactor.

Isn't it true, Mr. Clare, that the light water reactor safety approach is very similar to the three levels of safety that you've discussed in your testimony?

BY WITNESS CLARE:

A I believe that the light water reactors use a three level of safety approach.

Q And isn't it the same level of -- three levels or approach that you're using for the Clinch River reactor?

BY WITNESS CLARE:

A I believe they're similar. I don't know that the words that they would use to describe theirs are identical to the words we use to describe ours.

Q Mr. Strawbridge, aren't these three levels of safety identified in your testimony the same three levels of safety used in light water reactor safety approach?

/ / /

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BY WITNESS STRAWBRIDGE:

A. I think when described in general terms, yes, they're the same three levels of safety.

Q. Is there any substantive difference between the two safety approaches?

BY WITNESS STRAWBRIDGE:

A. In implementation of the approaches there are some differences.

Q. But in the general safety philosophy itself is there any substantive differences between LWR's and CRBR's, not in their implementation?

BY WITNESS STRAWBRIDGE:

A. I think they're consistent.

Q. Isn't it true, Mr. Strawbridge, that a double ended pipe rupture is a design basis accident in a light water reactor?

BY WITNESS STRAWBRIDGE:

A. Yes.

Q. And isn't it true that that accident is not a design basis accident for the Clinch River breeder reactor?

BY WITNESS STRAWBRIDGE:

A. Yes.

Q. So the safety philosophy itself does not dictate what accidents are within or outside the design basis itself, am I correct? The safety philosophy itself.

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BY WITNESS STRAWBRIDGE:

A That's correct.

JUDGE MILLER: We'll take a five-minute recess, please.

At 3:00 o'clock we have two limited appearance statements, about five minutes each, please.

(A short recess was taken.)

JUDGE MILLER: All right, we will resume, please. Let's see, I had two limited appearance statements that we had scheduled for 3:00 o'clock. The first one, I think, was Mr. Bates. You missed your 1:30 schedule and I promised you five minutes at 3:00. Here are are. Okay.

Help yourself to the microphone. Give us your name and address, and we'll be glad to hear from you.

/ / /

16-8

STATEMENT

OF

ALBERT BATES

MR. BATES: Thank you, Mr. Chairman.

My name is Albert Bates. I'm with the Natural Resource, Natural Rights Center, which is a nonprofit public interest law firm in Summertown, Tennessee. It's a project of PLENTY, International, which is a research environmental relief and development corporation with projects all around the world.

And my concern is primarily with the international implications of the fuel cycle, but I'm going to reserve those comments for the construction permit stage and confine myself to the matters before the Board at this time. I'll try and keep my comments to a minimum. I have an advantage on the witnesses. Not being bound by the Diablo Canyon rule, my comments are going to be broad and general.

The question of conservatism regarding whether the core disruptive accidents should be included in the design basis accidents, I would like to speak not just for the Natural Resource Defense Council but also for the project management corporation when I address my comments to making the determination whether the Board should -- I would advise the Board, urge the Board to make a

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determination based on conservative safety considerations.

New designs call for higher standards, not less standards, and I know often we hear that normal rules should not be applied to the Clinch River breeder because it's a special case, particularly vis-a-vis economics, and I think that we're talking about safety. Just because the Clinch River is a special case we need to apply a higher standard, that we have no operating data, no operating experience, and no failure history for plants of this type.

It's a new combination of systems, a novel configuration, and for these reasons we have to be willing to consider the worst case assumptions which we might not otherwise consider.

In the context of this reactor, I can recall that the Three Mile Island reactor was licensed at a time when degraded core considerations were outside of the scope of design basis accidents, and here we have the question of whether core disruptive accidents should be outside that scope, and I think that the Three Mile accident is a prime example of the fact that a core can degrade and we have what's -- a situation in Pennsylvania now where we have a core that resembles a bowl of dried cereal, that they said could not happen at the time that the plant was licensed.

And I think that -- I can't stress enough the significance of a similar situation happening in the Clinch

16-10

River breeder. It would be a far greater magnitude situation if a Three Mile Island type of accident of degraded core were to occur in a breeder reactor.

It's therefore in a more conservative stance, rather than ignore core disruptive accidents, to consider them at this stage, and I would say that despite reliability programs that have been established since Three Mile Island that the patient is still under treatment and the prescription is experimental and that the patient still bears watching, that these reliability programs are only experimental and that we should be willing to go to the farthest extent to assure that we are considering every possible scenario.

And these comments that relate to core disruptive accidents also relate to the other contentions. New designs call for higher rather than lesser standards. Conservatism is required at all stages in this proceeding, and I would just conclude asking that the record be left open for written submission if after hearing the evidence I can make some further comments.

JUDGE MILLER: Yes. Thank you, Mr. Bates. We're glad to hear from you, and you'll be given an opportunity, as we have indicated. Thank you.

Yes, sir, come right up.

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hop

JUDGE MILLER: Mr. Adams, President of tne Roane-Anderson Economic Council has --

MR. ADMAS: Yes,sir.

JUDGE MILLER: -- asked to appear. We indicated last week that we would be glad to hear from you and you may proceed, sir.

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STATEMENT OF

BEN S. ADAMS

MR. ADAMS: Thank you.

If it please the Board, I am representing Roane-Anderson Economic Council and as Past President of the Oak Ridge Chamber of Commerce with the following statements:

I have turned over to the stenographer and to the Judge, a copy of the information which I will summarize, which is prepared under the auspices of the Roane-Anderson Economic Council and Chamber of Commerce. Behind that will be a general statement and a signing of a petition of community support, with a series of signatures and job descriptions of individuals.

I am the President of a local architect engineer firm. I'm currently the President of Roane-Anderson Economic Council and, as I have state, a Past President of the Chamber of Commerce. It is these two groups that I will represent today as I speak to you.

In December of 1973, the Roane-Anderson Economic Council and Chamber of Commerce hosted a reception and dinner to welcome the LMFBR project here in Oak Ridge. It was attended by over 250 citizens locally, people representing industry, State Government and members of the National Government.

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It was stated then that the project would involve the building and operating of a liquid metal fast breeder reactor by 1980 on 1300 acres site on the Clinch River in the Roane County section of Oak Ridge.

The year 1980 has come and gone. The project has been subjected to continual national controversy, but the community as a whole and in general, has remained steadfast behind the idea of the breeder and that the breeder is a cutting edge of the nuclear industry and Oak Ridge is an appropriate home for it.

We do feel that Oak Ridge citizens in this particular instance, through these two organizations, have expressed situs factor desirability for this project and continue to do so.

There have been a lot of things and I'm now digressing -- this information, I hope, will be conatined in the record and I will use the remainder of my remarks in a digression form.

JUDGE MILLER: Yes, you may.

MR. ADAMS: It is hoped that it does count that the community participants, business people, the people who have retired, the young people that we come in contact with, that their desires can also be heard relative to the general statement of support and to situs factors, having it here.

17-4

There have been times, in other testimony, where I personally appeared in Washington and have used an expression that is not universally accepted but it's one that does, I think, portray a very distinct image and that is, a safe nuclear harbor and I would believe that by and large that's what you'll find in Oak Ridge.

There are good many implications about the private versus the public ownership and utilization of this land. It was originally identified and set aside, transferred from the Atomic Energy Commission to the U.S. TVA and was to be used for the public good by having private industry developed on it. The residual would go into the tax base of the city. When the LFMBR project was identified and at the level of understanding we had of it at the time, it was readily accepted to take the 1300 acres out of the stewardship of TVA for the benefit of the community and put it into a federally-owned, non-tax base program.

That was our feeling then and that's our feeling now. So, toward the end of supporting, encouraging, welcoming this activity from both a general standpoint and a specific site standpoint, we do.

Gentlemen,

I am Ben Adams, president of Adams, Craft, Herz, Walker -- an Oak Ridge architectural and engineering firm. I am currentlypresident of the Roane-Anderson

Economic Council and past president of the Oak Ridge Chamber of Commerce. It is these two groups which I represent before you today.

On December 11, 1973, the Roane-Anderson Economic Counciland the Chamber of Commerce hosted a reception and dinner welcoming the LFMBR project to Oak Ridge, It was attended by over 250 citizens and representatives of local and state government who were briefed on the program by nuclear industry officials. It was stated that the project would "involve building and operating a liquid metal fast breeder reactor by 1980 on a 1300 acre site by the Clinch River in the Roane County section of Oak Ridge." The year 1980 has come and gone, and the project has been the subject of continuing national controversy, but the community as a whole has remained steadfast behind the idea that the breeder is the cutting edge of the nuclear industry and Oak Ridge is its appropriate home.

Ever since Oak Ridge was launched on its first mission during World War II it has been in the forefront of nuclear energy programs and has expanded its scope accordingly. New enrichment technologies (gas centrifuge and advanced isotope separation) have been developed at the gaseous diffusion plant (K-25). Peaceful uses of atomic energy have been explored and the use of nuclear as a commercial energy source became an important goal in

research and development. The Oak Ridge reactor research, nuclear fuel, safety, waste disposal and reprocessing. At this time it houses one of the nation's prominent programs in breeder technology which would constitute an excellent support source for the CRBRP. Work on fusion, the next energy step beyond the breeder is being pursued as fast as engineering capabilities will permit.

No other research and development complex in the country or world has as extensive a span of nuclear programs. The CRBRP project is the logical next step in reactor development and its construction in Oak Ridge would complement existing facilities shaping it as a complete center for nuclear technology. It would provide a unique opportunity for study of nuclear related questions. Expertise in the nuclear field, already available from an unusual cadre of experienced scientists and engineers would be enhanced. The development of the nation's nuclear energy option would be well served by keeping the CRBRP in Oak Ridge, Tennessee.

We understand that the local site for the CRBRP is one of the best in the country- Before there ever was discussion of a breeder project, a group of Oak Ridge citizens working to expand the city tax base identified the Clinch River segment as prime land for a large tax paying industry. This portion of the federal

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reservation was transferred from the then Atomic Energy Commission to the Tennessee Valley Authority with the thought that eventually it would be made available to the city for industrial purposes. This would be consistent with the government's long-range policy that the city should plan for new sources of revenue to replace federal in lieu of tax payments to the community.

When the decision was made to pursue a breeder demonstration program it was received locally with enthusiastic support as the next link in the advancement of nuclear technology. Selection of the Clinch River site by the AEC for the project was acknowledge as appropriate. The idea of this property being used for private industry was willingly abandoned in favor of another government project which the community felt was important to the nation's progressive leadership in the nuclear field.

We hope that our faith has not been misplaced and that before December of 1983 the Clinch River site will be used for the designated project .

Thank you.

Signed by: Ben S. Adams (sig.)

Ben S. Adams, President

Roane-Anderson Economic Council

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Ancil Silvey (sig.)

Ancil Silvey, President

Oak Ridge Chamber of Commerce.

I have with me a statement of support for the CRBRP accompanied by signatures of citizens of Oak Ridge. We did not try to obtain a quantity of names, but rather a cross-section of people in the community.

I thank you for allowing me to appear before you today. If I can be of any service to you or supply further information, I would be glad to do so.

Ben S. Adams (sig.)

CRBRP SUPPORT STATEMENT

As citizens of Oak Ridge, Tennessee, we wish to reiterate our support for the expeditious completion of the Clinch River Breeder Reactor Plant Project.

With the strong support of the Administration, the historical support of both Houses of Congress, and recent favorable action by the Nuclear Regulatory Commission, it appears that the impasse which has hampered the Project for five years has finally broken. This is welcome news. The Project is a vital element of our long-term national strategy to achieve energy independence.

Nuclear energy has been an integral part of life in Oak Ridge for forty years. We have great faith in the future of nuclear power in meeting our energy needs because we know firsthand how safe and effective the technology can be. We know the safeguards that are implemented at every level of planning, construction, and operation of nuclear reactors. We have raised our families here, comfortable and without the fears that accompany unfamiliarity with any new technology. As familiarity grows, we feel that the rest of the nation will share our confidence and that nuclear power will flourish.

If nuclear energy is to reach its full potential, the breeder is a necessity. And if breeder technology is to be developed, it must be demonstrated at some point in

an actual working environment. The Clinch River Project will accomplish this quickly and effectively. It is the nation's best chance to make the technology available for commercial use early in the next century.

Other countries are moving forward aggressively because they realize the value of an assured, stable and virtually inexhaustible energy resource. Internationally respected energy expert Alvin Weinberg, one of Oak Ridge's most distinguished citizens, recently visited France to examine that country's breeder facilities. Upon his return he praised the French for demonstrating "what the nuclear community always thought was the main business of nuclear energy - - - to develop an energy source that is inexhaustible and that is within reasonable cost of energy systems based on exhaustible resources."

We are proud that our area has been chosen for this demonstration project, but we are equally pleased to know that knowledge to be gained from it will benefit every corner of our nation. The Clinch River Project has made tremendous progress in a shifting political and regulatory environment, its design is at the leading edge of worldwide breeder technology, it is well managed and remains a good investment in our energy future. It should be allowed to move forward with no further delay.

NAME	OCCUPATION/BUSINESS/GROUP AFFILIATION
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Mark Hart	"
Ann Newtown	Sec.
Tracy B. Perkins	Program Analyst
Martin J Parker	Programmer/Analyst
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Kurt E Johnson	Engineer
Duane C Bogarth	Engineer
Clyde Mayo	Engineer
J.H. Minarick	
Arthur McBride	Engineer
Randy Beatty	Engineer
Gregg Lagerberg	Engineer
Patty Rowan	Secretary

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H. [illegible]	citizen
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John W. Rich	Engineer - [illegible]
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Harold W. Jernigan	City of Oak Ridge
William A. Gilson	Elographics, Inc
Ruth Ann Maddux	~~[illegible]~~ Citizen
Keith C. Jamieson	CMC Construction Co.
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Jon Warren	Gilbert Assoc. Inc.
Francis Kertay	TTT, Oak Ridge
Ann Garrison	Tele-Syst, Inc.
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Oliver H Coleman	Mgr.	SDC
Lee Gray		SDC
Marlin S. Mckinney	Mgr P.C.	SDC
Donald R Riley	Engr.	SDC
R. F. Hickey	Engineer	DMJM
Larry C. Coy	Engineer	DMJM
Joachim K.E. Rottert	Engineer	DMJM
Richard Smith	Engr	SDC
Milt William	Eng.	SDC
Mark Gallman	Engineer	DMJM
[illegible]	[illegible]	SDC
Fred Fisher	Engrg Mgr.	DMJM

JUDGE MILLER: Thank you, Mr. Adams.

All right. The panel may resume their places, please.

Ms. Finamore, you may resume.

BY MS. FINAMORE:

Q Mr. Clare, the Applicants have decided not to include a double ended rupture of the primary piping as design basis accident, despite the fact that it is included in the design basis for light water reactors.

You give several reasons in your testimony to explain or attempt to explain why such exclusion is a reasonable one.

The first reason that you give is that the inherent characteristics of the CRBRP PHTS coolant served to preclude a pipe leak that's greater than the design basis leak you have selected for the Clinch River Breeder Reactor and under that general category, you state that:

> "Since sodium is a coolant with high boiling temperature, it thus allows operation near atmospheric pressure and that reduces the mechanism that could cause a small piping flaw to grow to become a crack and also would prevent a small crack from developing into a major leak."

Now, isn't it ture, Mr. Clare, that the coolant in the boiling water reactor is also near atmospheric pressure?

BY WITNESS CLARE:

A. During plant operation, I believe the pressure of the reactor coolant in a boiling water reactor is substantially higher than that -- substantially higher than atmospheric.

Q. How much higher than atmospheric?

BY WITNESS CLARE:

A. I believe it's onthe order of 1000 PSI or greater.

Q. Do you agree with that, Mr. Strawbridge?

BY WITNESS STRAWBRIDGE:

A. Yes, I do.

Q. Can you tell me what the pressure of the coolant is during operation for a PWR, Mr. Clare?

BY WITNESS CLARE:

A. On the order of 2000 PSI.

Q. Now, the two pressures that you've just given me are quite dissimilar; are they not?

In fact, different by a factor of 2?

BY WITNESS CLARE:

A. Well, they're dissimilar but they are both substantially greater than atmospheric, which was our

reference point.

Q. Isn't it true that they are dissimilar by nearly a factor of 2?

JUDGE MILLER: I think you're being argumentative now.

BY MS. FINAMORE:

Q. Are there any regulatory guides or other documents upon which you rely for your assertion that since sodium is near atmospheric pressure that the necessity for protecting against a double ended pipe rupture are negligible?

JUDGE MILLER: I'm sorry. I don't follow that. You changed verbs on me or something.

Try it again.

BY MS. FINAMORE:

Q. I'd like to know if you have any documents, regulatory guides or other support for the proposition that since sodium operates at near atmospheric pressure, one need not consider a major pipe rupture as a design basis accident.

BY WITNESS CLARE:

A. We have included in Section 3.3 and specifically on -- starting on Page 40, a discussion of a number of characteristics of the plant on which we base our judgment that a double ended rupture of the primary coolant piping

17-14

need not be included as a design basis. So, we haven't reached a conclusion that it need not be included in the design basis solely because we have sodium coolant.

Q. So that's not enough?

BY WITNESS CLARE:

A. That's correct.

As I suggested, our argument on Pages 40, 41 et cetera, of the testimony does not rely solely on the sodium coolant properties.

JUDGE LINENBURGER: While we're in this area of discussion, can we document approximately what is the operating pressure range of the sodium in the primary group of the CRBR?

WITNESS CLARE: Certainly.

The pressure is strictly atmospheric from the standpoint of the -- any -- the vapor pressure of the coolant. In fact, there is a cover gas space within the primary coolant system which is held at atmospheric. Therefore, as you go around the primary coolant system, the only pressures you see are a combination of the static head of sodium, which is not terribly large. You're talking about a maximum of 40 to 50 feet of static head there, combined with the head of the pump.

The pump head at full flow is about 160 PSI. So that would be the maximum pressure, the minimum being

7-15

approximately atmospheric.

JUDGE LINENBURGER: So, are you saying that in some portions of the loop the facility may be at ten times atmospheric pressure, approximately?

WITNESS CLARE: Yes.

JUDGE LINENBURGER: Thank you.

BY MS. FINAMORE:

Q. Mr. Clare, do you consider the temperature of the primary cooling piping or of any cooling piping to be a factor that must be considered in determining what design basis for leak of that piping should be?

BY WITNESS CLARE:

A. We've identified one of the considerations as being the stainless steel properties and the properties of stainless steel do vary, depending on temperature and we have specifically considered the operating temperature of our primary coolant system in reaching our conclusion that the double ended rupture need not be considered in the design basis.

Q. Do you feel that the Staff is correct in not immediately coming to the same conclusions regarding the cold piping -- cold leg piping and the hot leg piping because of the difference in temperature?

I'm referring now to Page 2-9 of the SSR in which Staff preliminarily concludes that the double ended

17-16

rupture of the CRBRP primary cold leg piping need not be considered a design basis in that but because of it's higher operating temperatures, has not yet reached the same conclusions concerning the hot leg piping, but is still studying the situation.

BY WITNESS CLARE:

A. What was the question?

Q. Do you agree that these cold leg piping and hot leg piping should be considered differently because of the differences in temperature?

BY WITNESS CLARE:

A. I believe it's prudent, from an engineering standpoint, to consider the differences. We have done so in WARD-D-185, the document we've referred to on the next to the last paragaph on Page 42, we've addressed both conditions.

Q. The second factor which you've just mentioned for your conclusions regarding the double ended rupture of a pipe in the CRBR, is that stainless steel is chosen as the PHTS piping material.

Can you tell me whether stainless steel has been used as a piping material for any other reactor than the CRBR?

BY WITNESS CLARE:

A. Yes. It was used in the Fast Flux Test

17-17

Facility.

Q. Can you tell me whether it was used in light water reactors?

BY WITNESS CLARE:

A. I believe it's been used in some light water reactors. Exactly which -- under what situations, I don't know.

Q. Mr. Brown, can you tell me whether stainless steel has been used as piping in any light water reactors?

BY WITNESS BROWN:

A. I don't know.

Q. Mr. Strawbridge, can you tell me?

BY WITNESS S[illegible]RIDGE:

A. I don't know.

Q. Mr. Deitrich?

BY WITNESS DEITRICH:

A. I believe it has been used in some light water reactors but I can't be more specific than that.

Q. Mr. O'Block?

BY WITNESS O'BLOCK:

A. I don't know.

Q. Do you know, Mr. Deitrich, whether those reactors that you recall using stainless steel piping excluded a double ended pipe rupture and a DBA?

17-18

BY WITNESS DEITRICH:

A. I don't know

Q. They were light water reactors; weren't they?

BY WITNESS DEITRICH:

A. Yes.

Q. Mr. Clare, the third feature that you refer to as supporting your conclusion that you need not consider a double ended pipe break as a DBA in the Clinch River Reactor, is that -- the outside of the pipe will operate in a nitrogen inerted cell atmosphere with a low oxygen content.

Isn't it true, Mr. Clare, that there are a number of boiling water reactors now operating in nitrogen inerted cell atmospheres with low oxygen content?

BY WITNESS CLARE:

A. I don't know.

Q. Do you know, Mr. Brown?

BY WITNESS BROWN:

A. Yes, there are some.

Q. Can you tell me which ones they are?

BY WITNESS BROWN:

A. No, I don't know them by name.

Q. Aren't they built by General Electric?

BY WITNESS BROWN:

A. Yes.

17-19

Q. Do you know, Mr. Brown, whether or not the double ended pipe break is a design basis accident for those reactors that you just mentioned operate in a nitrogen inerted cell atmosphere with low oxygen content?

BY WITNESS BROWN:

A. It is a design basis accident in those reactors, yes.

Q. Mr. Clare, the next factor that you assert as support for your position that you need not consider a double ended pipe rupture in Clinch River, is the fact that there will be a material surveillance program.

If any unexpected change in the plant -- in the piping were to occur during the plant life, isn't it true that light water reactors also have a material surveillance program to detect any unexpected changes in piping properties during the plant life?

BY WITNESS CLARE:

A. I don't know.

Q. Do you know, Mr. Brown?

BY WITNESS BROWN:

A. No, I do not know.

Q. Do you know, Mr. Strawbridge? Whether or not light water reactors have material surveillance programs to detect changes in the piping that might occur during plant life?

BY WITNESS STRAWBRIDGE:

A. I know that there are some requirements in accordance with the general design criteria that address that area. I'm not familiar with the details of how those requirements are implemented.

Q. Do you know, Mr. Deitrich?

BY WITNESS DEITRICH:

A. No, I do not.

Q. Mr. O'Block?

BY WITNESS O'BLOCK:

A. I know there are requirements but I'm not familiar with the details.

JUDGE LINENBURGER: Gentlemen, bringing you back for a moment --excuse me, Ms. Finamore -- to the discussion of stainless steel in inerted atmospheres, nitrogen atmosphere, are any of you in a position to say whether the temperature of duty of that stainless is significant with respect to whether it's in an inerted atmosphere or in a nitrogen atmosphere versus in an air atmosphere, is temperature an important consideration there?

Do any of you happen to know?

Don't speculate. I want firm knowledge, if you have it.

WITNESS CLARE: My knowledge is that the -- that contain the liquid metal piping, the piping that

17-21

contains liquid metal, the stainless steel piping in the inerted nitrogen cells is a consideration that we have not implemented differently on this plant for different temperature systems.

I know that on this particular plant we have implemented that concept without regard to temperature. To that end, the temperatures of our systems do range considerably from some that operate at a few hundred degrees up to those that operate near 1000 degrees. So, my conclusion from that is that we don't believe that that is a significant factor.

JUDGE LINENBURGER: All right,sir. Thank you.

WITNESS BROWN:I have one point I'd like to make. You put two pieces of our testimony together there that included stainless steel piping in inert atmospheres. The PWR is carbon steel piping in an inerted atmosphere. It's not stainless steel.

JUDGE LINENBURGER: Thank you.

My apologies for that.

BY MS. FINAMORE:

Q Mr. Clare, the next factor upon which you relied for your assertion that double ended rupture of a piping need not be considered as a design basis accident for the Clinch River.

Is that the piping will retain its integrity

7-22

even if one or two snubbers were to fail during plant operational loadings.

Can you describe what snubbers are for us, please?

BY WITNESS CLARE:

A. A snubber, as used here, is a device which is used to help restrain the motion of the piping under vibrational loadings to some acceptable level.

Q. Can you tell me whether light water reactors also use snubbers?

BY WITNESS CLARE:

A. I believe light water reactors use snubbers.

18-1 he

Q And are light water reactors designed so that the piping will retain its integrity even if one or two snubbers were to fail during plant operational loadings, Mr. Clare?

BY WITNESS CLARE:

A I don't know.

Q Do you know, Mr. Brown?

BY WITNESS BROWN:

A No, I don't.

Q Mr. Strawbridge?

BY WITNESS STRAWBRIDGE:

A No, I don't.

Q Mr. Deitrich?

BY WITNESS DEITRICH:

A I'm afraid not.

Q Mr. O'Block?

BY WITNESS O'BLOCK:

A I don't.

Q Do you base that assumption, Mr. Clare, as an important factor without ever knowing whether or not it also applied to light water reactors?

BY WITNESS CLARE:

A What assumption are you referring to?

Q The assumption that the fact that the piping will retain its integrity even if one or two snubbers fail

18-2

is enough to, or is important in a decision to exclude a double ended pipe break as a DBA.

BY WITNESS CLARE:

A. Our testimony identifies that as a characteristic of this plant that helps lead us to a conclusion that the double ended rupture is not within the design basis accident spectrum, and as we've identified, we do not know whether or not that is -- whether or not a light water reactor plant can withstand the failure of snubbers.

Q. So am I correct that this is one of the factors that you're relying upon to come to a conclusion that's different than the one reached for an LWR without knowing whether this condition itself is different than the one for a LWR?

MR. EDGAR: I object to the form of the question. It's got three --

JUDGE MILLER: Sustained.

BY MS. FINAMORE:

Q. Am I correct that you rely upon the fact that the piping will retain its integrity even if one or two snubbers were to fail, in your conclusion that double ended pipe break need not be considered a design basis accident?

BY WITNESS CLARE:

A. The fact that the plant will be able to withstand the failure of snubbers during operation, including

18-3

the safe shutdown earthquake, is cited here in our testimony. To that extent, the answer to your question is yes, we rely upon it.

Q. Another factor that you rely upon for your assertion that double ended pipe ruptures need not be considered design basis accidents is that there will be a redundant, diverse and sensitive leak detection system.

Can you tell me, Mr. Clare, whether light water reactors use such a leak detection system for their piping?

BY WITNESS CLARE:

A. Light water reactor plants do include a leak detection system, the details of which I'm not familiar. I am certain that they are not -- your words were such as this one. I'm sure they are not similar to the one we use.

Q. Why are you sure?

BY WITNESS CLARE:

A. I'm sure because of my understanding of Regulatory Guide 1.45, which covers the requirements for light water reactor leakage detection systems, against which I've compared our system.

Q. Am I correct, Mr. Clare, that this leak detection system alerts the operator to take action and does not operate to prevent a leak from developing into a larger leak itself?

/ / /

18-4

BY WITNESS CLARE:

A. The leakage detection system does alert the operator should there be some very small leakage from the primary coolant piping and thereby does serve to prevent a larger leak.

Q. But it requires operator action, it does not operate automatically, is that correct?

BY WITNESS CLARE:

A. The leakage detection system operates automatically.

Q. It operates automatically to do what?

BY WITNESS CLARE:

A. To identify conditions of leakage to the operator.

Q. But it does not serve to prevent a leak from enlarging without operator action, does it?

BY WITNESS CLARE:

A. The purpose of the leakage detection system is to detect leakage. It does so automatically and will notify the operator when such leakage occurs.

Q. Mr. Clare, do you believe it's possible for the operator to ignore the signals from this leak detection system and continue to operate the reactor?

BY WITNESS CLARE:

A. It's theoretically possible that the operator

18-5

would ignore the signal.

Q Mr. Clare, are you aware that in the Three Mile Island Unit 2 accident the operator ignored the system, the signal that the piping valve was open, and because the operator assumed that it was simply a leak?

MR. EDGAR: I object to that question. That's two questions.

JUDGE MILLER: Well, which do you want to object to?

MR. EDGAR: The form of the question.

JUDGE MILLER: Okay. Sustained.

BY MS. FINAMORE:

Q Mr. Clare, are you aware that in the Three Mile Island Unit 2 accident the operator ignored the signal that the valve was open?

BY WITNESS CLARE:

A No, I'm not familiar with the TMI incident to that detail.

Q Are you familiar with that incident, Mr. Brown?

BY WITNESS BROWN:

A I'm familiar at a somewhat superficial level, yes, but not with the details.

Q Mr. Brown, are you aware that at the Three Mile Island Unit 2 accident the operator ignored the signal that the valve was open?

18-6

BY WITNESS BROWN:

A. No.

Q. Are you, Mr. O'Block?

BY WITNESS O'BLOCK:

A. I'm not that familiar with the specific details.

Q. Are you, Mr. Strawbridge?

BY WITNESS STRAWBRIDGE:

A. I think there was a valve that was open that was involved with the accident. In terms of the operator ignoring the signal, I don't know if that's a correct characterization of the occurrence.

Q. Are you aware that the operator failed to respond to the signal that the valve was open at the TMI-2 accident?

BY WITNESS STRAWBRIDGE:

A. I don't know the details to be able to answer that.

Q. Isn't it true that the Applicants analyzed the TMI-2 accident in determining what the design basis accident for Clinch River should be, Mr. Strawbridge?

BY WITNESS STRAWBRIDGE:

A. No, not that I'm aware of.

Q. Mr. Clare, did you have something to say?

JUDGE MILLER: Well, what are you doing? Are you volunteering something? Are you correcting something?

18-7

For what purpose do you rise?

WITNESS CLARE: I was responding to counsel.

JUDGE MILLER: What did she ask you?

WITNESS CLARE: If I had something to add.

JUDGE MILLER: Well, all right. Do you have something that's pertinent to what's going on here in your testimony? If so, you may tell us.

WITNESS CLARE: We have considered the accident that occurred at the Three Mile Island nuclear plant, and we have considered the implications of that for CRBRP. Our knowledge of that includes knowledge that the operators may not have had appropriate information to be able to react properly to the incident and may not have in fact reacted properly, and we have specifically reviewed our plant design in attempting to fix any shortcomings that we might have previously had in that regard.

Our testimony within the last few minutes regarding the exact details of how the Three Mile Island accident progressed and whether there was a specific signal to the operator on a specific valve was not important in making those reviews of our plant, but to be sure that the interface between the plant and the operator was adequate.

BY MS. FINAMORE:

Q You just mentioned now that you analyzed the TMI accident in order to fix it? Were those your words,

18-8

Mr. Clare?

BY WITNESS CLARE:

A. I don't recall my exact words. We attempted to reach an understanding of the difficulties that were brought out, emphasized by the incident at the Three Mile Island plant, and take those lessons and apply them to the CRBRP design and assure that our design reflected the understanding we gained from that plant, from the incident at Three Mile Island.

Q. And what did you learn from the Three Mile Island accident regarding human error?

BY WITNESS CLARE:

A. We learned that it was beneficial to pay particular engineering attention to that aspect of the plant design and assure that there was an adequate set of information available to the operator and that what he should do under various circumstances was clear to him.

Q. Mr. Clare, you also referred to, quote, highest quality engineering standards that are specified for the design analysis, materials, fabrication, examination and testing of the Clinch River plant as another reason why you need not consider a double ended pipe break as a design basis accident.

Isn't it true that these same highest quality engineering standards are used for light water reactors?

18-9

BY WITNESS CLARE:

A. To the best of my knowledge, they are not applied to light water reactors.

Q. You're saying that light water reactors do not use the highest quality engineering standards for design analysis, materials, fabrication, examination and testing?

BY WITNESS CLARE:

A. I'm saying that the standards that they apply to their piping are different than the standards we apply to our piping.

Q. How do you know that, Mr. Clare?

BY WITNESS CLARE:

A. My understanding and my response is based on the further identification made at the bottom of Page 41 and continuing on Page 42 where it specifically notes that our specifications for the quality of the piping material and the welds are more restrictive than the ASME Code.

To the best of my knowledge, for light water reactors, those more restrictive specifications are not used.

Q. You mention a comprehensive quality assurance program as insuring that these particular standards are met.

Doesn't the light water reactor plants also have a comprehensive quality assurance program?

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18-10

BY WITNESS CLARE:

A. The light water reactors do have quality assurance programs.

Q. Are they comprehensive?

BY WITNESS CLARE:

A. To the best of my knowledge, they are comprehensive.

Q. You mention a comprehensive in-service inspection program as providing assurance that there is little potential for initiating flaws during a plant life.

Isn't it true that light water reactors have comprehensive in-service inspection programs?

BY WITNESS CLARE:

A. To the best of my knowledge, light water reactors do have in-service inspection programs.

Q. Are they comprehensive?

BY WITNESS CLARE:

A. To the best of my knowledge, they are.

Q. Are there any differences between the quality assurance programs of the light water reactors and of the Clinch River breeder reactor plant that you know of?

BY WITNESS CLARE:

A. I'm not familiar with the details of the light water reactor in-service inspection program. I don't know.

Q. Are you, Mr. Strawbridge?

18-11

BY WITNESS STRAWBRIDGE:

A. Not with the details of it, although I am aware of the federal design criteria which need to be met and are met by the light water reactors in that area. I think the difference comes about -- Mr. Clare was referring to in terms of what the specifications allow, which he read from the bottom of Page 41 and top of Page 42, indicating that we have more restrictive specifications than the ASME Code. The quality assurance program would be comprehensive and adequate to insure that the particular specification is met, whether it's a light water reactor or whether it's the Clinch River plant. The Clinch River plant has the more restrictive specifications.

Q. But the means to insure that those specifications are met is no different than that used in a light water plant, is that correct?

BY WITNESS STRAWBRIDGE:

A. I don't know if the details are different. They both have to meet strict specifications.

Q. Mr. Clare, these specifications for allowable indications of flaws that you assert are more restrictive than the ASME Code, do you have any idea whether the Staff has required you, the Applicants, to apply those specifications to the Clinch River plant?

/ / /

18-12

BY WITNESS CLARE:

A. I'm unaware of any requirement specified in any Staff guidance or regulations that would require those specifications.

Q. Mr. Clare, do you have any evidence that the Staff will review the Clinch River breeder reactor's compliance with those specifications for allowable indications of flaws if they are indeed more restrictive than the ASME Code's?

BY WITNESS CLARE:

A. I'm aware that the Nuclear Regulatory Commission has various audit functions by which they may audit our compliance with any number of our requirements and specifications, and to the extent that those programs may cover our compliance with this specification, I am aware that they may do that.

Q. But you have no indication that they will in fact review these particular specifications, is that correct?

BY WITNESS CLARE:

A. Your earlier question was with regard to our compliance with the specifications. Now you've asked about the specifications themselves.

Q. No, I'm referring to compliance with the specifications.

18-13

BY WITNESS CLARE:

A. Then what was the question?

MR. EDGAR: I'd like the question rephrased. Now I don't understand it.

JUDGE MILLER: Rephrase it.

BY MS. FINAMORE:

Q. You stated before that the Staff had an audit program whereby it may audit compliance with some of your specifications, but my question is do you have any evidence at this time that your specifications -- compliance with your specifications for allowable indication of pipe flaws will in fact be audited by the Staff under their audit program?

BY WITNESS CLARE:

A. Only to the extent that I just mentioned in answer to your previous question.

Q. Am I correct, Mr. Clare, that Applicants have no evidence that the Staff will look beyond what is required for light water reactors in determining compliance with or in auditing the specifications for allowable indication of pipe flaws?

MR. EDGAR: I object to the question.

JUDGE MILLER: Sustained.

MS. FINAMORE: Can you explain the problem with that question?

18-14

JUDGE MILLER: Problem A, it's not very intelligible, and B, what does he know what the Staff is going to do; ask them.

JUDGE LINENBERGER: And C, we are pointing toward the implementation of the construction phase of this project, which gets into a very different phase of this hearing and is outside the scope of this phase of this hearing.

MS. FINAMORE: I'm just referring to the reference in Applicants' testimony to a quality assurance program as providing part of the basis for their conclusions at this phase of the proceeding.

JUDGE MILLER: Well, they told you what they think they're going to do. Now, if you want to go into what the Staff is going to do, assuming that it's a -- as Judge Linenberger has said, would be on a quality assurance, QA/QC program and implementation thereof at the construction or operation, but not here.

MS. FINAMORE: I agree.

BY MS. FINAMORE:

Q Mr. Clare, do you state that a detailed fracture mechanic's evaluation has shown that even in the large initial -- even if a large initial flaw were to exist, the toughness of the piping prevents significant growth of the flaw? Isn't that also true of light water reactors?

18-15

BY WITNESS CLARE:

A. I'm not familiar with the fracture mechanis under the conditions of the light water reactor piping system.

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Q. Can you tell me what evaluation that you're referring to in this sentence?

BY WITNESS CLARE:

A. The evaluation is presented in WARD-D-0185, as cited in the second to last paragraph on Page 42 of the testimony.

Q. Can you give me the pages of that document that you're referring to as a basis for that conclusion?

BY WITNESS CLARE:

A. If I could see the document.

MR. EDGAR: For the record, that document is marked for identification as Applicants' Exhibit 24.

JUDGE MILLER: 24. Very well.

WITNESS CLARE: The evaluation that we're referring to is discussed in Section 4.2 of that document, which begins on Page 4.2-1.

I would add to that that Section 4.3 beginning on Page 4.3-1 discusses the experimental evidence that is part of that evaluation.

MS. FINAMORE: Chairman Miller?

JUDGE MILLER: Yes.

MS. FINAMORE: We would like to move to strike that second paragraph of Page 42 at this time. I have a number of other paragraphs that we'd like to strike.

JUDGE MILLER: Well, pardon me; I thought you

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told us you were going to make a motion to strike various --

MS. FINAMORE: Yes, we have --

JUDGE MILLER: -- so there's no point in taking up piecemeal if you have in mind --

MS. FINAMORE: We will come tomorrow morning with a complete list.

JUDGE MILLER: All right. Fine.

BY MS. FINAMORE:

Q Mr. Clare, the numbered paragraph 3 of Page 42 of your testimony states that a comprehensive technology program has shown that even if a crack did grow significantly it would penetrate the pipe and be detected as a small leak prior to developing potential for a large pipe break.

Can you describe that comprehensive technology program for me and tell me where it's referenced?

BY WITNESS CLARE:

A It's discussed in the same document that we were just looking at, WARD-D-0185, and I believe it's in the same two sections that I just identified, 4.2 and 4.3.

Q Mr. Clare, numbered paragraph 4 on Page 42 of your testimony, Applicants state that analysis and testing have demonstrated that even if a small leak is not detected and corrective action taken, toughness and ductility of the stainless steel pipe, along with the low coolant operating pressure, would limit the maximum crack length, and that

19-3

this limited crack length would be very short compared with that crack which could cause a double ended pipe rupture.

Can you describe to me where that analysis and testing is referenced?

BY WITNESS CLARE:

A. Yes. Again, the same document, WARD-D-0185, the information that supports Paragraph 4 is contained in Sections 5.5 and Section 6.

Q. Mr. Clare, you state on Page 42 of the testimony that the overall conclusions that the likelihood of double ended pipe rupture is low is strongly supported by worldwide operating experience with sodium systems, and that there have been no occurrences of double ended sodium pipe rupture.

Can you tell me, what is your understanding of the statistical significance of the fact that there have been no occurrences of double ended sodium pipe rupture in other sodium systems?

BY WITNESS CLARE:

A. I don't understand the question.

Q. Do you know how many other sodium systems exist worldwide?

BY WITNESS CLARE:

A. No.

Q. Do you have a rough idea?

19-4

BY WITNESS CLARE:

A. I know it's a fairly large number. I would suppose on the order of a hundred systems or more.

Q. Are you talking about nuclear systems using sodium only?

BY WITNESS CLARE:

A. I wasn't making a specific distinction. The reference here is to sodium systems.

Q. Well, what other kinds of systems are you referring to other than nuclear systems?

BY WITNESS CLARE:

A. There are a large number of sodium systems, for example, systems that produce sodium, systems that are used for testing equipment, which may or may not be used in nuclear systems.

Q. What is your evidence that sodium in those non-nuclear systems have not leaked in a manner that's greater than the design basis leak for the Clinch River plant?

BY WITNESS CLARE:

A. I'm not sure I understand the question.

Q. Do you know whether any of these non-nuclear sodium systems have experienced a pipe leak?

BY WITNESS CLARE:

A. I believe there have been leaks in non-nuclear sodium piping systems.

19-5

Q. Do you know whether there has been leaks in sodium piping for other nuclear systems?

BY WITNESS CLARE:

A. I believe there have been leaks in nuclear sodium piping systems.

Q. Isn't it true that the French Phoenix reactor experienced a sodium leak recently?

BY WITNESS CLARE:

A. To the best of my knowledge, there have been two sodium leakage incidents in the French Phoenix reactor plant, neither of which was from piping.

Q. Can you explain what these sodium leaks were from?

BY WITNESS CLARE:

A. They were small leakages. One was in a tube of a steam generator. The other was in a particular forging of an intermediate heat exchanger, as I best recall.

Q. Were these leaks larger than the design basis leak for the Clinch River plant?

BY WITNESS CLARE:

A. No. They were very small.

Q. Even for the steam generator leak?

BY WITNESS CLARE:

A. The leaks were small.

Q. Were they smaller than the leak -- design basis

19-6

leak for steam generators at the Clinch River plant?

MR. EDGAR: Objection on relevance. The testimony deals with a pipe leak, the whole line of questioning, and now we're getting into steam generator leaks.

MS. FINAMORE: The reason I'm asking this question is because he's talking about worldwide operating experience with sodium systems and apparently is referring to not only non-nuclear systems but non-piping sodium systems and if he's referring --

JUDGE MILLER: No, you asked him, I believe. His testimony, as I understood, was related to sodium system, and you asked him about the Phoenix. He indicated that at least one that he had heard about, at any rate, was not due to the sodium system.

MS. FINAMORE: He said it was the sodium system and not the sodium piping.

JUDGE MILLER: He said it was in a steam generator.

WITNESS CLARE: Mr. Chairman, there is sodium on one side of that steam generator.

JUDGE MILLER: All right. Where do we stand.

MR. EDGAR: The testimony deals with piping, and the two sentences on which she is attempting to question have to do with piping. Just because she asks a question

19-7

which is off the point and the answer is that doesn't have to do with piping, it has to do with steam generators, doesn't make that a relevant line of inquiry.

MS. FINAMORE: That's not how the testimony is stated. It talks about worldwide experience with sodium systems.

JUDGE MILLER: That's correct. So long as your question is directed to that title.

BY MS. FINAMORE:

Q Then my question is, was the leak from the steam generator at the Phoenix reactor, which you just stated involved sodium, greater than the design basis leak from a steam generator for the Clinch River breeder reactor plant?

BY WITNESS CLARE:

A To the best of my knowledge, it was not.

Q Do you know for a fact whether that is true?

BY WITNESS CLARE:

A Well, as the preceding discussion has indicated, it's somewhat difficult to apply the concepts of a steam generator to piping, but to the best of my knowledge, were one to compare the size of the leak in the steam generator to the size of a leak from our primary piping, specifically our design basis leak, one would find the leak in the steam generator to be much smaller.

19-8

Q. Mr. Clare, you stated earlier that your statement regarding worldwide operating experience with sodium systems refers to both nuclear and non-nuclear systems.

I would like to know how many nuclear systems there are in the world that operate with sodium, roughly.

BY WITNESS CLARE:

A. I don't think I can answer that question. I don't know. There have been --

Q. Do you know of any others?

BY WITNESS CLARE:

A. Oh, there have certainly been others. I can think of on the order of 20 nuclear sodium systems, but I wouldn't necessarily say that was all there have been.

Q. Mr. Brown, do you know how many, roughly, reactor systems there are in existence, or previously in existence that use sodium?

BY WITNESS BROWN:

A. My recollection is about the same as Mr. Clare's, and I can't say it any more precisely than that.

Q. Mr. Strawbridge, do you have any idea?

BY WITNESS STRAWBRIDGE:

A. It would certainly exceed a dozen, but to be more definite than that, I don't think I could be.

19-9

Q. Do you have any idea how many reactor years of experience there have been with reactors using sodium?

BY WITNESS STRAWBRIDGE:

A. No, I don't know the answer to that.

Q. Do you, Mr. Clare?

BY WITNESS CLARE:

A. No.

Q. Can you give me a rough idea?

BY WITNESS CLARE:

A. No, I wouldn't care to guess, and that's what it would have to be.

Q. Mr. Brown, can you give me a rough idea?

BY WITNESS BROWN:

A. I cannot, no.

Q. Can you, Mr. Strawbridge?

BY WITNESS STRAWBRIDGE:

A. No. I answered previously.

Q. Mr. Clare, do you have any statistical basis for your statement that the overall conclusion that the likelihood of double ended pipe rupture is low is strongly supported by worldwide operating experience with sodium systems?

BY WITNESS CLARE:

A. The statistical basis is reflected in the sentence just after the one you've read, which says there

19-10

have been no occurrences, zero, of double ended sodium pipe ruptures. That's based on all the statistics on piping leaks that we're aware of.

Q. Are you aware of any double ended pipe ruptures that have occurred in light water reactors, Mr. Clare?

BY WITNESS CLARE:

A. No.

Q. One more question on the double ended pipe break; you conclude on Page 43 that the inherent coolant characteristics, piping properties, operating conditions and leak detection systems at CRBRP assure that the occurrence of PHTS leaks greater than the design basis leak are highly unlikely.

Can you explain to me when you say assure, what do you mean by that?

BY WITNESS CLARE:

A. I mean that the consideration of those systems in their functioning leads to a conclusion that the occurrence of PHTS leaks greater than the design basis leak are very unlikely.

Q. Do you think that indicate would be a good word to substitute for assure in this situation?

BY WITNESS CLARE:

A. No.

Q. Mr. Clare, I've just gone through a number of

19-11

factors that you've mentioned. Is there any one factor that you believe standing alone is sufficient to allow you to make that conclusion on the top of Page 43?

BY WITNESS CLARE:

A. We've written the testimony to include those considerations that we think are important, and I would leave the testimony as it is as reflecting the important considerations.

Q. Okay. I don't believe you answered my question yes or no, though.

BY WITNESS CLARE:

A. Could you repeat the question?

Q. Are any of the factors that you mention in your testimony and that I've just discussed with you sufficient in itself to allow you to make the conclusion at the top of Page 43 of your testimony?

MR. EDGAR: I'll object to the question. I don't understand it.

BY MS. FINAMORE:

Q. For example -- I'll give you an example. Do you claim --

MR. EDGAR: Rephrase it. I mean, that question makes -- it's utterly impossible for a witness to answer; are there any factors which by itself should carry the day in terms of his conclusions. You've got a plural object of

19-12

the sentence and then she's trying to reduce it to a singular.

MS. FINAMORE: I can go through each one individually if you like, but I thought if you knew of one that would be sufficient in itself you could point it out to me.

JUDGE MILLER: Well, what the Board wonders is really the materiality, the signficance. There are what, four factors?

MS. FINAMORE: No, I went through at least --

JUDGE MILLER: Well, that sentence --

MS. FINAMORE: -- eight or nine.

JUDGE MILLER: -- inherent coolant characteristics, piping properties, operating conditions and leak detection systems; that's four matters, assure that the occurrence of the leak greater than the design basis leak are highly unlikely.

Now, if you're going to look at the sentence, it's got four factors in it. You're trying to say is any one sufficient. I don't know what difference it makes because it's obvious that they've said the combination at least of these four is enough to justify the conclusion that they have put there.

MS. FINAMORE: Well, Chairman Miller, if we can prove that three or four -- three out of those four factors

19-12

should not be enough to carry the day, I would like to know whether they feel that the remaining factor is sufficient in itself to --

JUDGE MILLER: Well, do you represent to the Board you're going to put on evidence to show that three out of the four are inaccurate, and if so, which three are you going to knock out? If you can, just answer the question. You just --

MS. FINAMORE: Mr. Chairman, I believe that we have already presented some cross-examination that might lead one to conclude that some of these factors should be given less weight than Applicants assert. For that reason I think that we should be entitled to ask whether or not the Applicants are relying upon any one of those factors, should we be able to --

JUDGE MILLER: Well, that's a couple of shoulds and a highly speculative anticipatory what not.

MS. FINAMORE: I would like to know, for example, that the fact that stainless steel is used in the piping is enough, despite the fact that sodium coolant has a high boiling temperature and thus allowing operation near atmospheric pressure.

I mean, Applicants have cited a number of factors which are no different than light water reactors, yet in the light water reactor a double ended pipe rupture

19-13

is a design basis accident and --

JUDGE MILLER: Well, what difference does that make? We're not looking at a light water reactor. We're not trying to go into every design feature of every light water reactor in every part of the country. We're trying to look at what is the issue here.

MS. FINAMORE: We're testing the adequacy of Applicants' conclusion.

JUDGE MILLER: Well, how is that tested? Suppose that you get whatever you want, how does that test -- how does that testimony related here to the liquid metal fast breeder reactor?

MS. FINAMORE: Look, this is a first-of-a-kind reactor, Chairman Miller. We have no --

JUDGE MILLER: Well, so was a light water reactor the first time. So was Adam.

MS. FINAMORE: That's right.

JUDGE MILLER: That doesn't make it any different.

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JUDGE MILLER: All right. What is it that you're trying to find? Do you want the weighting of these four factors? Is that what you're after?

MS. FINAMORE: Not necessarily. My question --

JUDGE MILLER: All right. Then the objection is sustained. Ask your next question.

MS. FINAMORE: Okay. Then I am asking for the weighting of the four factors.

JUDGE MILLER: The objection is again sustained. Ask your next question.

MS. FINAMORE: I'd like to know whether or not the fact that stainless steel is chosen as the PHTS piping material would be enough in itself to allow the Applicants to conclude that a double-ended pipe break should not be considered a design basis accident for the Clinch River Plant.

JUDGE MILLER: Can you answer that, standing alone?

WITNESS CLARE: I can't answer that. You've said for the Clinch River. I know a lot more about the Clinch River than just the fact that its piping is made out of stainless steel.

BY MS. FINAMORE:

Q This is a hypothetical question. If that --

JUDGE MILLER: Now wait a minute. We've painfully come on with you a long way on some of the things that you

said might be. Now you're going to switch over to a hypothetical, a hypothetical stainless steel double-ended so-and-so.

You've gone way beyond the bounds. I mean, why are you taking the time? This is your time, you know.

MS. FINAMORE: I think it's very important, Chairman Miller; and that's why I'm pursuing this line of questioning.

JUDGE MILLER: All right. What's the importance of it? Why is it so overwhelmingly significant to your case?

MS. FINAMORE: The Applicants have stated that the fact that stainless steel piping is used in the Clinch River breeder reactor is a factor that should be considered in their decision as to the design basis accident.

They have also answered that stainless steel piping is used in other reactors. Our conclusions are going to be that because the piping is not different from that in many light water reactors, the conclusions regarding a potential major accident should not be different between a light water reactor and the Clinch River breeder reactor. It's that simple.

We have the same argument about many, if not all, of the other factors upon which the Applicants are relying for their decision. We think that this Board in making a decision as to what -- as to whether Applicants are correct in their decision as to what a major design basis accident should be for

20-3

the plant should consider things such as whether the facts that they rely upon are strong or not, and whether or not they are significant or not.

Our question is -- our point that we intend to make, that if there is no difference between the factor they've chosen and how it's treated in a light water reactor and this water reactor, that that is not a factor of significance that should cause the Applicants to make a complete diversion from how design basis accidents have been treated in the past.

Another thing is: Both the Staff and Applicants have stated that one goal of this Clinch River project is to prove comparability between light water reactors and breeder reactors.

It's the factors --

JUDGE MILLER: I don't recall them saying that.

MS. FINAMORE: That's the Staff testimony.

JUDGE MILLER: Well, I haven't attempted to focus on the Staff's testimony, but I'm looking now at this particular panel that you're cross-examining.

MR. EDGAR: Mr. Chairman, there may have been a misuse of the term "comparability" here. I think the statement flows back to the Denise letter where they talked about comparable risk.

But these witnesses have stated what their position is, and that they're relying on a combination of things.

I have no objection to a question that asks what is the basis of the testimony. I have a strong objection to a question that asks a witness to speculate and give an invalid answer.

MS. FINAMORE: I'm asking for an explanation.

JUDGE MILLER: I believe they're permitted questions that are designed to test the bases of the witness' conclusions at Page 42. We've permitted that. I don't know where we are now.

I thought she had covered that completely, or something. She had covered that, and it has always been permitted.

MS. FINAMORE: Well, I'm just asking these questions to elicit an expert opinion from the panel as to whether in their expert judgment a particular fact is sufficient to reach a particular conclusion.

JUDGE MILLER: Well, you're zeroing in on one where they've given a number of different factors.

MS. FINAMORE: That's right and --

JUDGE MILLER: You're asking does one -- whichever one you pick -- is that in and of itself alone enough.

MS. FINAMORE: I believe that they are able, if they're expert witnesses, to provide their judgment on that particular question.

JUDGE MILLER: Well, whether they are or not, if there's a combination of factors, the testimony gives the

combination of factors, why do you assume that any one standing alone would be sufficent and what difference does it make, because they're not standing alone according to the witness' testimony?

MS. FINAMORE: Well, I'm not assuming anything. That's why I'm asking the question. And whether or not they're standing alone is -- the reason I'm asking that question, as I've stated before, is that after we have finished our proposed findings of fact, we might argue that certain -- most, if not all, of these factors should not be considered at all.

And if that's true, there might be one or two that are left standing alone. And my question now is --

JUDGE MILLER: Well, you're engaging in a lot of argument. The proposed findings of fact is in the future, and we're simply trying to conclude cross-examination of the expert testimony that's in printed form here of these witnesses.

Now if you want to ask anything that pertains to that that hasn't already been covered, you may do so.

MS. FINAMORE: Well, yes, that's why I asked that particular question.

JUDGE MILLER: Well, there's no sense going ahead and arguing, which you're doing now with the Board at some considerable length. We have given you the opportunity, insofar as you haven't covered it, to ask appropriate questions.

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BY MS. FINAMORE:

Q. Mr. Clare, do you believe in your opinion that the fact that the Clinch River breeder reactor plant is cooled by sodium which operates near atmospheric pressure is sufficient to enable you to conclude that a double-ended pipe break should be outside of the design basis for the Clinch River plant?

BY WITNESS CLARE:

A. I haven't considered that factor, in ignorance of the other factors. I haven't done an analysis of that situation, so I don't believe I can give you a valid technical opinion on that question.

I have only considered the factors in combination, as identified in the testimony.

Q. Do you believe that the fact that sodium is cooled with a high boiling temperature and thus allows operation near atmospheric pressure is the most important of the factors you've mentioned for it forming the basis of your conclusion that a double-ended pipe break should not be within the design basis for the Clinch River?

BY WITNESS CLARE:

A. I'm not certain I understand the question. But I have not ranked the considerations in order. So I can't suggest whether any one is more important than the other.

JUDGE LINENBERGER: Mr. Clare, in order to put a slightly different handle on this watermelon, are you perhaps

20-7

saying an equivalence that you don't have a feeling, based on any kind of sensitivity analysis of how any of the individual factors stack up by themselves; you've only looked at a conglomerate of them; is that a characterization -- a fair characterization of your position?

WITNESS CLARE: Yes, sir, it is.

JUDGE LINENBERGER: Thank you.

JUDGE MILLER: Are you capable of putting any weight, saying one, two, three four; is this more than that and so forth, in any sense that would fairly and objectively reflect your own opinion as an expert and that of your colleagues?

We're not trying to pressure you either way. We simply want to bring this part of the record to a conclusion in fairness to all parties.

WITNESS CLARE: No, sir, I don't think I can rank them that way.

JUDGE MILLER: I take it -- Is that true now of the testimony of the rest of the gentlemen comprising the panel?

WITNESS BROWN: Yes.

WITNESS O'BLOCK: Yes.

WITNESS STRAWBRIDGE: I agree with that.

JUDGE MILLER: If anybody thinks he can --

MR. DEITRICH: I agree --

JUDGE MILLER: Go ahead. I didn't mean to cut you

20-8

off.

WITNESS DEITRICH: I agree with that.

JUDGE MILLER: All right, proceed.

MS. FINAMORE: I have no further questions on this particular topic. I'd like to ask for a five-minute recess.

JUDGE MILLER: Okay.

(A short recess was taken.)

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JUDGE MILLER: All right. Let's take our places, please.

Where's the rest of our panel? We are missing one. Okay. Ready to go.

All right, Ms. Finamore. You may proceed, please.

BY MS. FINAMORE:

Q. I'd like to turn now to Page 35 of your testimony, which deals with the shutdown heat removal system.

Mr. Clare, you say that the shutdown heat removal system can remove heat by four independent paths. Can you explain what those four paths are, please?

BY WITNESS CLARE:

A. Yes. If you would refer to Page 36 of the testimony, there's a figure in the middle of the page identifying the reactor on the left-hand side, proceeding through a pump, intermediate heat exchanger, another loop out to the steam generator. And as you'll note, at the bottom of that figure, we've indicated there are three loops.

There are, in fact, three pumps, three intermediate heat exchangers, three steam generators, etc. Those are three out of the four paths.

Now, if one looks on Page 39 of the testimony, there's a figure at the top of the page beginning with the reactor in the center of the figure, proceeding to the left, again through pumps, the heat exchanger, more pumps, another heat

20-10

exchanger. That we've called the fourth loop. In that way we have four paths that remove heat from the reactor.

Q. Now each of those paths involves several pieces of equipment. I'd like to know for each of these independent paths is all of the equipment that's involved in that path what's called safety-grade equipment?

BY WITNESS CLARE:

A. All of the equipment that I just discussed is safety grade equipment. However, if you look on Page 36, the last three items on the right-hand side, the cooling tower, the turbine generator, condenser and the steam feedwater system there that we've indicated going to and from the turbine generator and condenser are not safety grade.

All other portions of the plant identified on that figure are safety grade.

Q. Is the auxiliary feedwater system indicated in that diagram, 3-13, safety grade?

BY WITNESS CLARE:

A. The auxiliary feedwater system is safety grade, yes.

Q. Now you just discussed the equipment on the figure on Page 36. Turning to the figure on Page 39, is all of the equipment indicated in this fourth heat removal path safety grade?

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20-11

BY WITNESS CLARE:

A. Yes, it is.

Q. Now you then say that the systems providing these paths incorporate redundant and diverse features. Are the four safety systems that you mentioned completely redundant from one another?

BY WITNESS CLARE:

A. The heat can be rejected from the reactor coolant through any one of the four paths independent of heat removal through either of the other four paths, if that was the intent of your question.

Q. Is that true under all conditions that might occur in the plant?

BY WITNESS CLARE:

A. Certain accidents that have been postulated within the design basis could disable one of the loops. And that loop would not be available for decay heat removal -- one of those paths.

Q. From what I understand you just saying, any one of these four heat removal loops can handle the heat removal from an accident at the plant. Now can any one of those four systems handle the heat removal from a plant under all conditions?

BY WITNESS CLARE:

A. As I've just said, there are design basis events

20-12

in which we postulate the failure of certain parts of the plant.

A pump, for example, or a steam generator. And under the condition that fails that path, we would not be able to remove heat through that path.

Q. The question I'm asking: Is it possible that each one of the paths is immediately available to remove heat or are some of the paths designed to remove heat only if another path does not function as intended?

BY WITNESS CLARE:

A. The three loops that we call the main heat removal paths identified on Page 36 are the systems that we would intend to remove decay heat under essentially all circumstances. Only when heat removal is not possible through those loops -- or those three paths would we choose to depend upon the fourth path identified on Page 39.

However, there is nothing -- There is no effect of the functioning of the first three that would preclude the functioning of the fourth path.

Q. Now, am I correct that you said that the T-G Condenser is not safety grade?

BY WITNESS CLARE:

A. That's correct.

Q. Now at the bottom of Page 35 you state that in the process of heat removal from any of the first three loops, you

20-13

postulate that the T-G Condenser, the heat is transferred to the cooling tower water which rejects the heat to the atmosphere. Now if that's not a safety grade item, isn't it true that you cannot take credit for the operation of that condenser during a particular accident -- during a design basis accident?

BY WITNESS CLARE:

A. We have not assumed the functioning of that equipment for the mitigation of any design basis accident.

Q. Why is that?

BY WITNESS CLARE:

A. As you've stated, it's non-safety related equipment.

Q. But you've mentioned it in your testimony here as occurring during a design basis accident.

BY WITNESS CLARE:

A. No, we haven't made that statement. We stated -- again the paragraph that you cited at the bottom of Page 35, that heat is normally transported that way.

Q. But then if you can't take credit for that happening during a design basis accident, isn't it true that you would have to rely on the fourth path, which is all safety grade?

BY WITNESS CLARE:

A. No. What we rely on then is identified immediately after the sentence that you read from that says, "Any one of the three overall heat transport system paths has the

20-14

capability to independently reject reactor decay heat."

Continuing down to the paragraph under the figure, "If the turbine generator condenser is not available, as we do assume for design basis accidents, the steam generators are automatically isolated from the turbine generator by valve actuation. Concurrently, the steam generator auxiliary heat removal system is activated to reject decay heat to the atmosphere."

Q. Okay. Can you explain to me what the analysis is upon which you relied for your statement at the top of Page 36 that any one of the three overall heat transport system paths has the capability to independently reject the reactor decay heat?

BY WITNESS CLARE:

A. Could you repeat the question?

Q. What's the basis for that conclusion? What analysis have you relied upon for that conclusion?

BY WITNESS CLARE:

A. The analysis is one of understanding the heat removal capability that is provided by the flow, the heat exchangers and the heat sink, in contrast with the heat generation rate in the reactor, and recognizing that the heat sink has been designed with adequate heat removal capability to balance the heat generation of the core.

Q. Do you have any analysis upon which you're relying,

other than the ones you've just stated, in making that conclusion?

BY WITNESS CLARE:

A. We have a number. The question is very broad. Perhaps you meant a narrower question than the one you asked.

Q. Well, your answe- was very broad, and I'm wondering if there are any particular analyses upon which you're relying for that broad conclusion?

BY WITNESS CLARE:

A. Analysis for concluding that there is adequate heat removal in any one of the three loops?

Q. Excuse me?

BY WITNESS CLARE:

A. You've asked what analysis I'm relying upon. I've answered the question, assuming that it pertains to analysis for concluding that there is adequate heat removal for any one of the three loops.

Q. Yes, that's the question.

BY WITNESS CLARE:

A. As I say, I've answered that. That was my prior answer.

Q. So you have nothing further that you rely upon other than your answer. That's all I'm asking.

BY WITNESS CLARE:

A. I believe I've answered the question.

JUDGE LINENBURGER: Mr. Clare, while there is a pause here; in removing of heat, which this room could stand some of at the moment -- can you say briefly why it is in the portion of the system shown in the figure at the top of Page 39, that NaK is specified there as the important fluid, rather than continuing with sodium?

WITNESS CLARE: Yes. NaK is very similar to sodium in its heat removal characteristics. However, it has a significantly lower melting temperature than does sodium, thereby alleviating the requirements we would have to maintain trace heating of the system in order to keep the coolant in a fluid state.

JUDGE LINENBURGER: Thank you.

BY MS.FINAMORE:

Q You refer to three feedwater pumps which are independent and diverse. Are these feedwater pumps completely divers, Mr.Clare?

BY WITNESS CLARE:

A. I assume you're reading from the third paragraph on Page 37. The next sentence identifies -- states that there are two electric motor driven pumps and one steam turbine driven pump.

The two electric motor driven pumps are, in fact, identical and not diverse from one another. Those two pumps are diverse from the steam turbine driven pump.

21-00

Q. The two electric motor driven pumps, do they share any electric controls?

BY WITNESS CLARE:

A. No, they don't.

Q. Do they share any electric instrumentation?

BY WITNESS CLARE:

A. They share instrumentation to the extent that the instrumentation on all three steam generators that we've indicated in the figure on Page 36, is combined into a signal which would activate the two electric driven pumps. However, the activation signal is redundant and it -- within itself and would result in the initiation of operation of either of those electric pumps, independent of the other, also considering the single failure within that initiation circuit.

Q. But the signal is the same for both?

BY WITNESS CLARE:

A. There is instrumentation which will provide a signal to both pumps.

Q. Do these two electric motor driven pumps share the same power source?

BY WITNESS CLARE:

A. No, they do not.

Excuse me. They do not share the same emergency Class 1-E power source. They can be operated from the same offsite source.

Q. Have you performed any analysis of the failure rates for any of the three feedwater pumps?

BY WITNESS CLARE:

A. The project has performed such analyses.

Q. And what are those failure rates?

BY WITNESS CLARE:

A. I don't know.

Q. You state on the -- in the fourth paragraph on Page 37 of your testimony, that any one of the HTS paths in conjunction with the normal feedwater system or AFWS, which is the auxiliary feedwater system, can remove the reactor decayed heat without the need for operator action.

Can you explain the basis for that statement?

BY WITNESS CLARE:

A. The basis for the statement is that upon the occurrence of some event that would shut down the reactor, the automatic control systems in the plant would, without operator action, appropriately initiate and control the normal feedwater system, the auxiliary feedwater system, as well as the overall heat transport system, such that any one of those paths, heat transport system paths, could remove the decayed heat from the reactor.

Q. Would you agree with this statemnt: Any one of the HTS paths, in conjunction with the normal feedwater system, can remove the reactor decay heat without the need

for operator action.

21-2

MR. EDGAR: I will object to that question on the ground that it's redundant and duplicative. That's right in the testimony as a matter of logic. It's an or conjunction. You know, if we're going to spend time doing stuff like that --

MS. FINAMORE: No. I believe that statement can be read one of two ways and I'm just trying to pin down which way the Applicants intended it to --

JUDGE MILLER: He may answer.

Can you answer that?

WITNESS CLARE: Yes. Provided that that feedwater system is available, the heat -- any one of the heat transport system paths, in conjunction with that system can remove the reactor decay heat without the need for operator action.

BY MS.FINAMORE:

Q. Do you have any documents that support that assertion?

BY WITNESS CLARE:

A. Yes. It would be in the PSAR.

Q. Which section, sir?

BY WITNESS CLARE:

A. It would be a combination of Chapters 5, 7 and 10.

21-3

Q. Are you referring to any particular sections within those chapters?

BY WITNESS CLARE:

A. Those chapters certainly cover a larger area than what we've just discussed. Without looking at the PSAR, I can't be more specific.

JUDGE LINENBURGER: Mr. Clare, coming to share the instrumentation, which you talked about a moment ago, can the failure of any one sensor deny operability of the two electric driven -- electric motor driven pumps, simultaneously?

WITNESS CLARE: No, sir.

JUDGE LINENBURGER: Thank you.

BY MS. FINAMORE:

Q. In the final paragraph on Page 37, you state that the principal on-site power supplies are three diesel generators.

Have you done any analyses of the failure rate of these diesel generators?

BY WITNESS CLARE:

A. We have done failure rates of the on-site diesel generator. We have done studies of the failure rates of on-site diesel generators.

Q. Have you considered the effect of the failure rates of those systems on your conclusions? Regarding

1-4

the shutdown heat removal systems?

BY WITNESS CLARE:

A. We've no quantitatively considered failure rates of the diesel generators in our conclusion that the shutdown heat removal system is adequate to prevent HCDA's from being in the design basis.

If that's the conclusion you're referring to.

Q. Page 38 of your testimony, when you refer to the use of natural circulation to remove shutdown heat from the reactor in case of an accident, can you tell me if natural circulation will work if voiding occurs?

BY WITNESS CLARE:

A. The physical principle of natural circulation of a fluid in a vessel would be enhanced by the vaporization of the fluid. Yes. It would work.

Q. Would it work to the same degree that you are assuming in your testimony on Page 38? Or will it be reduced capacity?

BY WITNESS CLARE:

A. The thermal driving head that is the motive force for natural circulation, would be enhanced in the case of voiding.

Q. Are there any conditions in which natural circulation would not be available?

21-5

BY WITNESS CLARE:

A. Natural circulation assumes both a heat source and a heat sink. If either the heat sink or the heat source were not present, natural circulation would not work.

Q. What type of accident are you referring to in which either of those two conditions would not occur?

BY WITNESS CLARE:

A. I wasn't referring to a specific accident.

I'm not sure I understand the question.

Q. Can you think of any examples in which natural circulation would not be available?

BY WITNESS CLARE:

A. Well, I've given the two general conditions. An instance when the heat generation, when the heat source is not present would be when the reactor had not operated long enough for there to be a decay heat source.

An example of the generic condition of no heat sinks being available would be when there is neither a normal feedwater nor an auxiliary feedwater available for those loops.

Q. You referred to use of the natural circulation capability along with turbine driven auxiliary feedwater pump with battery powered instrumentation and control.

Can you tell me how long you are postulating

that these batteries will be available to work?

BY WITNESS CLARE:

A. The design requirement for the batteries provided for that purpose, is that they be available for at least two hours, plus the time required to transfer supply to some alternate power supply.

Q. And how much time would that be?

BY WITNESS CLARE:

A. I don't recall the exact number.

Q. Can you give me a rough estimate?

BY WITNESS CLARE:

A. No. I'm sorry, I don't recall.

Q. Can you, Mr. O'Block -- I believe this was your section.

BY WITNESS O'BLOCK:

A. Can you repeat the question?

Q. The question is, how long are the batteries designed to operate?

BY WITNESS O'BLOCK:

A. The design form is for two hours plus some time afterwards for transfer to an alternate source available.

Q. And how long is that additional time? Can you give me any estimate?

BY WITNESS O'BLOCK:

A. No, but I -- I can't give you a reasonable one.

21-7

I can't remember the specific requirement. It was on the order of a half an hour, or thereabouts.

Q. Mr. Clare, is the desing of the shutdown heat removal system based upon meeting the requirements of the signle failure criterion?

BY WITNESS CLARE:

A. The shutdown heat removal system will operate in the event of an initiating event, plus a single act of failure, which is consistent with the single failure criterion.

I believe, however, that the four paths that we have provided in the plant go beyond that requirement.

Q. If you postulate in multiple failure of this shutdown heat removal system, would a core destructive accident occur?

Or could it occur?

BY WITNESS CLARE:

A. Not necessarily.

Q. Could it occur in any circumstances, given multiple failures of the shutdown heat removal system?

BY WITNESS CLARE:

A. There are combinations of failures of the shutdown heat removal for which one could not assure that an HCDA would not be initiated.

Q. And what would one of those combinations of

21-8

circumstances be?

BY WITNESS CLARE:

A. Well, all of those combinations must necessarily include the failure to remove heat through all four of the heat removal paths.

Q. Mr. Clare, is it one of the requirements of this Clinch River Reactor that it must operate with all three loops?

BY WITNESS CLARE:

A. It's a design requirement of the plant that we must be able to operate with three loops.

Q. If there were only two loops available, is it a design requirement that the plant be shut down?

BY WITNESS CLARE:

A. I'll make two points in answer to your question.

If we are operating on three loops and for whatever reason, one of the loops should become unavailable, the plant would be required to shut down. The plant would automatically shut down.

The second point is that the design features of the plant have been specified to allow two loop operation. Operations beginning with only two loops.

Q. Are you saying in other words, that if one of the loops were down for maintenance, that the plant could

21-9

continue to operate in your design specifications?

BY WITNESS CLARE:

A. The features of the plant have been designed so that would be possible.

Q. Well, I'm talking about your design specification. If one of the loops were down for maintenance, would you be required to shut down the plant or could you continue to operate while that one loop was being serviced?

BY WITNESS CLARE:

A. That would -- as I've stated, the plant features have been specified with a requirement that we be able to operate with only two loops removing heat during normal operation.

Whether or not that's possible during maintenance in one of the three loops, in an engineering sense, depends on what maintenance operation might be under way.

Q. I'm not really referring to whether it's possible in an engineering sense. Again, I'm talking about your requirements for operation of the plant. Whether or not the plant has been designed in a certain way, whether or not it's engineering -- it's possible in an engineering sense to operate the plant in a certain way.

I'm talking about whether or not the operators will be required to shut down the plant until one loop,

21-10

which is down for maintenance, has been put back into service.

MR. EDGAR: I'll object to that. I see that as well beyond the scope of these proceedings. I think they are asking about tech-spec or something so far out in time --

MS. FINAMORE: Can I respond to that?

JUDGE MILLER: Yes.

MS. FINAMORE: The reason I'm asking these questions is because there's been certain postulations about a single failure due to any cause and it's important for us to determine whether or not there can be multiple failures that may not, in fact, have been considered and in reaching that conclusion, it's important for us to know whether previous to any postulation of an accident condition, the plant is in full operating status or if there is any possibility that before an accident or an initiator occurs, the plant might already be in a less than full operating capacity because of some outside reason, such as maintenance, that is not considered a failure.

JUDGE MILLER: Well, yes, we understand that but the question itself, or the issue of whatever you want to postulate is not something that is before our issue at this time.

21-11

-1

It would be cover in other ways. By tech-specs, for example. These gentlemen are not writing tech-specs. We are not going into that matter now.

MS. FINAMORE: No, I don't think we are talking about tech-specs. Now, this is again a feasability question.

JUDGE LINENBURGER: Mrs. Finamore, excuse me, but earlier you made the condition in your question to Mr. Clare that you were not talking about technical or engineering capabilities of the plant to function with two versus three loops, but you were talking about what requirements might be in terms of operational ground rules.

Now, you have jumped the fence here from technical capabilities to operational requirements and now back again, it seems to me.

Now, perhaps we don't understand you but that is the way it appears to the Board now, that you jumped the fence.

JUDGE MILLER: We're talking about two different things.

22-1
bm

MS. FINAMORE: Just one moment.

JUDGE MILLER: That's the basis upon which we sustained the objection.

MS. FINAMORE: We'd just like to confer for one minute.

(Pause while counsel confer.)

JUDGE MILLER: Do we sense you're approaching the end of cross-examination of the panel?

MR. COCHRAN: No, sir.

JUDGE MILLER: All right. Your minute is up then.

I'm afraid we're going to have to either move on to something else, or call your cross-examination concluded, Ms. Finamore. We cannot continue to have this slow motion interrogation. We know the reason, but, nonetheless, we've got to conduct a trial here.

MS. FINAMORE: I'm doing my best.

JUDGE MILLER: I know you're doing your best. Just the amount of time being consumed by counsel, whatever it is, has grown excessive, and so we're going to have to either terminate your cross-examination or get you to continue it in an expeditious manner.

BY MS. FINAMORE:

Q Mr. Clare, is it credible in your mind that there could be situations in which the plant, prior to an accident or initiation occurrence could be operating on two loops?

22Q2

BY WITNESS CLARE:

A. As I've stated before, the features of the plant have been designed so that it would be possible for that operation to occur. We have not progressed to the point of preparing technical specifications, nor finalizing those technical specifications. So I have no way to make a judgment as to whether or not such operation might actually occur.

Q. I'd like to turn now to the section of your testimony entitled "Maintenance of Individual Subassembly Heat Generation and Removal Balance," on Page 43 of your testimony.

You state in the third paragraph in that section that "Design features have been provided to maintain the balance between heat generation and removal in individual subassemblies."

The first feature that you point to is -- or are features that preclude a rapid reduction of flow to a limited region of the core.

Can you tell me, Mr. Clare, is there any other reactor that you can point to in which such features have been used in the past?

BY WITNESS CLARE:

A. I don't know.

Q. Do you know, Mr. Brown?

22-3

BY WITNESS CLARE:

A. Excuse me. Let me change my answer, if I could. I believe the Fast Flux Test Facility has such features.

Q. Can you explain the differences, if any, between those features in the Fast Flux Test Facility and the Clinch River breeder reactor as proposed?

BY WITNESS CLARE:

A. No.

Q. Are there any differences?

BY WITNESS CLARE:

A. I don't know.

Q. Do you know, Mr. Brown?

BY WITNESS BROWN:

A. I believe there are differences, but I can't tell you precisely what they are.

Q. Can you point to any of those differences?

BY WITNESS BROWN:

A. The Figure 3-15 on Page 44 details the features that are within Clinch River. The specific items that are identified -- I'm looking for what we called them in the title here -- but that large inlet flow assemblies there are not in FFTF. They have another inlet plenum, a rather large one that covers the whole core inlet region that is -- provides a flow protection, which Clinch River doesn't have. We've made it a bit differently to provide protection against inlet flow

22-4

blockage.

Q. Referring to the second numbered paragraph, features that insure that local failures, e.g., fuel rod failures, would not propagate to widespread failures, Mr. Brown, can you point to any other reactors in which such features have been used?

BY WITNESS BROWN:

A. The primary features in Clinch River in this area are similar to those that are in the FFTF.

Q. Are there any differences?

BY WITNESS BROWN:

A. I can't think of any right now.

Q. Aren't the sensors different between the FFTF and the Clinch River breeder reactor, Mr. Brown?

BY WITNESS BROWN:

A. My understanding was that they both have outlet thermocouples. There may be some additional sensors in FFTF, but I do not know the details well enough to describe them to you.

Q. Do you, Mr. O'Block?

BY WITNESS O'BLOCK:

A. Would you please repeat the question?

Q. I'd like to know what, if any, differences there are between the FFTF and the Clinch River breeder reactor regarding the features to insure that local failures, e.g., fuel rod failures, would not propagate to widespread failures.

22-5

BY WITNESS O'BLOCK:

A. I'm not aware of any significant differences.

Q. I'd like to know, Mr. Brown, what evidence you're relying upon for the assertion that these two design features that I just mentioned to you will maintain the balance, in fact, between heat generation and removal in individual sub-assemblies.

MR. EDGAR: I'll object to the question. It's redundant. The testimony speaks for itself.

JUDGE MILLER: Sustained.

BY MS. FINAMORE:

Q. I want to know if you have any analysis, other than that mentioned in the testimony.

BY WITNESS BROWN:

A. I didn't hear --

JUDGE MILLER: The objection was sustained to the prior question. You need not answer it.

WITNESS BROWN: Now you would like to know what?

BY MS. FINAMORE:

Q. What analysis, other than the assertions made in your testimony are you relying upon for your statement that design features have been provided to maintain the balance between heat generation and removal in individual sub-assemblies?

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22-6

BY WITNESS BROWN:

A. One other detailed piece of information that is referenced in our testimony is PSAR Section 15.4.

Q. Where is that referenced in the testimony?

BY WITNESS BROWN:

A. On Page 45 in the middle of that -- the middle of the second full paragrapn.

Q. Now, again, in those two features -- or two numbered paragraphs that you're referring to when you talk about precluding and insuring the results that you are asserting, Mr. Brown, is it your understanding that by precluding you do not mean make logically impossible, which is the dictionary defintiion?

BY WITNESS BROWN:

A. That's correct.

Q. Well, what do you mean by "insuring"?

JUDGE MILLER: Well, "insure" in the dictionary means to identify the event -- that the thing happens that you're insured against, doesn't it? It doesn't say it can't happen. It simply says there will be indemnification, usually of a pecuniary nature.

If so, what do you mean? What is your question in terms of the issue here?

MS. FINAMORE: Well, I assume that even under your definition you're talking about making completely whole and I

want to know --

JUDGE MILLER: Completely? I mean the loss of a limb isn't really made whole, but there is pecuniary compensation.

MS. FINAMORE: Well, I assume that it would be fully compensated.

JUDGE MILLER: I don't know what you're assuming, but a word is a word.

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MS. FINAMORE: I'm trying to find out what Applicants are assuming.

JUDGE MILLER: What do you want to know --

WITNESS BROWN: My response is meant to imply the same as what we had previously referred to. There's nothing different in here than was in our previous testimony.

BY MS. FINAMORE:

Q. On the second-to-last paragraph on Page 44, you state that because of the arrangement of these flow paths and the cross flow that would exist, no object could block enough passages to starve the flow to any sub-assembly. What if it was more than one object or piece of an object that was involved? Is it possible that there would be more than one object involved to block the passages and therefore starve the flow to any sub-assembly?

BY WITNESS BROWN:

A. I'm not sure I understand the question.

Q. The question is: Is it possible that there might be an accident in which more than one object was blocking a passage to a -- or passages to a sub-assembly?

BY WITNESS BROWN:

A. I can conceive of possibilities where there is more than one piece, and I supposed that more than one piece could come up and block one or more sub-assemblies.

Q. Are you --

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BY WITNESS BROWN:

A. Actually a portion of one or more sub-assemblies. I find it hard to conceive of blocking a whole sub-assembly as designed here.

Q. Are you aware of any instances in which more than one object has blocked a passage to a sub-assembly?

BY WITNESS BROWN:

A. I guess I'm uncertain about whether there was more than one in the Fermi-1 incident. So I guess the answer is: I'm not aware of any that there was more than one.

Q. Do you know, Mr. Strawbridge, what was involved in the Fermi reactor?

BY WITNESS STRAWBRIDGE:

A. My understanding of what was involved in the Fermi reactor was a plate came loose, and came up against the underside of two fuel assemblies that resulted in some damage to two fuel assemblies -- a single plate.

Q. Mr. Clare, on Page 45 the first full paragraph, in the middle of the paragraph you state that "Analysis shows that even if a major buildup of such particles is assumed (more than 80 percent of the flow area blocked), the sudden coolant temperature would not increase by more than 200 degrees Fahrenheit. This increase would not result in boiling in the hottest fuel assembly."

What are the analyses that you are referring to in

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that statement?

BY WITNESS CLARE:

A. They are analyses that consider the thermo-hydraulic effects of heat generation at normal power level in a reactor, and assuming that 80 percent of the area of the fuel assembly is blocked to sodium flow.

Q. Please identify these analyses for me.

BY WITNESS CLARE:

A. The analyses are discussed in PSAR Section 15.4, as noted in the middle paragraph.

Q. In that middle paragraph you also refer to extensive analyses supported by experimental data would show that the local fuel rod failures would not propagate beyond their immediate vicinity.

Am I correct that these are only the analyses referred to in the following sentence, PSAR Section 15.4? Those are the analyses that you are referring to in the first sentence?

BY WITNESS CLARE:

A. Yes.

Q. And is that analysis in PSAR Section 15.4 what you are relying upon for your conclusion in the final sentence of that paragraph that, "Thus, fuel propagation throughout a fuel sub-assembly is not anticipated"?

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22-11

BY WITNESS CLARE:

A. Yes.

Q. And is the analysis in PSAR Section 15.4 the basis for your conclusion at the bottom of the first paragraph that "Thus, the design has the margin to accommodate a very substantial blockage, in addition to the provisions to prevent such blockages"?

BY WITNESS CLARE:

A. The analyses that demonstrate that are provided in Section 15.4.

Q. Am I correct that you are relying upon the analyses in PSAR Section 7.5.4 for your conclusion in the first sentence of the final paragraph of Page 45 that fuel failures will be detected by fission gas detectors monitoring the cover gas and by delayed neutron detectors monitoring the sodium?

BY WITNESS CLARE:

A. The systems that monitor the cover gas and the coolant are described in Section 7.5.4.

Q. Okay. But you're asserting here that they will detect fuel failures?

BY WITNESS CLARE:

A. That's correct. They're being designed with requirements to do so.

Q. And do you have any analyses in PSAR Section 7.5.4

22-12

to enable you to assert that fuel failures will be detected?

BY WITNESS CLARE:

A. To the best of my knowledge, there are no specific analyses in Section 7.5.4 of the sort that I think you're referring to.

Q. So what is the basis for your assertion that failures will, in fact, be detected by the systems that have been designed?

BY WITNESS CLARE:

A. The systems are being designed to specific requirements that are stated in Section 7.5.4.

Q. Have you done any anlysis of the reliability or failure rates of such fission gas detectors and delayed neutron detectors?

BY WITNESS CLARE:

A. Not to my knowledge.

Q. Can you explain to me what the action is that must be taken by the operator once the fuel failures have been detected by the systems that you've just described?

BY WITNESS CLARE:

A. As we have noted earlier, the technical specifications and operating procedures haven't been prepared yet. In general, the operator action would be to either at a planned or other shutdown of the plant, depending on the situation, possibly replace the fuel which has some leakage.

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Q. How quickly would action have to be taken, once the fuel failures have been detected?

BY WITNESS CLARE:

A. As we've noted in the earlier portion of the testimony, the middle paragraph of Section 7.5, we do not believe that such failures would propagate at all. Within reason the action would not have to be taken until the end of the cycle.

Q. Yes. But this paragraph assumes that failure propagation has in fact occurred. And given that assumption, which is what you're discussing, how long would action have to be taken --

MR. EDGAR: Objection to the question in that it characterizes the paragraph. The paragraph speaks for itself.

JUDGE MILLER: What does it say?

MS. FINAMORE: I withdraw the question.

MR. EDGAR: Just rephrase it.

JUDGE MILLER: Okay. Go ahead --

MS. FINAMORE: I withdraw the question.

What I'd like to say is --

BY MS. FINAMORE:

Q. You state in the final sentence on Page 45 that this instrumentation will provide information to the operation in the event of localized failures so that appropriate action can be taken to insure that the condition remains localized.

I'd like to know how quickly does the operator have to take action to insure that the condition remains localized.

BY WITNESS CLARE:

A. That would depend on the situation at hand. As I stated before, our understanding of the expertimental data is that the failure will not propagate, which as I stated before, would not require the operator to take any action until the end of the fuel cycle, in which case the failed fuel would be replaced.

If the situation were not as I have described, it is conceivable that the technical specifications and operating procedures would require some other action.

Q. Such as?

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BY WITNESS CLARE:

A. Again, until the procedures have been written, I'm not sure; perhaps shutting down the reactor or replacing the fuel earlier.

Q. What is the basis for your assertion that this fuel propogation -- failure propogation will not occur rapidly?

BY WITNESS CLARE:

A. This is discussed in the middle paragraph of section -- excuse me, Page 45 of the testimony. There is experimental data from other reactor facilities and also analyses which are discussed in Section 15.4 of the PSAR.

Q. Can you give me any estimate whatsoever as to what you mean by high likelihood that any fuel failure will remain localized, on Page 46 of your testimony, the fist paragraph?

BY WITNESS CLARE:

A. High likelihood is that we have a very high confidence that in fact should any fuel failure to occur it will remain localized. We believe it would be highly unlikely, incredible that it would not be the case.

Q. Mr. Clare, the testimony refers to high likelihood in a number of places. Is it true that you are referring to the same degree of likelihood every time you say high likelihood?

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BY WITNESS CLARE:

A. I'd prefer to reserve that judgment to the individual cases in the testimony, but in cases such as this where we have discussed the high likelihood of the plant features terminating a condition within the design basis so that it does not develop to a hypothetical core disruptive accident, our intent is that it will do that with sufficient likelihood, sufficiently reliably that the HCDA need not be considered in the design basis.

Q. Is that the same likelihood that you had in mind when you said it was a high likelihood that a core disruptive accident will not occur?

BY WITNESS CLARE:

A. Yes, I believe my last statement was that when we use high likelihood with respect to the functioning of the plant features to preclude an HCDA, that that means that they will operate with sufficient reliability to preclude the occurrence, the preclude the occurrence of an HCDA.

MS. FINAMORE: Mr. Chairman, that concludes my cross-examination of that particular subsection of the testimony.

I would either like to ask for a short break or else for a recess at this point. As I mentioned to you earlier, we had prepared our cross-examination so that it

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would be conducted by Dr. Cochran, and if we could have some time at this point to coordinate it further, I think it might save some time when we meet again tomorrow.

JUDGE MILLER: Well, we can take a short recess. We'd like to get as much accomplished as possible. What do you plan to move into next, what area?

MS. FINAMORE: The reactor shutdown system.

JUDGE MILLER: Well, do you think a five-minute recess will help you?

MS. FINAMORE: Are you _- how long are we planning to run tonight, until 6:00 o'clock?

JUDGE MILLER: Well, 6:00 or 8:00. That's what we stated early this morning.

MS. FINAMORE: Well, I guess I'm requesting that we go to 6:00 o'clock tonight in order that we be able to transfer some information and be able to proceed more efficiently tomorrow.

JUDGE MILLER: Information transfer system tonight.

MS. FINAMORE: That's right.

JUDGE MILLER: Well, let me inquire, how much longer do you think that you're going to take on the cross-examination of this panel?

MS. FINAMORE: Well --

JUDGE MILLER: With or withour an information

23-4

transfer.

MS. FINAMORE: We have a lot of areas to cover, Judge Miller. The question of how long it takes, as I said before, depends on whether or not Dr. Cochran and I have some more time to discuss this issue, since we're not proceeding in the manner in which we had intended.

JUDGE MILLER: Well, since you've asked us to consider the time factor of both a recess, or you've even asked for adjournment, we need to consider that in the context of your best estimate as to the time for the cross-examination of this panel and of the separate panel on Contention 2(e).

You know that the projected schedule, which we felt was reasonable, would give you until the conclusion of business tomorrow, Tuesday, which would be a day and a half. Of course, you've had a bit more time since you got started before noon, but nevertheless --

MS. FINAMORE: Well, I think to some extent that depends on the motion to strike portions of the testimony that we intend to file the first thing tomorrow morning.

JUDGE MILLER: Well, we're not going to take a lot of time considering a motion until you get through with the panel.

MS. FINAMORE: Well, I understand that, Judge

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Miller. It's just the fact that if these particular portions of the testimony are stricken we will not have to spend any further time on cross-examination in those areas. If they are not stricken --

JUDGE MILLER: Well, the point is that your cross-examination ought to be concluded before we're going to consider the motion. You see, there's --

MS. FINAMORE: That's means we have to conduct a full cross-examination on those areas before --

JUDGE MILLER: Well, yes.

MS. FINAMORE: -- you determine whether or not they're open. Well, then --

JUDGE MILLER: Well, we have to consider motions in the total context. That will be the testimony of the panel, after cross-examination, cross-examination by Staff, and whatever redirect, at that point you'll make your motion.

MS. FINAMORE: Chairman Miller.

JUDGE MILLER: Yes.

MS. FINAMORE: We've consulted, and based upon the ruling that the Board has made today regarding the admissibility of the Exhibits 2 through 24, we believe that it's possible to curtail our cross-examination on those particular documents, in reliance upon the Board's ruling that they are used for a limited purpose only.

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JUDGE MILLER: That they're what? Reliance upon the Board's ruling they're what?

MS. FINAMORE: That these documents would be admitted for a limited purpose only.

JUDGE MILLER: Well, yes, we did indicate that the Board was -- that if admitted, it would be for the limited purpose that we had described, yes.

MS. FINAMORE: Given that ruling, I believe that we can, and we'll make every effort to conclude this tomorrow, our cross-examination of this panel.

JUDGE MILLER: Well, I should hope so because you've got another panel.

MS. FINAMORE: Oh, and Applicants' panel on 2(e).

JUDGE MILLER: Oh, 2(e). In other words, what we're asking, if you're prepared to make a commitment to conclude your cross-examination of the Applicants' witnesses by the close of business tomorrow, uesday. We'll run whatever time you tell us that you need. If you need more time we'll run to 6:00. If you need more, we'll run to 8:00. If you need more, we'll run to 10:00. We'll give you the full shot at it, but nontheless we want to conclude your cross-examination. We think that it's reasonable. We're not trying to deprive you. We're considering also the nature of the cross-examination today and of the testimony and the responses and the whole picture. Now,

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you're going to have to decide, because you can't have it both ways.

MS. FINAMORE: I think --

JUDGE MILLER: Nor can anyone else; it just happens that you're now on cross. We'll make the same ruling when they're cross-examining your witnesses.

MS. FINAMORE: I think we can meet that schedule.

JUDGE MILLER: Are you prepared to make the commitment? You see, you've got these witnesses now, they think that, and so forth, and so on, but you've been cross-examining. Now I'm asking you. Never mind best efforts and hopes, aspirations, and all the rest of it. Will you make a commitment that you will conclude the cross-examination of the Applicants' witnesses, which is this and another panel, by the close of our business tomorrow, say 6:00 o'clock or 7:00 or whatever?

MS. FINAMORE: Well, the one factor that we are not aware of at this time is whether or not the witnesses will endeavor to answer succinctly and --

JUDGE MILLER: Well, here's your panel.

MR. EDGAR: Well, let the record show that they have been succinct and direct under some very difficult circumstances.

JUDGE MILLER: Well, the transcript will fairly

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show I think both ways.

I don't think anybody has been sabotaging either counsel or the witnesses. I think they have been --

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JUDGE MILLER: I think there's been an honest effort to proceed expeditiously. We don't quarrel with that.

MS. FINAMORE: Well, I --

JUDGE MILLER: But you're asking us at 20 minutes 'til 6:00 and we'd indicated before that we planned to run somewhere between 6:00 and 8:00 o'clock tonight in order to try to accomplish a good deal of business and in the context in which we want to consider that today, tomorrow or any other day, is how much time are you going to take?

When it gets to be your witnesses, we're going to be asking the same thing of the Applicants.

MS. FINAMORE: Well, as I said before, Judge Miller, given an honest effort by the panel to move expeditiously, I don't see --

JUDGE MILLER: Well, you've heard the panel. You can pretty well surmise the answers. There's a lot more time between questions than there is between question and answer. And that's for understandable reasons too, because they haven't been holding you up.

MS. FINAMORE: Well, if they continue to proceed in this manner, then I said we'll have no problem.

JUDGE MILLER: You still ought to give me a commitment.

MS FINAMORE: It's a conditional commitment.

JUDGE MILLER: In that case, we'll go conditionally until 8:00 o'clock. I want either a commitment or I want -- if it's conditional, all right, we'll proceed with the conditions on an ad hoc basis. I'm not going to shilly-shally about it with you or anybody else.

We think you have reasonable time and if I thought that you were really being pressed, where you didn't have a reasonable opportunity for cross-examination, that's one thing. We think that you have had a reasonable time.

MS. FINAMORE: Am I correct, Judge Miller, that you said that if we needed additional time tomorrow night beyond 6:00 or 8:00 we could have it?

JUDGE MILLER: Yes, I did.

MS. FINAMORE: Given that condition, we will make a commitment.

JUDGE MILLER: Then I understand there is a commitment by Counsel for NRDC to conclude the cross-examination of this panel and the additional panel in 2(e) of the Applicants and you've had a chance to see their direct testimony so you know about what is coming up.

Now, let me just inquire, to be fair to you; Staff, I assume, isn't going to take a lot of time on

cross because this is going to affect the commitment now that the NRDC is making and we want to be fair to them.

MR. SWANSON: No. We will have very limited cross, I believe. I think we might have added a couple of extra questions based on today's but my guess is that we could accomplish that in the neighborhood of five to ten minutes.

JUDGE MILLER: Okay. Great.

What about redirect? I know you're going to have to project that because you haven't heard tomorrow's cross. You've heard some samples of it today.

MR. EDGAR: Thus far, I think, it's limited. I really don't think we're going to have much. There are a few points of confusion.

JUDGE MILLER: About what kind of time are we talking about?

MR. EDGAR: I think if I were to do it right now, if you said go do redirect, about ten minutes.

JUDGE MILLER: I should make him do it now.

(Laughter.)

JUDGE MILLER: All right.

I think it's reasonable all the way around. We will accept your commitment and we will impose the conditions on the other parties as they've stated.

If you need the time beyond 5:00 o'clock or

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whatever tomorrow, we'll keep working with you. We'll give you the time.

In that event, we will therefore recess until tomorrow at 8:30.

MR. SWANSON: May we assume, then, that the converse is true. It's highly unlikely that we're going to close -- finish with this panel before the end of the day tomorrow?

I'm thinking in terms of bringing our panel --

JUDGE MILLER: Ms. Finamore hasn't made a commitment nor have I asked her. If she wants to finish them faster, fine. I'm not going to require her to take more time.

MR. SWANSON: I was thinking in terms of bringing in our witnesses.

JUDGE MILLER: You better have them on call.

(Whereupon, the hearing in the above-entitled matter was recessed at 5:45 p.m.)

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

_____

in the matter of: CLINCH RIVER BREEDER REACTOR PLANT

Date of Proceeding: 23 August 1982

Docket Number: 50-537

Place of Proceeding: Oak Ridge, Tennessee

were held as herein appears, and that this is the original transcript thereof for the file of the Commission.

Mary L. Bagby

Official Reporter (Typed)

Mary L. Bagby

Official Reporter (Signature)