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UNITED STATES ATOMIC ENERGY COMMISSION

IN THE MATTER OF:

THE TOLEDO EDISON COMPANY

and

Docket No. 50-346

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY
(Davis-Besse Nuclear Power Station)

Place - Room 418 New Federal Building
Toledo, Ohio

Date - Thursday, May 4, 1972

Pages 309 - 504

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In the Matter of:

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(Davis-Besse Nuclear Power Station)

Docket No. 50-346

Room 118
New Federal Office Building
234 Summit
Toledo, Ohio

Thursday, 4 May 1972

Pursuant to notice, the above-entitled matter was convened at 9:30 a.m.

BEFORE:

MR. JEROME GARFINKEL, Chairman.

MR. JOHN R. LYMAN, Member.

MR. EMMETH A. LUEBKE, Member

APPEARANCES:

(As heretofore noted.)

C O N T E N T S

P R O C E E D I N G S

CHAIRMAN GARFINKEL: The proceeding is now open. Let the hearing come to order.

It is 9:30 a.m., and we are meeting today at Room 410 at the New Federal Office Building here in Toledo, Ohio.

We left last evening with Mr. Kalur about to begin his cross-examination of the witnesses of the Applicants who testified yesterday, with the exception of Mr. Roe.

Mr. Kalur, will you begin your cross-examination.

MR. KALUR: I call Mr. Miller to the stand.

CHAIRMAN GARFINKEL: Mr. Miller, will you take your seat.

You are still under oath, Mr. Miller.

CROSS-EXAMINATION

BY MR. KALUR:

Q Mr. Miller, your professional qualifications are that of a nuclear fuel engineer; is that correct?

A That's right.

Q Will you tell me what nonrunning training you have had?

A I have attended the management development courses at the Toledo Edison Company. I have had experience in Administrative Assistant Division of the Company, in

which I worked on computer programs for various accounting systems within our company.

I have not had any college training in accounting other than the management development courses at the Toledo Edison Company.

Q Do you regularly prepare financial statements and reports such as are included in your testimony for any other purpose at Toledo Edison?

A I have and do regularly prepare economic evaluations or alternate plans. I have prepared this for -- in my present job, an evaluating job, for customer fuel. I have prepared them in my previous assignment in the systems planning in the Toledo Edison Company.

Q Who did you work with in preparing these figures that are contained in your testimony?

A I have worked with our systems -- our present systems planning group.

Q Who does that include?

A Pardon?

Q Who does that include?

A Mr. Jim Sullivan, Mr. Mark Koch, who is the Chief Planning Engineer for the Toledo Edison Company. I worked with Mr. Ed Kosuruba, who is our controller; Mr. Don Nicholson, who is our secretary-treasurer.

Q Who helped you prepare the exhibit?

value figure contained on page 16-B of $75,146,000?

A Mr. John Hollate, from Bechtel.

Q Did he supply the figures, or did he supply the information, or both?

A He supplied the information, and I, because Bechtel is only responsible for the plant part of this project, the transmission line part --

Q I just asked you if he supplied it.

A Not all of it.

Q The information he supplied you, was it written or oral?

A Written, and partially oral.

Q Do you have the written portion of that with you?

A Yes.

Q Would you show me a copy of it.

CHAIRMAN GARFINKEL: Let the record show that the witness is furnishing Mr. Kalur with a copy of the underlying data supporting the cost figures.

A I have other figures here too. That is not all of it.

Q Would you show me on this sheet of paper that you have handed me where it gives the salvage value.

CHAIRMAN GARFINKEL: Mr. Kalur, if we are going into that document, I think we should mark that document for identification.

MR. KALUR: I will do that as soon as he identifies it -- as long as it corresponds to the question I asked.

CHAIRMAN GARFINKEL: We can mark that without you doing that. I think we should mark it.

MR. KAISER: I have no objection. I am not sure it is the document I have asked for yet.

THE WITNESS: That's right. What document did you ask for?

MR. KALUR: The document which shows how the salvage value is determined.

A. This was received over the phone orally from Mr. Hollett.

Here are the figures. It includes -- This is the actual amount (indicating) up to 12-31-73, that we would have paid for. In addition, there is transmission equipment that we would have received that would be salvageable, that I received from Mr. George Huber, of $508,000; and then after --

Q. Who is George Huber?

A. He is our transmission engineer. He is --

Q. All right, that's all I needed.

A. All right. We have figures on the remaining balance that we would take delivery after 12-31, of $22,[illegible] and that figure is developed right here

(Indicating).

Q. Will you hand me the extra copies you are going to hand to that man with glasses?

A. All right.

Q. Let's leave the explanation for later.

A. One moment.

Let's see which ones you have there now.

CHAIRMAN GARFINKEL: Mr. Miller, do you need some more time? We can take a five-minute recess.

THE WITNESS: I am trying to find one piece of paper. I can't find one piece of paper.

CHAIRMAN GARFINKEL: We will take a five-minute recess until he locates the information.

(Short recess.)

(END OF PAGE)

CHAIRMAN GARFINKEL: May we be back on the record.

Mr. Miller, have you furnished Mr. Kalur with the information he requested?

MR. MILLER: Yes, sure is the information on the transmission line construction. This is the information on the material that would be received during the review period. This is the information on the material that would be -- that was received over the phone, that would be received after the review period. This is the information on how the totals were put together to come up with the 73 million.

And this was the information on how the material up through 12/31, how the total value of the salvageable material up through 12/31/73 was prepared.

Q All of those documents deal with salvage value?

A Yes.

CHAIRMAN GARFINKEL: Let the record show that Mr. Miller turned over a series of documents to Mr. Kalur in connection with his testimony dealing with salvage values.

MR. KALUR: Why don't you mark each document --

MR. CHAIRMAN: Do the documents have captions, Mr. Miller?

MR. MILLER: They are just my notes and notes I received from others.

MR. CHAIRMAN: Those are not tickets that can be

related to exhibit numbers?

MR. MILLER: No.

MR. KATUR: May we just number them consecutively then?

CHAIRMAN CHAIKOWSKI: Have you introduced any exhibits yet?

May we have you start with No. 5, for identification, until it is offered in evidence if you offer it in evidence.

(The documents referred to were marked Intervenors' Exhibits Nos. 5 through 7, inclusive, for identification.)

CHAIRMAN CHAIKOWSKI: Off the record for a second.

(Discussion off the record.)

CHAIRMAN CHAIKOWSKI: Let the record show that Mr. Katur is showing the documents furnished by Mr. Miller to Mr. Mulder at this time.

Mr. Reporter, let the record show that Mr. Katur is showing the documents to Mr. Charnoff.

Q Mr. Miller, are you familiar with any of the contracts that have been entered into, either with a general contractor or subcontractor for the Davis-Besse project?

A Not in specific details, no.

Q Have you seen any of them?

A Yes.

Q Isn't it a fact that all those contracts except the main one with Bachtel contain arrangements that if in the event of an act of the government the project construction is halted those contracts shall be null and void?

A No.

Q Have you ever seen that contract provision in any of those contracts?

A No.

Q Could they be in there and you don't know about it?

A To my knowledge the contracts have canceling provisions --

Q That's not my question. Could they be in there and you not know about it?

A There is a possibility.

Q Is there anything in those papers you have handed me that is written from John Hollatt of Bechtel?

A Yes.

Q Will you tell me which papers those are? Will you identify them? There are exhibit numbers on here.

A The first part of this paper is from John Hollett.

CHAIRMAN CARPINELLI: What exhibit is that?

MR. KRAUS: Exhibit 7.

CHAIRMAN CARPINELLI: Marked for identification.

Q That's the only one from Mr. Follett?

A In that group, yes.

Q Is that the only one written dealing with salvage value from Mr. Follett?

A Yes.

Q Now my question has to do with Intervenors' [illegible].

CHAIRMAN GARFINKEL: If you are going into depth with the questions then you should offer it into evidence. Otherwise -- if you are going into the substance of this document I think it should be received in evidence so anybody will be able to follow it subsequently.

MR. KALUR: I will offer it in evidence.

MR. CHARNOFF: Which document is being offered?

MR. KALUR: Intervenors' Exhibit 7.

CHAIRMAN GARFINKEL: Will you describe it.

MR. CHARNOFF: Will you describe it, please.

MR. KALUR: This is a document with the name John Hollern written in pencil on the left and it seems to be titled "Cost of Construction with Delay [illegible] Total," A-c-c-u-m period, I assume that is "accumulated.

CHAIRMAN GARFINKEL: Any objection to its going into evidence?

MR. CHARNOFF: No, sir.

MR. [illegible]: No, sir.

CHAIRMAN GARFINKEL: Okay. It is received in

A Under "Equipment Payments."

Q Under "Equipment Payments" I see the figure 25,180, under "April 1, 1973." What does that figure designate?

A That's the accumulated equipment payments as of that date, cash.

Q Equipment payments for what?

A All the equipment at the site contracted for by Toledo Edison Company.

Q Does that mean it is on the site or is it going to be delivered?

A That's what we paid for, not what we have received.

Q My question is, is that equipment on the site or is it to be delivered?

A It is to be delivered, and some is on the site.

Q Both.

A It is both, yes.

Q Is there a salvage value anywhere on this document with respect to that figure of 25,180?

A No.

Q Where do you see the first salvage value figure under the designation "Equipment Payments"?

A These figures show the accumulated payments for

equipment during the -- this period of time right here (indicating), during -- and we have used from this table --

Q What period of time? Would you designate that?

A We are using the equipment payments during the period of time from 3/1/77 to 12 -- or 1/1/78, which includes the -- these payments come in one month later than the [illegible] --

CHAIRMAN [illegible]: You mean [illegible] or 1/1/77?

MR. MILLER: [illegible]. Excuse me. 1/1/78.

A (Continued) These payments are for equipment and progress payments on equipment that will be either delivered or we will be paying for it during the review period. These payments would continue whether or not we were to have a delay in construction or not. So we --

Q There are two other months covered on here, aren't there, April and May, '78?

A That's right.

Q Will you show us under "Equipment Payments" where you have indicated there are salvage figures, where those salvage figures are in the monthly period you have just indicated?

A All right. If we were to take these payments right here --

Q Tell us what payments you are talking about.

MR. [illegible]: Excuse me, Mr. Miller. Don't say, "right here," "this period."

MR. MILLER: Okay.

MR. CHARNOFF: Define it in terms of times or dollar amounts so the record will show.

Q All of what machines are you talking about?

A We are taking the equipment [illegible] June, July, August, September, October, November and December. This equipment will either be purchased or [illegible] during this period of time. There would be no [illegible] so it would all be salvageable.

Q Could you show me those are salvage figures [illegible]

MR. CHARNOFF: I think he has just told you that all of the equipment cost would be treated as salvage, Mr. [illegible].

MR. [illegible]: Then he can indicate that. Let's let him indicate it.

CHAIRMAN [illegible]: Mr. Charnoff, please, this is cross-examination, and Mr. [illegible] has a right to get the specific answer from the witness.

MR. CHARNOFF: He answered the question.

CHAIRMAN [illegible]: Well, I don't think he answered the question directly.

Q (Continued) Show me the figures for salvage value.

A This figure that I just told you.

Q Read the figure, please.

A $2,595,000 for equipment payments in June.

Q All right. Read the next figure.

A $2,174,000 for equipment payments in July. Two million -- or 1,854,000 for equipment payments in August.

1,447,000 for equipment payments in September. 1,413,000 for equipment payments in October. 1,210,000 for equipment payments in November. And 1,593,000 for equipment payments in December.

Q Where are your facts and figures as to what equipment we are talking about?

A Mr. John Hollett can provide that information, from Sanitel.

Q You couldn't?

A No.

Q Are these figures from John Hollett on this page? Is there anything on here that are your figures?

A The writing on the right-hand side is my figures, they came from John Hollett over a telephone call.

Q So John Hollett supplied to you the figures with respect to salvage value for these monthly periods, isn't that correct?

A For this seven months' period, yes.

Q And the fact is that you of your personal knowledge don't know what the salvage value figures are

except what Mr. Hollatt told you, isn't that true?

A That is correct.

MR. KAUR: Mr. Chairman, in view of this I would like to have the testimony on page 26b stricken from the record.

CHAIRMAN GRAFENNEL: Overruled.

Q Can you give me a total on these salvage figures that you have run across here?

A I would need one of those other sheets because my totals are on the other sheet.

Q All right.

A $12,965,000.

Q That's salvageable -- that's your figure for salvageable material between June and the end of December, of '72, is that right?

A That's right.

Q And this figure is on Intervenors' Exhibit No. 4, is that right?

A That is correct.

MR. KAUR: This document is entitled "Cost of Abandonment."

Q What is this figure underneath "Salvageable Material," headed up "Field Lab and Mat," l-a-t, what does that include?

A That is field, labor and material, is the

$13,778,000 that would be spent if we continued construction during that same period of time; and that is, I believe, shown on one of those tables in our [illegible]stimony. It was not shown, but it was the sum total of the --

Q If we add together the total cost of the project, to 6/1/77, we have got $1[illegible],000, is that correct?

A Correct.

Q And we have got [illegible] material that you are going to put into the job between June and December that could be salvaged at 12,[illegible]?

A Correct.

Q And you have [illegible] --

A Labor and materials.

Q -- labor and materials, 33,778,000 in the next six months' period?

A That's correct.

Q For a total of $137,750,000 [illegible] if the project should be abandoned on 12/31?

A That is the [illegible]al expenditure up to that time.

CHAIRMAN GARFINKEL: [illegible] to offer that into evidence?

MR. [illegible]: Yes.

CHAIRMAN GARFINKEL: Why don't you just offer it now, and you can reproduce that document.

MR. [illegible]: We will offer into evidence

Intervenors' No. 4.

CHAIRMAN GARFINKEL: Any objection?

MR. WALSH: No objection.

MR. CHARNOFF: No objection.

CHAIRMAN GARFINKEL: It is received into evidence.

(The document referred to was received as Intervenors' Exhibit No. 4 in evidence.)

BY MR. [illegible]:

Q Mr. Miller, isn't it true that Toledo Edison Company has involved some advertising money in advertising the safety of nuclear power?

A Yes. I read it in the newspapers.

Q You wouldn't know how much that is?

MR. CHARNOFF: Is that relevant, Mr. Chairman?

A No.

MR. KEPLER: I am going to [illegible].

CHAIRMAN GARFINKEL: This is cross-examination. I will give a little more leeway to cross-examination, subject to [illegible].

Q Do you know if the Toledo Edison plans at the present time to build any other nuclear facilities?

A No plans at this time that I am aware of.

Q Do you have anywhere in your figures the savings to Toledo Edison and ultimately the consumer if the Toledo

Edison plant should be abandoned, with respect to the abandonment of advertising of nuclear facilities?

A No.

MR. CHARNOFF: I am sorry. I would like to have that question restated.

CHAIRMAN GARFINKEL: Will the Reporter read the question [illegible].

MR. [illegible]: The witness has answered the [illegible] evidently [illegible].

CHAIRMAN GARFINKEL: Okay, fine. The witness answered it.

MR. CHARNOFF: I would object to the question raised [illegible], Mr. Chairman [illegible] if there is need for it.

CHAIRMAN GARFINKEL: Yes. The question can be reread and the answer too.

(Record read as requested.)

MR. CHARNOFF: I understand the answer. I don't understand the question.

MR. [illegible]: Your witness [illegible] of you three.

CHAIRMAN GARFINKEL: [illegible] appreciate [illegible] comments like that not be placed on the record.

MR. CHARNOFF: I wouldn't [illegible] the record to

leave anybody with the implication that we do understand that kind of question.

CHAIRMAN SHERMAN: That is not the issue, Mr. Chernoff. The issue is, the witness appears to understand the question very well. He answered it.

MR. MAHON: Mr. Chairman, I would like a few minutes to look through these documents.

CHAIRMAN SHERMAN: Do you want a continuance present?

MR. MAHON: Yes, please.

CHAIRMAN SHERMAN: You may have a ten-minute recess.

[Brief recess.]

I am the type of judge a prosecution officer who does not like counsel for the Applicant to talk to his witness -- to the witness on the stand. That is normally part of his client's cross-examination is taking place.

So, Mr. Chernoff, if you will refrain from discussing the testimony with Mr. Miller at this time while cross-examination is taking place.

Brief recess.

[End of tape]

CHAIRMAN GARFINKEL: May we go on the record.

Mr. Kal[illegible], will you contin[illegible] your [illegible]

[illegible]

BY MR. [illegible]:

Q Mr. Miller, the figure on [illegible] of $75,[illegible]5,000 is that the salvage value of all equipment [illegible] on the site if construction were cancelled on [illegible]

A No.

Q What does th[illegible] figure represent [illegible] salvage equipment?

A That figure represents equipment that may have to be stored elsewhere. [illegible] also represents equipment that has not been delivered, but it is [illegible] the [illegible] toward being completed that the abandonment cost would be equal to the cost of the equipment; so we have just decided we would take delivery on the equipment and use it in some other plant.

Q Well, what date do you find -- would you attribute that $75,000,00[illegible] figure to?

A The equipment payments [illegible] continue for --

Q Just give me a date. That's [illegible], is a date.

A I am just trying to --

Q Don't give me a reason, [illegible] a date.

A All right. Approximately [illegible]

Q That's six months after the end of the NEPA review period; isn't that correct?

A That's correct.

Q How much of that $[illegible] figure would be attributable to equipment delivered after December [illegible]?

A I would [illegible] those [illegible] [illegible] and [illegible], those payments

[illegible].

[illegible] Mr. Miller?

THE WITNESS: This [illegible] the payments for the nuclear steam supply system, the turbine generator, [illegible] and that sort of equipment -- [illegible] equipment; [illegible] would be [illegible] be paying for at this time.

CHAIRMAN CARPENTER: [illegible] committed [illegible] to those?

THE WITNESS: We would have been committed and we would have made approximately -- [illegible] on the nuclear steam supply system we would have paid approximately $[illegible],000,000 on it at that time [illegible] --

CHAIRMAN CARPENTER: [illegible] that time -- What time now?

THE WITNESS: At [illegible]

CHAIRMAN GARFINKEL: Okay.

MR. CHARNOFF: Mr. Chairman, if I can help you, that number is the same number that appears on page 26-C of the testimony, and it is [illegible] as the equipment delivered after December 31, 1977.

The question [illegible] by Mr. [illegible] with respect to equipment delivered, how much would those payments have been or be.

CHAIRMAN GARFINKEL: [illegible].

BY MR. KAHN:

Q Is it your testimony, Mr. Miller, that $72,409,000 of equipment delivered after December 31, 1977, is totally [illegible] at that price?

A Yes.

Q Who would have the contract for the delivery of the nuclear steam supply system?

A I have a copy of it.

Q Do you have it with you?

A No.

Q Will you produce it for us?

CHAIRMAN GARFINKEL: Will you make the request to counsel, Mr. Kahn.

MR. KAHN: Mr. Charnoff, will you make that document available to us?

MR. CHARNOFF: We already did. When would you

like it.

MR. [illegible]: As soon as you can get it here.

MR. CHARNOFF: May we be off the record for a moment.

CHAIRMAN [illegible]: Yes, you may.

(Discussion off the record.)

CHAIRMAN [illegible]: [illegible] Mr. Sylvester.

[illegible]

BY MR. [illegible]:

Q Is there anything in your [illegible] discussion of the [illegible] in the [illegible] considered as of June 1?

A No.

MR. CHARNOFF: The issue of abandonment as of June 1 is not an issue in this hearing, Mr. Chairman. The issue in this hearing --

CHAIRMAN [illegible]: This is cross-examination.

MR. CHARNOFF: That's right but the issue is suspension now with the possibility of abandonment as of December 31.

MR. [illegible]: I will withdraw the question if you like.

MR. CHARNOFF: You are so accommodating, Mr. [illegible].

present facts on the record; it is not a divorce law case or a tort case that Mr. Kalur may have experience with, where the name of the game is to trap witnesses. The name of the game here is to present a full and complete record, and we ought to establish once and for all that that is the purpose of this administrative proceeding.

CHAIRMAN GARFINKEL: If you understand my rulings, I don't think Mr. Kalur has to answer to you. This I govern and this Board governs the conduct of this administrative proceeding. We have to develop fully a full record, but we will do it in the way the Board deems appropriate.

Mr. Kalur, please continue with your cross-examination.

BY MR. KALUR:

Q Mr. Miller, if the Board were to order a suspension of the construction permit outside of its contractual commitments, Toledo Edison would not have to spend any money for building; isn't that true?

THE WITNESS: Do I answer yes or no, or can I -- I don't understand your question.

CHAIRMAN GARFINKEL: [illegible], please. It's a question now between the witness and Mr. Kalur.

If you don't understand the question, please so indicate. You don't have to answer any question you don't

understand.

THE WITNESS: Okay.

Q. If construction were ordered to cease on June 1 by an order of this Board outside of the contractual commitments that Toledo Edison has already entered into for the supplying of equipment, if everyone at the job site would cease, would they not?

A. No.

Q. Why would they not cease?

A. We would have to maintain the site. We were given the monthly cost of maintaining the site. We have given in our testimony yesterday the one-time cost to mothball the site and to rehabilitate it if we regained our construction permit.

Q. What about the laborers, about 700 laborers, you wouldn't be paying them, would you?

A. Not all of them.

Q. Well, how many would you be paying?

A. In the testimony yesterday Mr. Bollett indicated there would be about 15 people on the site.

Q. The rest, minus 700 plus, would not be paid; isn't that true?

A. Right.

Q. And that money would be a savings to Toledo Edison, would it not?

A During the seven months' period?

Q Yes.

A Right.

May I correct that.

It would be a saving to the applicant, not Toledo Edison alone, but Cleveland and [illegible].

Q All right, that's understood.

In any of these documents you have supplied to us is there an exact listing of salvage value, naming of specific item, and a specific salvage value [illegible] it?

A No.

Q Will you tell me now the $3.5 000,000 figure was arrived at?

A The $3.5,000,000 figure was arrived at by totaling all of the equipment that was delivered to the site up through 12-31-72, that Bechtel considered salvageable -- specifically Mr. John Hollett from Bechtel.

Q Mr. Hollett did not supply you with a list though of what items he deemed to be salvageable, is that correct?

A Yes, he did. This is one of the documents I gave you this morning, and it lists --

CHAIRMAN GARFINKEL: Will you refer to the exhibit number.

THE WITNESS: Yes. Exhibit 2, and 3.

CHAIRMAN GARFINKEL: Which are both not received in evidence but marked for identification, am I correct, Mr. Kelur?

MR. KRIEG: [illegible]. I think we have [illegible] "1" and "3."

Q Can you identify the [illegible] of Intervenors' Exhibit 1?

A All right. The [illegible] "[illegible] Equipment Commitments for Delivery Scheduled Before 10-1-72."

Q And what about Exhibit 3, what is the title of that?

A It is "Present Equipment Commitments for Delivery Scheduled Between 10-1-72 and 12-31-72."

Q I see that there are two columns headed up on Exhibit 1 which have the heading "8-1-72" and "10-1-72." Would you tell me where it indicates on these documents that we are talking about salvage value?

A The salvage value for each individual piece of equipment is the payments shown here in thousands of dollars.

Q For the F9 [illegible] -- Is that correct?

A That's correct.

Q The figure is $13,340?

A $1,334,000. It is in thousands of dollars.

Q Mr. Miller, on page 26-A of your written testimony--

This is your testimony, is it not, on 25-A?

A The lower part of it, on Item C -- the lower two paragraphs, is mine, yes.

Q Do you know whose testimony is under "D"?

A Mr. Roe.

MR. [illegible]: Mr. Chairman, [illegible] have the document -- this document is [illegible] to who is primarily responsible or [illegible] responsible, I [illegible] to make a motion to strike the entire testimony.

CHAIRMAN [illegible]: Your motion is denied.

If you need to cross-examine a specific witness, or to have him as part of your case, I will treat any witness that you call -- any witness of the Applicant that you call as part of your case as an adverse witness, which permits you to use leading questions throughout.

So you are still free in your case in chief. You haven't presented your case in chief yet. So therefore I don't see any basis for the motion to strike.

MR. [illegible]: My basis is, Mr. Chairman, that we are constantly changing who wrote what sections of this document and who is primarily responsible. It is impossible for us to prepare adequate cross-examination.

CHAIRMAN [illegible]: Well, he identifies the person. You know who that person is with respect to the cross-examination or direct examination. You had that

document --

MR. [illegible]: I [illegible] now with respect to Section [illegible] [illegible] [illegible].

CHAIRMAN GARFINKEL: You can call [illegible] part of your case.

MR. [illegible]: All right.

MR. [illegible]: [illegible] Mos on [illegible] [illegible] [illegible] [illegible].

CHAIRMAN GARFINKEL: [illegible] that?

MR. [illegible]: No, sir.

CHAIRMAN GARFINKEL: [illegible] Mr. [illegible]?

MR. [illegible]: I have no objection.

CHAIRMAN GARFINKEL: Do you want to do that now?

MR. [illegible]: No, Mr. Chairman, not now.

CHAIRMAN GARFINKEL: [illegible]

MR. [illegible]: We will wait until our case. That's all the questions I have of Mr. Miller.

CHAIRMAN GARFINKEL: Wait, Mr. Miller. Mr. [illegible] may have some questions.

MR. [illegible]: I have no questions.

CHAIRMAN GARFINKEL: Mr. Charnoff may want to have redirect.

MR. CHARNOFF: May I?

I won't approach him. I will simply ask him a question.

CHAIRMAN GRADISON: By all means.

REDIRECT EXAMINATION

BY MR. CHARNOFF:

Q Mr. Miller, a question was asked of you by Mr. Kalur with regard to the question of whether suspension at this time would result in savings to Ohio Edison or Cleveland Electric, or both, during this three month period with respect to roughly 625 workers who would be -- who would lose employment during the period if there was such a suspension.

One question I would like to ask you is whether that would result in a savings or a reduction in expenditures to the companies involved.

A It would result in a reduction in our expenditures during the seven months' period.

Q Would it ultimately result in a savings to the company, or increase costs to the plant?

A Increase costs to the plant.

MR. CHARNOFF: I have no further questions.

MR. KALUR: I have one question.

CHAIRMAN GRADISON: Before you ask your question, I think you may want Mr. Miller back with respect, once you get the contract information that Mr. --

MR. CHARNOFF: We have the contract right here.

CHAIRMAN GARFINKEL: So therefore I will let you ask the question what you want to ask, but I think we should not let him off if you have further questions regarding the contract.

I would rather take a five- or ten-minute recess and finish the cross-examination of Mr. Miller in its entirety.

MR. CHARNOFF: May I have one moment to make while we are on the record.

Do we have the full contract here?

I believe we have it. We will check. But I could point out that certain cost data in that contract is proprietary.

CHAIRMAN GARFINKEL: Well, then I have no hesitation of putting it in camera.

MR. CHARNOFF: We must do it in camera in these proceedings. I just want to point that out.

CHAIRMAN GARFINKEL: All right.

MR. CHARNOFF: May I have a moment to check with Mr. Rea to see whether we have the final contract here.

CHAIRMAN GARFINKEL: Off the record.

(Discussion off the record.)

CHAIRMAN GARFINKEL: On the record.

MR. KALUR: Will you reread his answer to the

last question.

(Record read as requested.)

RECROSS-EXAMINATION

BY MR. KALUR:

Q Mr. Miller, your testimony that this would be an increased cost to the plant is based on an assumption that there would not be an abandonment of the project after the full NEPA review; is that correct?

A Yes.

MR. KALUR: Nothing further.

CHAIRMAN GARFINKEL: Mr. Welsch?

MR. WELSCH: No questions.

CHAIRMAN GARFINKEL: Mr. Charnoff?

MR. CHARNOFF: I think Mr. Miller has done very well.

CHAIRMAN GARFINKEL: You are excused subject to recall on the question of the contract.

(Witness temporarily excused.)

CHAIRMAN GARFINKEL: You understand, Mr. Kalur, you did not introduce into evidence Exhibits 2, 3, 5, and 6.

MR. KALUR: I understand that.

I introduced two items in evidence.

CHAIRMAN GARFINKEL: Are you going to return those documents back to --

4-1

CHAIRMAN [illegible]: You are still under oath, Mr. Reynolds.

CROSS-EXAMINATION

BY MR. [illegible]:

Q Mr. Reynolds, will you tell me so I know for sure what is your testimony in the written sections?

A [illegible], please.

Beginning on page 27, [illegible] through page [illegible] and the associated charts following page [illegible].

CHAIRMAN [illegible]: You mean all these charts that go from page 30, 31, through --

MR. REYNOLDS: Yes, sir.

CHAIRMAN [illegible]: -- through page [illegible]?

MR. REYNOLDS: Yes, sir. Actually the charts on page 31 and 32 apply to an earlier portion of the testimony which I was involved in the preparation of, if there is any question about that.

Q So am I correct the testimony on page 27 you were involved in the compiling of that?

A Yes, from numeral A -- or pardon me, letter A, on page 27.

Q Do you know who is responsible for the material under the V?

A On which page, please?

Q Page 27.

CHAIRMAN GARFINKEL: That's the first full paragraph on page 37?

MR. [illegible]: That's correct.

A I did not write that portion of the testimony. I am aware of it.

Q You don't know who wrote it?

CHAIRMAN GARFINKEL: The question is do you know who wrote that, who is responsible for the preparation of that particular paragraph.

A This was prepared under the general direction of Mr. Roe.

MR. CHARNOFF: That paragraph is introductory material to 8A(1) and (2), for which Mr. Reynolds is primarily responsible.

CHAIRMAN GARFINKEL: But who was responsible for the introductory paragraph then?

MR. CHARNOFF: He testified Mr. Roe wrote it.

CHAIRMAN GARFINKEL: Okay.

Q Well, you are responsible for most of these graphs included starting on page 31, is that correct?

A Yes, sir.

Q Do any of these gr[illegible] I believe it can accurately be stated show [illegible] for electrical power, reflect increased demand for electrical power by The Toledo Edison Company?

4-3

A I don't understand that.

MR. CHURNOFF: That doesn't sound like the transcription of the question.

CHAIRMAN GARFINKEL: I think it would be best to restate it.

MR. KALUR: Let me rephrase it.

Q Is there a relationship between advertising and the creation of a demand for electrical power, in your opinion?

A I have attempted multiple regression analyses of this particular item you are talking about and I have found no significant results on a statewide basis, considering inter-company differences in promotional expenditures per customer.

Q And would it be a fair statement then that you found no correlation between advertising and the demand for electrical power?

A This is a true statement, yes, sir.

Q How much did the Toledo Edison Company spend last year for advertising?

A I do not know. This is not my area.

CHAIRMAN GARFINKEL: Mr. Kalur, I am having a little difficulty right now understanding the relevancy of the particular question in connection with respect to the plant. The fact -- let's assume there was no nuclear plant

4-4

that's in issue here, and you still have advertising and you still have the -- the demand is increasing. You are going to have the demand there even if you have to have a fossil plant or something else. [illegible] is this related specifically to the nuclear plant?

MR. KALUR: Mr. Chairman, they have given us charts on what they believe to be the continuing electrical demand, obviously for coming under the requirements of E-2(b) by showing how the consumer would be hurt by stopping the construction at Davis-Besse.

CHAIRMAN GARFINKEL: That's only on the basis that they need a plant, they have to generate this electricity.

MR. KALUR: The point is if they did not advertise there would be a certain correlation with the decline in need for the electrical power.

MR. CHARNOFF: That is not what the testimony shows, Mr. Chairman.

MR. KALUR: I am not pursuing it any further.

CHAIRMAN GARFINKEL: Just a moment.

MR. CHARNOFF: Mr. Chairman, we have no objection to that question and answer remaining in the record.

CHAIRMAN GARFINKEL: That is not the question. I want Mr. Kalur to know as a Board member what my concern is. I understand the concern and I think it is relevant to

4-5

cross-examination, based on his answer.

MR. KAHUN: Mr. Chairman, since he has answered it this way I am not going to pursue my questioning on it. He doesn't know.

Q Will you tell us who does have the figures on how much they expended on advertising last year?

A Offhand I don't know the name of the person who would have the dollar amount that was expended on advertising last year.

Q Well, who would that -- who would that?

A I suppose our controller would have that figure.

MR. KAHUN: No further questions.

CHAIRMAN GARFINKEL: Mr. Malsch may have some questions.

MR. MALSCH: No questions.

CHAIRMAN GARFINKEL: Any redirect?

MR. CHARNOFF: Not at all. He did extremely well.

CHAIRMAN GARFINKEL: Okay.

Off the record.

(Discussion off the record.)

CHAIRMAN GARFINKEL: May we be on the record now.

Mr. Baker, any other witnesses?

MR. KAHUN: We will call Mr. Herdendorf.

CHAIRMAN GARFINKEL: Is Mr. Herdendorf here?

MR. CHARNOFF: Dr. Herdendorf.

CHAIRMAN GARFUNKEL: Dr. Mendenhall, I am sorry.

MR. CHARNOFF: Just correction was made with all due respect to all the Ph.D's in this room.

CHAIRMAN GARFUNKEL: Professor Lyman, here prefers the word "Professor" rather than "Dr."

MR. CHARNOFF: Professor Lyman, I would welcome to call him or Dr. Mendenhall whatever you wish to call him.

MR. LYMAN: Mr. Chairman, I myself have some questions of Dr. Mendenhall. I don't know whether I should ask them now and follow the usual procedure or how I should do it.

CHAIRMAN GARFUNKEL: Let Mr. Kalur -- In this case I am changing the procedure that is the continuous cross-examination by Mr. Kalur. Let Mr. Kalur ask his questions on cross-examination of Dr. Mendenhall.

CROSS-EXAMINATION

BY MR. KALUR:

Q Would you prefer "Dr." or "Professor"? Let us get this straight.

A Either is correct. That's fine.

Q I like "Professor."

CHAIRMAN GARFUNKEL: Please, no further comments along this line.

Q Did you have an occasion to write an earlier report on the subject that you have given testimony on?

A-7

A Yes, I have.

Q Do you have that report with you?

A I am not sure I understand what report you are referring to.

Q Did you write a report for the State of Ohio?

A Yes. A number of reports for the State of Ohio.

Q Do they concern the same subject matter that the report that has been placed in evidence as your testimony does?

A No. I have written a report to the State of Ohio that specifically deals with dredging within the area of the Davis-Besse plant.

Q Have you ever written any type of report concerning any other report -- any other report concerning the anticipated dredging activities at Locust Point?

A No. There has only been one report. There have been a number of editorial issues of that, within a short period of time; a month's period. But they are essentially the same report.

Q Were they all written for The Toledo Edison Company?

A Correct.

Q Looking through your qualifications and your list of publications I notice item No. 4 is Sand Beach, Ottawa County, Ohio shore control study. Would you happen to have that with you?

A-6

A No. I do not have a copy of that with me.

Q Well, what about Item 15, 'Report of shore damage caused by the Lake Water storm'?

A Not to me, no. I am familiar with these, I probably can brief you on any information you would like to have.

Q Can you get them for us?

A Yes. They are in Columbus. They can be produced within a day, probably.

MR. CHARNOFF: Are these documents in published literature, Dr. Hardendorf?

DR. HERDENDORF: No, they are open file reports for the State of Ohio and as such they were never really published as an open circulation.

Q Now, I am correct in stating that the report that you have prepared, and the one that is in evidence now, was one prepared for Toledo Edison in support of their application for a corps of engineers permit, is that correct?

A That's correct.

Q And so the statement at the end of your report that you recommend issuance of the permit is with respect to the permit to be issued under Series III, Section 403, is that correct?

A If that is the correct notation of the corps of engineers, correct.

Q Do you know when the application for the corps

4-9

permit was filed by Toledo Edison?

A Not the precise date. I believe it was in April.

Q Do you know if they filed an application prior to April?

A Yes, I believe they did.

Q All right. And was that one refused?

A By my direct knowledge I have never seen a refusal of it, but my understanding is that it was -- the company was asked to modify it.

Q The fact is the earlier application was submitted, it was not acted favorably on and a new application has been submitted, is that true?

A I believe that is true. To the best of my knowledge I think that is.

Q And the reason the first one wasn't accepted was because of environmental reasons, isn't that true?

A I have no way of knowing. I have not talked to the corps about it.

Q Do you know if the corps has published a NEPA impact statement on the proposed dredging?

A No, I do not.

Q Can you quantify for me, or identify the type of damage that will occur from the sediment dumping as a result of the dredging?

A Well, you can anticipate a number of the effects

A-10

of the dredging. The dumping of the material in the open lake you are referring to?

Q Yes.

A This material is likely to cause some turbidity. I don't anticipate it to be great because it is basically sand, which settles very rapidly and doesn't cause turbidity problems in a lake.

Q You have a degree in limnology, is that right?

A That's right.

Q Would you define for us the scope of limnology?

A Limnology is the study of fresh water streams and lakes. Basically it is the biological and physical and chemical processes associated with rivers and lakes.

Q Is it a true statement in the field of limnology that the dredging and depositing of sediment material is probably the worst development that can occur to a fresh water ecosystem?

A As far as in the study of limnology?

Q Yes. Would that be an accepted tenet of it?

A It is difficult to say. As far as talking about formal education in limnology I have never had a course that dealt with dredging or even remotely fringed on it.

Q Well, you wouldn't say that dredging material in a deposit of water, in a fresh water ecosystem would be beneficial, would you?

4-11

A If you are asking me if dredging can cause environmental dama e I will have to answer yes.

Q And it uniformly causes some damage, does it not?

A There is some environmental effect, yes.

Q You are employed by the Lake Erie Area Research, is that correct?

A I am director of that center.

Q Is that set up by Ohio State?

A Yes, that is a unit within the --

Q Do you have any knowledge as to who funds that?

A Yes. It is funded by a number of agencies. Federal, state, private.

Q Do you have any knowledge as to who the private contributors are?

A The only private contributor at this point is the -- for who I prepared this report.

Q That would be Toledo Edison Company?

A That's right.

Q Is it not true that whenever you disturb a beach area that acts as a barrier such as Locust Point does, that that area that has been dredged is permanently damaged as to its stability?

A In this case I would think that would be a very minimal disruption.

Q But that is true, there is some permanent damage

4-12

as to stability, isn't there?

A I would say not in this case. I would like to explain that answer, too.

Q I will give you a chance.

A I think I would like a chance right now.

CHAIRMAN GARFINKEL: Go ahead, please explain it.

A (Continued) Because of an answer I would like to explain it. That this is a very shallow dredging an average 1.6 feet below bottom. Basically the material will be sand. This is a material which is a loose material which moves to and fro. Replacing of this material then will essentially establish the bottom of the lake like it was before. It is not like you are taking out a firm bedrock foundation. This material will be replaced and will go back in the condition that it was taken out. So I don't think it will be.

Q So you say it is a 1.6 feet average, but the dredging will be deeper than that in some places?

A It will be 3.6 on a maximum.

Q What was the original depth that was expected?

A I don't know, I was not involved in that.

Q It was more than 3 feet, wasn't it?

A I think it was, because they were planning on putting the intake line there, the company was.

Q This area, the Locust Point area, is the area in

front of the Davis-Besse station, isn't that true?

A That's correct.

Q Can you give us any of your conclusions on what the effect on Navarre Marsh would be if the debris in the Locust Point, Sand Beach area, was sufficient to allow water from the lake to enter?

A Yes, I can't speak for that particular area, but in 1956 there were breaches in a number of areas due to the high water storm. There were breaches in the dikes, these were repaired in Ottawa area. And the Navarre Marsh, I don't know of any lasting damage.

Q It wouldn't be good for a marsh area to have lake water going in, would it?

A No, it would disturb your mixing, and your amount of nutrients and this type of thing. But during marsh management they do allow water in and out from the lake, for flushing.

Q That is a controlled activity, is it not?

A A controlled activity. But I am just referring that this type of lake encroachment is not an irreparable damage.

Q When I read your report I was not entirely clear on your conclusions as to what supplies the sand for the beach. You seem to indicate there was a westward drift of the sand, but there was also a splitting of the two

drifts. Would you explain to me how the sand is supplied to the beach?

A Yes. To explain that, Locust Point is a headland area, and as such sand normally will move away from a headland area, and in two directions east and west. The westerly movement I was specifically talking of was movement toward the Sand Beach area. The other movement was toward the east, toward the area of Port Clinton. Normally you would expect in this type of situation that you would eventually deplete the sand and that you wouldn't have any beach there at all because of movement of sand in both of those directions. So you have to account for the sand in some way, and the most plausible explanation is that it moves in from an off-shore source. And we did find through our studies a major sand deposit lying off shore, between the Locust Point area and the Reef area. Actually the Reef area itself is embodied by a number of sand areas. So storm activity carries this sand into the Locust Point area, and wave action, and ice shelf during the wintertime, carries material into the beach to constantly replenish the material that is moving away in both directions. And our study has shown that the beach over a 20-year period now has remained fairly stable, there hasn't been any great changes. And this is the best explanation we have of why it does have stability and it is still moving out.

Q Is the Sand Beach area the area to the west of the Locust Point?

A Yes.

Q And there are a number of summer homes with permanent residents close to the water there, is that correct?

A That's correct.

Q Is it your opinion that the leaving of dredge material in the water would not for the period in which it is in the water interdict or cut off the westward sand flow to the Sand Beach area?

A No, because I believe the dredging is right about the point of divergence, and being so close to the point of divergence your sand is moving either east or west from that point, and this is why I don't feel that there will be any detriment, particularly because the main source material is moving at right angle into the shoreline from off shore.

Q Have you done any studies on the effect of radionucleide buildup in fish?

A No, not at all.

MR. KALUR: No further questions.

CHAIRMAN GARFINKEL: Mr. Malsch.

MR. MALSCH: Yes.

CHAIRMAN GARFINKEL: You may cross-examine.

of the page of what appears to be a 3-foot contour?

A That's correct.

Q Does the channel end at the 3-foot contour?

A It goes slightly beyond to the 3.6 foot contour.

Q Do you know what the draft of the barge is going to be?

A Less than 5 feet. Might I explain that? The apparent discrepancy.

Q Is it greater than 4 feet?

A The lake is averaging right now 3 feet above the datum used on this chart, so that means right now with that 3-foot contour we would have about 6 feet of water and this is anticipated to run on through the fall, about 2 feet above datum.

Q So you expect the water levels to be about 2 feet above the 3 feet slope during the period August through October?

A At least 2 feet, yes, and probably running a little higher.

Q And what will happen to the spoils in the water after you dredge them? Are they going to be piled up on both sides?

A No, it is piled on one side, and it will form much like a dike that you would find in the controlled marsh areas. And material will just be left alongside the

CROSS-EXAMINATION

BY MR. NELSON:

Q Professor Nordendorf, when is the dredging going to be done?

A It will be done during a period sixty days prior to delivery of the barges, which is anticipated to be in September. It will be basically during the month of August. August, I would say, is the primary month.

Q What is the period during which you are going to be closing up the channel?

A It will then be in the latter part of September through probably October, rather, to complete it.

Q So you are opening up the channel in August and you are closing it back up around September?

A That's correct.

Q Would the lake bottom then be restored around October?

A Yes. The plans call for complete restoration by that time, by forty days after delivery.

Q And what form of dredging will be employed?

A I don't believe that final decision has been made, but it will not be as a hydraulic type, it will be a drag line or a bucket type probably from a barge.

Q Figure 4 of your testimony, referring to Figure 4 of your testimony, there is an identification in the middle

channel until the barge has left and then it will be immediately replaced back into the opening.

Q The underlying material, clay material, will that be placed on top?

A Yes. I recommended that the clay be placed alongside the channel, that the sand be placed back up on the, towards the beach area.

Q So you are placing the clay in the water and the sand on the beach area?

A There will be some mixture which you won't be able to separate out, because it is not that distinct a separation in there, but basically the material on the beach will be sand, probably exclusively, and the material in the water will be a mixture of sand and hard clay.

Q Where do you expect to put the earth that will be removed from the shore area?

A That's all sand, and that will be in the same pile as the off-shore sand.

Q Will a drag line be used in excavating the shore area?

A I can't answer that question.

(END OF PAGE)

Q Referring to page 9 of your testimony, you state on page 9 that "I anticipate that introduction of dissolved pollutants into the water caused by the dredging operation will be negligible."

A That's correct.

Q Can you quantify in any way the amount you actually expect to be produced?

A This statement is based upon the character of material, which is ancient material that was deposited long before man's advent on the scene. So the material is basically cleaner material than our recently deposited bottom material that you find in a harbor.

And I do have some chemical analyses that were taken not in that precise area but within a few miles of there, during my work, which indicates that this material is low in materials that would be considered pollutant, detrimental pollutant.

Q What did you mean here by dissolved pollutants? What elements or compounds would you be talking about?

A Those are a broad mention -- anything that would be deleterious to the environment.

Q For example, what could that be?

A This could be phosphate, for example, which might be considered, overfertilization of the material. Or any toxic material such as heavy metal, pesticides, such things.

Most of these elements, compounds, were not in abundance.

Q How about mercury, is that possible?

A Yes, we have some analyses on mercury in that general vicinity which show levels less than a half a part per million.

Q How far away from this area were those samples taken?

A I would say a few miles from the site.

Q Has there been any analyses of the nature of the sediments in the actual area where the dredging will be conducted?

A Mainly the size grain analysis, the type of materials. This would be the -- what is sand, silt, and clay. Mechanical analysis rather than chemical.

Q These samples you referred to, sediment samples, in your experience has samples of this sort varied from place to place and site to site, along the lake?

A Yes. As far as the -- well, in this very area, mechanically as far as grain size they vary considerably. You go from the shoreline with sand up to clay material, then out to a glacial material, and out to a bedrock area.

Q How about variability up and down the shoreline?

A That can vary quite drastically too. Some areas you will have sandy shores, clay banks, bedrock shores. In local areas you have limited variability, within a few

miles.

Q Then in view of the fact that you have taken those samples at the location -- Was that your testimony?

A No, that wasn't.

I have Not taken those samples for chemical analyses at the site, but we have taken samples for size grain analysis, whether sand, silt, clay, that type of thing.

Q But no chemical analysis?

A That's correct.

Q But you have conducted analyses, chemical analyses in other nearby areas?

A Yes.

Q What is the basis for your belief that the analyses conducted in the other areas would be applicable to this area?

A Well, there is variability, as I say, in the types of sediments but the chemical analysis of that particular type of sediment -- take clay, for example. Clay from all areas of the lake is basically the same. There is not a wide variation of the ancient glacial chemical content. The wide variation --

Q Do you think it is possible that any of the tidal effects would cause any of the dredge material to float into the river?

A Tidal effects?

Q Wind tides.

A It is rather unlikely.

Q Why?

A You are about over a mile away, and our experience has been in sand material that it settles much more rapidly than that, within a few hundred feet really at the site, and turbidity just would not carry it that far.

Q How about the clay material?

A Well, our experience in dredging in the Maumee River has shown that really in a few hundred yards we can't determine background clay, suspension contents, backgroun of the river, with relation to a dredge, for example.

Q In your opinion at the time the dredging is being conducted do you think it may affect the spawning of any important species of fish?

A No, I don't believe so. It is not the right time of the year, for many of the species, being in the fall, and also it is not causing any considerable -- the area is only about 1.5 acres of bottom. And the habitat is not the right type. It is a rather high-energy wave activity habitat, which is not particularly good for spawning because the wave activity would disturb the eggs and this type of thing and would not be conducive to the spawning.

Q Have you yourself done any surveys as to the nature of the fish or other aquatic organisms that may be

found in the area where the dredging activities are to be conducted?

A I have collected samples which have been analyzed for benthic organism content, and presently I am director -- a director of the Center. There are people that work for the Center that have conducted such research.

Q How about fish and species of that sort?

A Yes.

Q Have they conducted surveys to determine what they might be?

A Some of the people that work for the Center that is under my control have, yes.

Q I think you testified on page 12 that the area is not a particularly good habitat for benthic organisms.

A That's correct.

Q Have you visited the beach around near where the dredging will be conducted?

A Yes.

Q Are there any shells or anything of that sort littered along the beach?

A Very abundant.

Q Do those shells indicate to you the existence of any benthic organisms in the area?

A We have direct sampling in the area which indicates that the number of benthic organisms rur only about

10 percent, of that found offshore in the deeper areas.

That is why I said relatively the area is not a good habitat. But so far as those shell areas go I have a theory that those are material that is carried from the offshore reef areas. The sand is carried in to the shore. This is the way the shells are carried in to the shore from the offshore deposits.

I can't substantiate that, but it is my belief.

Q How do you intend to restore the beach area once the work is done?

A I would say that the clay material which is placed on the bottom will return roughly to its original contour, and the sand will be distributed over the area probably with a dragline or similar device, and graded down in this manner to the approximate contour. There will be fathogram recordings made of the bottom for a survey when construction there is completed to determine if this is completed as planned.

Q Is the beach area stabilized by rickrack at the present?

riprap

A [illegible]?

riprap

Q [illegible] yes.

A Not at the site where the channel goes through, but I anticipate or expect about -- would estimate that about 500 feet further east there is some riprap [illegible]

protection of the shoreline.

MR. MARSCH: I have no further questions.

CHAIRMAN GARFINKEL: Mr. Charnoff, do you have any redirect?

Then I will let you continue recross again, but I want to have Mr. Charnoff's redirect.

Or do you want to continue and let Mr. Kalur have -- continue with his cross if he has any further questions, and then redirect?

MR. CHARNOFF: Mr. Kalur's cross of Dr. Herdendorf?

CHAIRMAN GARFINKEL: Again based on the cross-examination here --

MR. CHARNOFF: I would be glad to defer to Mr. Kalur.

CHAIRMAN GARFINKEL: Do you have any further in view of the cross?

MR. KALUR: I have no further cross-examination.

CHAIRMAN GARFINKEL: Mr. Charnoff, do you have any redirect?

MR. CHARNOFF: No, sir.

CHAIRMAN GARFINKEL: Wait. The Board may have some questions here.

MR. LYMAN: You mentioned a site within a mile or a mile and a half of the plant you found a small

concentration of mercury in the water. Do you have any reason to believe that this mercury might have resulted from the plant construction?

THE WITNESS: No, I didn't mean to infer that, sir. I meant that the mercury we did discover is a typical background level we found in many of the sediments throughout the lake which is running less than a part per million -- except in the Detroit River mouth it is running quite high, about four parts.

This is typical background levels.

MR. LYMAN: Does Lake Erie freeze in the winter?

THE WITNESS: Yes, it does.

MR. LYMAN: How thick does the ice get?

THE WITNESS: Several feet in the western basin.

MR. LYMAN: Like three feet?

THE WITNESS: I haven't any direct measurements, but myself, know from fishing, it has been over a foot and a half.

MR. LYMAN: Then some of the sediments that are being dredged are also influenced in the winter by ice that may be sitting on top of it?

THE WITNESS: Oh, yes, the ice piles up in many windrows, and this intersects the bottom in areas that are quite deep, maybe over ten feet deep. The ice can pile up on the reef areas and scrape the bottom.

MR. LYMAN: Could this explain then why the benthic organisms are relatively less abundant there?

THE WITNESS: Yes, it could be a possible explanation.

MR. LYMAN: That's all.

CHAIRMAN GARFINKEL: Wait.

MR. LUEBKE: I have no questions.

CHAIRMAN GARFINKEL: I have one or two questions.

The testimony you gave today, that's your testimony; am I correct?

THE WITNESS: Yes.

CHAIRMAN GARFINKEL: Okay.

Were you told by anybody from the Applicants' desk how to testify?

THE WITNESS: Not at all.

CHAIRMAN GARFINKEL: This is your free and complete testimony?

THE WITNESS: Yes, sir.

CHAIRMAN GARFINKEL: I have no further questions.

Does anybody want to recross on the basis of what the Board has asked?

Mr. Kalur?

MR. KALUR: No, sir.

CHAIRMAN GARFINKEL: Mr. Charnoff?

MR. CHARNOFF: No, sir.

CHAIRMAN GARFINKEL: Mr. Malsch?

MR. MALSCH: No, sir.

CHAIRMAN GARFINKEL: You are excused.

(Witness excused.)

CHAIRMAN GARFINKEL: Any more cross-examination?

MR. KALUR: I have a couple of questions I would like to address to Mr. -- the controller for Toledo.

MR. CHARNOFF: We can call him. He is on call, right across the street.

Is this with regard to advertising?

MR. KALUR: Yes.

MR. CHARNOFF: Because we can ask Mr. Kostanski to come, if we may take a ten-minute recess.

CHAIRMAN GARFINKEL: I think it is appropriate. I think we will go to 12:30 today. And then we will take a luncheon break.

(Short recess.)

(END OF PAGE)

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CHAIRMAN GARFINKEL: May this hearing come to order, please.

Based on an informal discussion off the record and in order to save time, the counsel for the parties have agreed to permit Mr. Malsch to put on as much as possible of his case in chief, for the remaining hour between now and 12:30 when we will recess for lunch.

Mr. Malsch?

MR. ESSY: Mr. Chairman, my name is Douglas Essy. I am with the Federal Power Commission.

CHAIRMAN GARFINKEL: Will you take a seat over here, please.

MR. ESSY: I am not going to be the witness, I will be eliciting testimony from one of our staff.

CHAIRMAN GARFINKEL: Please call him.

MR. ESSY: At this time I would like to call Mr. Toalston to the stand, please.

CHAIRMAN GARFINKEL: Will you state who you are again, please.

MR. ESSY: Douglas Essy, staff attorney for the Federal Power Commission.

CHAIRMAN GARFINKEL: The Federal Power Commission is not a party to this case, Mr. Malsch.

MR. MALSCH: That's correct, but he has entered an appearance on behalf of the staff for the purpose of

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conducti..g the direct examination of Mr. Toalston.

MR. KALUR: I will have to show an objection to this, on, first, the ground they are not a party; second, on the same ground we made as to the regulatory staff participation as a party. This is an adversary proceeding.

CHAIRMAN GARFINKEL: The part dealing with the participation of the regulatory staff I take it is a continuing objection?

MR. KALUR: That's right.

CHAIRMAN GARFINKEL: But it is overruled.

I am more concerned procedurally in permitting an attorney from another agency to cross -- to examine, in a case in chief, unless he is specifically authorized by the Commission to represent the Commission.

Mr. Malsch, is he authorized specifically to represent the Commission?

MR. MALSCH: Well, he is authorized by the staff to represent the staff. I am not sure the full Commission is aware of Mr. Essy's participation.

MR. CHARNOFF: Well, the Commission is not a party herein. As I understood it the appearance was made by Mr. Malsch on the first day and he indicated Mr. Essy was here to assist in the presentation of his testimony. The Federal Power Commission is not offered on behalf of the FPC as a party, it is entered on the part of the regulatory

staff. And as a matter of convenience to Mr. Malsch he is simply enlisting the aid of Mr. Essy.

CHAIRMAN GARFINKEL: I will treat that as permissible for this hearing. Whatever comments come out -- whatever testimony comes out of the examination by Mr. Essy will be the testimony of the regulatory staff.

Is that correct, Mr. Malsch?

MR. MALSCH: That's correct.

CHAIRMAN GARFINKEL: Okay.

MR. ESSY: May I have Mr. Toalston sworn in, please.

Whereupon,

ARGIL L. TOALSTON

was called as a witness and, having been duly sworn, was examined and testified as follows:

CHAIRMAN GARFINKEL: Please be seated.

MR. ESSY: Mr. Chairman, we have not prepared a written treatise of Mr. Toalston's qualifications, so I would like to briefly run through them if I may.

CHAIRMAN GARFINKEL: Surely.

DIRECT EXAMINATION

BY MR. ESSY:

Q Please state your name, Mr. Toalston.

A Argil L. Toalston.

Q And your address?

A 6100 Westchester Park Drive, College Park, Maryland.

Q And by whom are you presently employed?

A With the Federal Power Commission.

Q And how long have you been so employed, sir?

A Since May 10, 1971.

Q And do you work for a particular division within the Federal Power Commission?

A Yes. I work in the Bureau of Power, and the Division of Coordination and Reliability.

Q What are the duties of that division, please?

A Its principal duties are to review reliabilities throughout the United States, based principally on reliability records.

Q Could you please speak a little bit louder?

A I will try.

Q And what are your duties within that division, please?

A I am assigned to specific areas to review.

Q Would you state the goal of the division that you work for?

A The goal is to promote coordination and reliability among the various electric utilities.

Q Mr. Toalston, what is your education, please?

A I am a graduate electrical engineer, I have a

Bachelor of Science degree from Ohio State University. I graduated in 1951.

Q Are you a member of any honorary societies?

A Yes.

Beta Kappa Nu.

Q What are you prepared to testify on today, please?

A I am prepared to discuss the impact that a delay in the Davis-Besse nuclear project may have on the expected reliability of the power supply in the summer of 1975.

Q Are you speaking in terms of commercial operation?

A Yes. Commerical operation if Davis-Besse is delayed beyond June of '75, in particular.

Q Why do you feel that you are qualified to testify on this?

A I have had over twenty years' experience with the electric utility industry.

Q Would you please describe that?

A Yes. Before going with the Federal Power Commission I was employed by a consulting firm by the name of Commonwealth Associates, located in Jackson, Michigan. My first year there I was in steam plant design. The next four years in substation design. The year after that in the technical section. And the remaining fourteen years in systems studies.

In the systems studies we did many studies on transmission, distribution, generation, and energy control centers.

Q Then your employment with the Commonwealth Associates was your previous employment to being employed at the Federal Power Commission, is that correct?

A Yes. I went to the Federal Power Commission directly after leaving Commonwealth Associates.

Q What particular qualifications do you have on the subject of reliability?

A I have had special expertise in reliability. We have done a number of reliability studies involving probability mathematics. I have written computer programs applying probability mathematics to reliability projects. And I have even written a technical paper on using probability techniques.

Q Have you had occasion within that subject to study a particular pool of electrical systems?

A Yes. One of the studies that we did was for the Wisconsin pool.

Q What professional qualifications do you possess, Mr. Tealston?

A I am a registered engineer, a registered electrical engineer in both Ohio and Michigan.

Q Are you a member of any associations?

A Yes. I am a member of IEEE, that's the Instutute of Electronics and Electrical Engineers.

Q Do you hold any positions within that association?

A I am classified as a senior grade member.

Q Have you any papers that have been published?

A Yes. Several technical papers in the IEEE transactions.

Q Mr. Goalston, as we were going to be conversing with terms that may or may not be familiar to some of the individuals present, I would like to go into some of those terms. And, first of all, as we are mainly going to be discussing reliability of electrical systems, would you please address yourself to that term?

A Reliability in particular regarding power supply is what we are going to be discussing, and reliability pertains to the ability of the electrical system to supply the electrical requirements at all times. The more of the time they can supply it the more reliable it is. Reliability depends on many different things. The load variation of the electrical systems, the sizes of generations in the electrical systems; but particularly with respect to the size of the system.

Forced outage rates for the generator.

Also important is the strength of the transmission line interconnections within the system. And, above all,

reserves, generation reserves is important.

Q What do you mean by "reserves," now? Pardon me, were you going to --

A Yes, I was going to say generation reserves are both important as -- as to the amount of the reserves and also to the location of the reserves.

Q What do you mean by "reserves"?

A "Reserves" is the difference between generation capability and the load requirements.

Q What do you mean by "load," now?

A "Load" is the electrical requirements of the system's customers. It varies from minute to minute, but the thing that we are primarily interested with is the hourly average load, or the integrated hourly load, and more specifically we are interested in that peak load that occurs, and in this particular case the critical period appears to be the summer of 1975, so we are interested in that particular peak.

Q In answering my previous question you mentioned "generation." Will you define what that means in terms of capability?

A Yes. "Generation capability' is the theoretical maximum output that the system can put out. We have different terms, we use "demonstrated capability" as meaning the maximum that is actually demonstrated by a test. We use

the term "seasonal" to indicate that the maximum may be derated due to seasonal conditions, such as water temperatures, and air temperatures.

Q Are there various types of reserves?

A Yes. There is -- you might say -- well, we talk generally of three different types of reserves. Let me start with spinning reserves, and then operating reserves, and finally installed reserves.

Now, "spinning reserves" pertain to the extra generation that is actually running at the time, and "operating reserves" include the spinning reserves and also a certain amount of what we call "quick-start generation," generation that is not actually spinning, but could be started very rapidly. "Installed reserves" include the operating reserves and also generation that may take some time to start, it may be a day or so.

Q In your studies did you center on any one particular type of reserve?

A In this case the installed reserves is most important because we are looking at a long time in the future and the fact that it takes a day or two to start is not particularly significant.

Q Well, how do you rate reserves then, in terms of significance to reliability?

A Well, there's two things that are important, of

course: The amount of the reserves is important, and also the location of the reserves.

Q You have studied the Davis-Besse project in terms of reserves, have you not?

A Yes.

Q And what were your findings?

A Our findings are that if the Davis-Besse commercial operation is delayed beyond the summer of 1975, specifically June of '75, that we can expect some lower reserves, and, therefore, probably a decrease in expected reliability.

MR. KALUR: Objection. Show a request that that be stricken. The AEC regulatory staff through the FPC is now attempting to carry the proof burden put on the permittee.

MR. CHARNOFF: Not so, Mr. Chairman.

CHAIRMAN GARFINKEL: Objection overruled.

Continue with the examination.

Q Prior to delving into your study then in detail, Mr. Toalston, I would like to inquire as to the basis for that study. I will simply ask you: Upon what did you base your study?

A It was based on generation, projected generation, projected load, which, in turn, give projected reserves.

CHAIRMAN GARFINKEL: Mr. Esay, one question I have that occurs to me. You are using the period 1975.

I am not so sure I know the relevancy. Is that when the plant is now scheduled to go into operation?

MR. CHRISTY: The plant is now scheduled for commercial operation in December, 1974. The period of concern, of course, is the peak of winter '74-'75, and the summer of '75. As I understand it Mr. Foulston is basically testifying to the summer of '75.

MR. ESSY: Does that clear it up?

CHAIRMAN GARFINKEL: Okay. I wanted to get the relevancy of that period.

MR. ESSY: You have two peak periods in an electrical system, one occurring during the summer, one occurring during the winter.

CHAIRMAN GARFINKEL: Fine.

Q Did you glean your figures for this study from any particular reports?

A Yes. We rely on reports that are filed with the Federal Power Commission by the electric utilities, and by the regional reliability council. In particular in this study we used the Federal Power Commission Report Form No. 12, which is an annual report, and Federal Power Commission Form No. 12S, which is a monthly report, and therefore, gives us more up-to-date information.

Q Who files those reports, please?

A These are all electric utilities.

Q And what is delineated within those reports?

A They show the actual load conditions that are occurring, the actual generation capabilities, and they also project these values for the future.

Q Now, you mentioned the regional reliability council. Could you explain what that is, please?

A Yes. A regional reliability council is a group of electric utilities and pools of electric utilities. There are nine regional reliability councils in the United States and that covers the entire United States.

Q Is there one in which we are particularly concerned?

A Yes. We are particularly concerned with ECAR, which stands for East Central Area Reliability Coordination.

Q I believe yesterday as Applicants' Exhibit No. 3 -- or identified as Exhibit No. 3, I don't recall if it was introduced.

CHAIRMAN GARFINKEL: Yes. It was received.

Q (Continued) As Applicant Exhibit No. 3, the ECAR document for April, 1972 came in the record. Did you utilize that document in your study?

A Yes. This was one of the principal documents, the one that is due April, '72.

Q And what do the regional reliability councils report to the Federal Power Commission?

A They give long-range plans starting today up through for ten years in the future. Particularly the part we are interested in today is the projections of loads and generation capabilities, also to the lesser extent the projections of transmission capabilities.

Q Do these regional reliability councils have a goal?

A Yes. They are to encourage coordination among the electric utilities in the interest of obtaining good reliability at the overall lowest cost.

Q Are these reports filed -- now, when I am speaking of "reports" I am referring to both Forms 12, 12E, and the regional reliability council reports. Are they filed pursuant to Federal Power Commission regulations?

A Yes.

Q How do you know that their values are authentic?

A In the case of Form 12 it is attested to and notarized; and 12E is simply an updating, a more recent issue of the Form 12, which, of course, we can check against the Form 12. The regional reliability reports we can check their authentitity by comparing them to the Form 12's, and noting that generally they do -- they are quite close to the values given in the Form 12s.

Q Your study then, if I asked previously -- I don't recall, I think I did -- centered mainly around the

regional reliability report of April '72 from the ECAR system?

A Yes.

Q Referring now to the subject of reliability and, of course, reserves, you mentioned earlier that, I believe, in essence, reserves were equal to generation capability minus load. Now, when you refer to "generation capabilities" are you speaking prospectively?

A Yes. We are more interested at this time in the projected capability rather than the actual that is transpiring today. In other words, we are concerned with the summer of 1975, so we are talking about projected capability rather than actual.

Q Do you expect the actual to be less?

A Yes, very definitely I do expect it to be less. The actual -- the expected must provide for a number of contingencies, which will reduce the actual. And some of these are -- well, one of the important ones, of course, is the slippage, the scheduled additions are delayed and the generation is not there when you are expecting it to be; one of the contingencies is the slippage. Another one, we must provide for maintaining generation, so, again, the actual will probably be less than the expected. I mentioned "seasonal" deratings before. There are also equipment deratings, because the equipment may not be quite up to par

when the time comes.

One of the important things is forced outages, outages which are not foreseen but which do happen. There are also possibilities, as we see it right now, of fuel limitations, for instance the shortage of gas may restrict the operation of certain generators, or in the case of coal-fired plants the pollution aspects may restrict the operation of some of these generators. So all these things will make the actual capability less than the projected theoretical.

Q Well, then, how do you compute the amount of extra generation that is needed to provide for these contingencies?

A There is no way to compute it exactly, of course, because all these things are a matter of probability.

Q So it's not an arbitrary figure, though?

A No, it is not arbitrary. It is based on experience, and, of course, we could apply probability mathematics to determine what is the realistic value.

Q What, in your opinion, is the normal amount of reserves needed?

A It varies depending on the conditions in the system and so forth. I would say 15 to 20 percent is a good reliable figure.

Q Could you elaborate on that and why it varies?

A Yes. 15 percent for instance might be adequate for a system that has small generating units with respect to its overall size, and those generating units have low outage rates. Electric utilities with real good interconnecti All these means that you could get by with lower reserves.

The higher reserve would apply to utilities or pools which have very large generating units with respect to their total capability, generating units with high forced outage rates, or if they had weak interconnections this would mean they would have to have more reserves.

Q Whatamount would you say is needed for the applicant's system?

A I believe some place in the middle, around 20 percent.

Q Are you speaking there to the applicants themselves or to their interconnected pool?

A I am speaking in this particular case of CAPCO, which includes -- or of which the applicant forms a part of its pool.

CHAIRMAN GARFINKEL: Will you spell out what CAPCO is, for the record?

MR. TOMLSTON: Yes. It stands for Central Area Power Coordination Group. And the applicants are within this pool.

Q Why do you give the figure for CAPCO?

A Because this pool operates as a group and this is the figure we feel is important in this case.

Q If this 20 percent extra generation is employed, Mr. Dealaman, will that assure the CAPCO Group being able to supply its summer 1975 peak load?

A No, there can't be an assurance that they will even be able to supply it with a 20 percent reserve. With that figure we would expect a high degree of reliability.

Q What if the figure drops below that?

A The reliability would decrease accordingly.

Q Why?

A Because there would not be enough excess generation to supply for all these contingencies that I have mentioned previously.

Q What might the consequences be if they couldn't maintain the 20 percent reserve?

A Well, it could be minor or it could be major. If they could not obtain enough emergency power from the surrounding areas they may have to actually go into a load-interruption program, or a load curtailment.

CHAIRMAN BARNWELL: Let me ask you a question in this connection: What would you say would be the critical reserve where there is a serious repercussion you can expect? Do you have any idea?

MR. DEALAMAN: No. Because as the reserve decreases

there is more things that will cause a repercussion, and whether this would be critical depends on the entire situation at the time.

CHAIRMAN GARFINKEL: I see.

Q You mentioned interruption of load, if I am not mistaken, Mr. Toalston. What effects -- or why would that be so bad?

A Well, in some cases it is not too bad. Some customers are merely inconvenienced and, of course, irritated, but other customers depend on this electricity for their product; for instance, for those that require refrigeration for their product, or heat for their project -- product, they could suffer economic loss. And still other customers depend on this electricity for their well-being. So it could result in bodily injury, or even death in some cases.

Q I presume that latter is referring to hospitals?

A Well, particularly if the hospital doesn't have a backup supply.

Q Well, can a system interrupt load to those people who don't really need it?

A No, this is the unfortunate thing about interrupting load. If you could just interrupt it to those people that don't need it this wouldn't be so bad. But these people are all in on the same feeder, those that need it very badly and those that don't. so when you interrupt

a feeder you interrupt all kinds of people, both those that don't need it and those that depend on it quite critically.

Q Mr. Tomlston, let's at this point, I think, let's get into the figures of your study. First of all, in evaluating the reliability of the CAPCO Group is it sufficient to merely look at the CAPCO reserve picture?

A No, we feel that it is important to look at a wide area, not only CAPCO but ECAR, of which CAPCO forms a part, and we feel it is even important to look beyond ECAR to some of the pools that surround it.

Q Can you tell us why?

A Because if the reserve situation is critical throughout the area that's worse than if the reserve situation is only critical in certain parts of the area.

Q Do you have the figures of your study with you?

A Yes.

Q If you would then would you please begin with the areas surrounding ECAR?

A Yes.

CHAIRMAN GARFINKEL: Is the information he is going to speak about, is that -- I am not going to stop this examination, but I just want to know do we have anything like that in the testimony yet?

MR. ESSY: You have, further down the line, you have the ECAR document, from which we will be addressing

ourselves. Or from which Mr. Toalston will. But this initial part, no we don't.

A (Continued) Looking at the surrounding areas around ECAR, and starting with New England, in the summer of 1975 they are expecting a reserve percentage of 37.9 percent.

Right below New England, in the New York pool they are expecting a reserve percentage of 30.4 The MAC area, or the Mid-Area Coordination Group -- Mid-Atlantic Area Coordination Group -- is expecting a reserve percentage of 30.8 percent.

VACARS, the Virginia-Carolina Group, reserve percentage of 23.7.

The TVA, Tennessee Valley Authority, 30.7 percent.

The Illinois-Missouri pool, percentage of 17.6 percent.

Commonwealth Edison, 12.7 percent.

And the Western Upper Michigan System -- the Wisconsin-Upper Michigan System -- is 18.1 percent.

Q Am I correct in assuming that the areas closest to the Toledo area tend to have the least reserve margin?

A Yes. We did observe this, at both Commonwealth Edison and the Illinois-Missouri pool have a reserve margin under 20 percent; whereas the New England Group,

for instance, which is quite remote, has a predicted reserve margin of 17.9 percent.

Q What about the reserve situation within ECAR then?

A I have those figures here too.

Q Are those figures delineated in Exhibit 3, by the way, Mr. Toalston?

A Not the particular figures that I am giving. Some of them are. I will take that back.

CHAIRMAN GARFINKEL: Is there any way to put that -- the information he has got with him, and place that into evidence? I don't want to stop the examination, but I think we should have the document for reference, to look at.

MR. ESSY: Well, the ECAR document is in evidence, Mr. Chairman. And this is what we are referring to now.

Were you referring to the previous set of figures?

CHAIRMAN GARFINKEL: No, no, just what you are going to now.

MR. ESSY: Well, that is in evidence except that he has extrapolated a reserve figure.

CHAIRMAN GARFINKEL: I just wanted to be sure.

Q Could you depict the reserve situation for ECAR, please?

A Yes. The total ECAR area is -- again, for the

summer of '75 now -- is expecting a reserve percentage of 21.5 percent. They also have a breakdown within ECAR which I think is important. I would like to start with the Allegheny Power Systems. They are expecting 40.1 percent. The American Electric Power, 31.6 percent. CAPCO, 17.0 percent. Cincinnati Gas and Electric, 15.5 percent. Columbus-Southern Ohio, 14.2 percent. The Dayton Power and Light, 22.9 percent. Kentucky-Indiana pool, 15.5 percent. Louisville Gas and Electric, 21.6 percent. The Michigan pool, 15.9 percent. Northern Indiana Public Service Company, 22.9 percent. The Ohio Valley Electric Corporation, 2.1 percent. And Southern Indiana Gas and Electric Company, 11.9 percent. That covers the ECAR pool.

Q Well, again it appears that the higher reserves are remote from Toledo. Is that correct?

A Yes. We have observed that here again. The Allegheny Power Systems, projected again, have reserve percentage of 40.1 percent. The Michigan pool has a projected value of 15.9 percent.

CHAIRMAN GARFINKEL: Mr. Toalston, do you have a figure specifically for Toledo Edison?

MR. TOALSTON: Yes.

MR. ESSY: We are getting into that, Mr. Chairman.

CHAIRMAN GARFINKEL: Go ahead. Okay, fine.

Q What about CAPCO now?

A I have CAPCO figures also.

MR. KALUR: How about Southern California?

MR. TOALSTON: I don't have --

MR. ESSY: That's a little bit removed.

MR. TOALSTON: I don't have Southern California.

A (Continued) I have already mentioned the total CAPCO Group as having a reserve of 17 percent. This, of course, is based on Davis-Besse being in commercial operation by the summer of 1975.

If it is delayed so that it is not in commercial operation at that time this reserve percentage would drop to 9.6 percent.

Now, I have also got the individual companies within CAPCO, and I will go into that now, if you would like.

Q Please. Are you going to do that both with and without Davis-Besse?

A Yes. First, assuming that Davis-Besse is in operation, and starting with Cleveland Electric Illuminating, the percentage is 21.3 percent.

The Duquesne Light, or Duquesne Power, 11.4 percent.

Ohio Edison, 7.4 percent.

Toledo Edison, 7.7 percent.

Now, without Davis-Besse, Cleveland Electric Illuminating decreases to 9.4 percent. Duquesne remains

the same because Davis-Besse is not a part of their capacity. Ohio Edison remains the same because Davis-Besse is not a part of their capacity. But Toledo Edison drops to a minus 24.7 percent.

Q You base these figures on the figures provided for load and generation capability encompassed in Exhibit 3 of the applicant, did you not? In the ECAR regional reliability council report?

A The total ECAR figure is obtained from the regional report. The individual companies have been obtained from the FPC Form 12 Report.

Q That minus 24.7 percent reserve for the Toledo Edison Company, could you indicate what that means?

A It means that they must obtain power from some place or somehow, that there will actually be less generation than load, which means if they can't obtain this power that they would have to interrupt load.

Q Do you have figures just for Toledo Edison?

A You are talking about capacity?

Q I am talking about capacity and load figures.

A Yes.

Again with Davis-Besse Toledo Edison is expecting a capacity of 1,523 megawatts; and a load of 1,414, which gives a megawatt value of 109.

Maybe I ought to give CEI here also, since they are

Q Please do, thank you.

A Cleveland Electric Illuminating.

With Davis-Besse, they are assuming a -- they are projecting a capacity of 4,210 megawatts, with a peak load of 3,470, which gives a megawatt reserve of 740.

Now, without Davis-Besse the Toledo Edison capacity would be reduced from 1,523 megawatts to 1,065 megawatts. This load still, it would be 1,414, which gives them a negative megawatts of 349; for the reserves.

The Cleveland Electric Illuminating without Davis-Besse is expecting a capacity reduced from 4,210 to 3,796. The same load at 3,470, gives a reserve of 326 megawatts.

Q Mr. Toalston, what steps could be taken to help relieve the impact of low reserves?

A Well, there's a number of remedial steps, or supplementary steps I think --

CHAIRMAN GARFINKEL: I think the questioning here now should start to be limited to Cleveland Electric and Toledo Edison, rather than go general.

MR. ESSY: We have. I planned to do it this way.

CHAIRMAN GARFINKEL: Is this question now related just to Toledo Edison?

MR. ESSY: Well, assuming that we are looking at the minus 24.7 percent reserve, or whatever that figure

was. Yes; that's what we are going into now.

CHAIRMAN CARFINKEL: Okay.

MR. TOALSTON: May I say something?

CHAIRMAN CARFINKEL: Surely, go ahead.

MR. TOALSTON: These are general observations which would apply to Toledo Edison and every other company within the United States you might say.

CHAIRMAN CARFINKEL: All right.

MR. TOALSTON: Steps that can be taken, one is prepare for this trouble, if you might expect that the reserves are going to be low. There are various ways you can do this. First of all, you ought to train your operators so they know what to do when and if this happens. You can also train the public so that they will be responsive to you if you request a reduction in load at the time. You can develop programs ahead of time for load shedding, and for voltage reduction, which would tend to help the situation. You ought to get your equipment into top working order, so that when it occurs it will be the best that is available.

It is possible that these companies might be able to accelerate their maintenance, in other words, maintenance that may have been scheduled for this critical period may be able to be advanced and done ahead of time.

There is also a possible option that they could

purchase some power.

Another possible option, that they could install gas turbines in time to meet this critical situation.

Q You expect they will be able to purchase power?

A It is possible; it is not definite.

Q Well, why isn't it definite?

A Well, for two reasons; as we discussed before, much of this excess reserve is rather remote from the people that are concerned here. And also we can expect the same type of problems to occur to the surrounding areas that are facing these particular companies right now. Namely, they can also expect slippage of generation, which would decrease their expected reserves to something less than what they expect.

MR. ESSY: I have some questions here that may go against your pleasure of staying within Toledo.

CHAIRMAN GARFINKEL: Go ahead and ask the questions.

MR. ESSY: I will quickly try to --

CHAIRMAN GARFINKEL: I am just trying to limit the direct examination as much as possible.

MR. ESSY: I shouldn't have too much more.

CHAIRMAN GARFINKEL: All right. go ahead.

Q Again, Mr. Toalston, could you address yourself to the problems of reserve margins being the larger of

which are more remote from Toledo, and what significance that attaches to these figures in terms of supplemental power sources?

A When the reserves are remote and an emergency situation occurs these companies are all interconnected, and when an emergency first occurs the power rushes in from all of the interconnected companies. And if the load-shedding for instance, is not rapid enough, there is indeed a shortage of reserves throughout, this could cause a widespread interruption, similar to the northeast blackout in 1965.

Q Your other supplemental source suggestion was gas turbines, was it not? Gas combustion units?

A I mentioned gas turbines might be a possibility, yes, as a supplement.

Q Why do you use the term "possibility"?

A I don't believe there is any assurance that these companies will be able to get the gas turbines in time.

Q Well, okay, assume they can be acquired, are there any shortcomings?

A Yes, there are also shortcomings that are inherent in gas turbines. For one thing, they are designed for short-time operation, and when we are trying to supplement a nuclear unit in this case it means they may have to operate quite a few hours and it would go into a lot of maintenance, extra maintenance, therefore decreasing

the reliability.

Q Could you give a figure of hours' use, for gas turbines, say vis-à-vis a nuclear power plant?

A It varies depending on the load and the system and the generation at the time. But we generally think of gas turbines as operating maybe 10 percent of the time or less, whereas nuclear units we expect to operate maybe 75 percent of the time.

Q Are there any other shortcomings to gas turbines in operation?

A Yes. Gas turbines have higher outage rates. For instance, statistics show that outage rates of gas turbines exceed 22 percent, whereas for nuclear units it is something over 10 percent.

CHAIRMAN GARFINKEL: What is an "outage rate," for my benefit?

MR. ESSY: I am sorry, Mr. Chairman.

MR. TOALSTON: An "outage rate" is the expected -- well, really, it is a statistical figure that is derived based on the time that the unit is in operation versus how much it is out. So if you say 22 percent it means that 22 percent of the time it was wanted you couldn't get it.

CHAIRMAN GARFINKEL: Thank you. That clarifies it for me.

Q In terms of expense could you address yourself to it?

A With gas turbines?

Q Yes.

A Yes. Due to the shortage of gas that is facing us, gas turbines probably could not be expected to operate on natural gas, and as a result they would have to go to oil, and, in turn, they would have to go to a low-sulfur oil, and low-sulfur oil is quite expensive.

Q Are there any other factors that might be extant in this expense item for gas turbines? I am relating this perhaps to the nature of gas turbines being peak rather than base loads.

A Yes. That's another thing, is that since these gas turbines are designed for short-term operation, and in a sense we are trying to supplement nuclear power in this case, it might have to operate more hours, this would mean that there would be more maintenance expense involved also.

Q Well, could you estimate the cost of gas turbine operation as compared to nuclear?

CHAIRMAN CARFINKEL: I think I would like to limit that specifically to the Davis-Besse plant.

MR. ESSY: Fine. Within that framework.

A Yes, I think this would apply to both the Davis-Besse and for other places.

I would estimate a figure, that the operation of

the gas turbine would be approximately five times the operation of the nuclear unit.

Q Let's qualify that. Does that mean that the customers will be billed at a factor of five times?

A No, no, not that. But since the gas turbine operation is only a small part of the total system operation, the impact on the customers themselves would not be five times.

Q In your opinion, Mr. Toalston, are there any other viable supplemental sources of power upon which these applicants could call to help relieve the situation in the summer of 1975?

A Other than the possibilities that we have mentioned of being able to purchase power, being able to possibly install gas turbines, due to the time limit here I don't believe there is any other -- I was going to say feasible alternatives -- I don't believe there are any other alternatives.

CHAIRMAN GARFINKEL: Mr. Toalston, just for the record, would it be -- in your opinion would it be impossible to build, within the time frame, a new fossil plant?

MR. TOALSTON: Yes, in my opinion time would not allow for a new fossil plant.

CHAIRMAN GARFINKEL: Thank you.

Q What is your overall opinion of the effects of a delay in the construction of the Davis-Besse project, Mr. Toalston?

A If there is a delay in the construction --

MR. KALUR: Objection unless it is restricted to the electrical.

MR. ESSY: I didn't hear that.

MR. KALUR: Objection unless you are going to limit the question. It is pretty broad right now.

CHAIRMAN GARFINKEL: Do you want to repeat the question to this Board, Mr. Reporter.

(The question was read.)

MR. ESSY: I will rephrase that, Mr. Chairman.

CHAIRMAN GARFINKEL: Please.

Q Mr. Toalston, in terms of reliability, what is your opinion of any effect that a delay in the construction of the Davis-Besse project would have?

A If the delay in the construction of the Davis-Besse nuclear plant actually results in a delay in the commercial operation of that plant, I would expect that in the summer of 1975 that CAPCO and particularly Toledo Edison would have sub-par reserves, and could expect a decrease in overall reliability.

MR. ESSY: Thank you, Mr. Toalston. That concludes my direct examination, Mr. Chairman.

CHAIRMAN GARFINKEL: Mr. Charnoff, we still have about ten minutes. Do you have any cross? I think probably we can dispense with your cross, unless you have a good amount of cross-examination.

MR. CHARNOFF: I'm hurt.

CROSS-EXAMINATION

BY MR. CHARNOFF:

Q Mr. Toalston, have you examined the situation with respect to the winter peak of '74-'75?

MR. ESSY: Would you like that question repeated?

MR. TOALSTON: I believe, I didn't understand it.

Q (Continued) Have you examined the winter peak of '74-'75 projections to determine the impact of a delay of the Davis-Besse plant?

A I have looked at them very briefly but I haven't examined them in detail at all, because this did not seem to be the critical period as far as I could see.

Q Have you seen the testimony presented by the applicants with respect to that period of time, on pages --

CHAIRMAN GARFINKEL: Mr. Charnoff, when you get to those pages, and cite them in the record, just show them to the witness so he clearly sees and understands what is in those pages.

MR. CHARNOFF: I will be handing the witness the somewhat scissored document, so that we are sure we are

giving him only that which is in evidence.

MR. ESSY: Will you refer to the pages.

MR. CHARNOFF: I surely will, in just a second.

The references I would make, gentlemen, and Mr. Toalston, is to the projection on page 36, a table on page 37, which shows CAPCO reserves for December, '74, and June, 1975.

Q Do you have a copy of this document, Mr. Toalston?

A I believe my document is dated differently than yours. It is pretty similar.

CHAIRMAN GARFINKEL: I would also like the record to show that the pages referred to in the testimony have not been scissored out.

Q Let me show you my copy, Mr. Toalston. Page 37 as I said, has the table, CAPCO reserve percentages with and without maintenance, in December, 1974 and 1975.

Page 38, Table I has a CAPCO peak load week presentation for December, '74, and June, 1975.

Table II on page 39 shows the data for Toledo Edison, and Table III for Cleveland Electric Illuminating Company on page 40.

I wonder if you would examine the data with respect to the 1974 material, Mr. Toalston, and tell me whether -- appreciating that you haven't made the same detailed study -- whether those are basically consistent

type of presentations and quantifications of the situation as you would expect them to be based upon your examination of the June and July, the summer peak of 1975, period.

You might take a moment to look at that, if you wish.

A I am not prepared to defend these figures, because our data was based on a regional report which was made more recently, I believe, than what these figures are based on.

Q Very well.

A However -- do you want me to go on?

Q Yes, go ahead.

MR. KOLUD: I object to him going any further. I think he has answered the question.

Q I am really inquiring whether they are consistent, in effect, with the trends that you understood when you looked at the summer of 1975 period.

CHAIRMAN GARFINKEL: May I ask you this question -- I am sorry to interrupt, but I think I want to tie up what you are doing.

MR. CHARNOFF: You are not scissoring my question?

CHAIRMAN GARFINKEL: No, I am not doing that.

The figures that are contained on the pages shown to you by Mr. Charnoff, if they were accurate -- if we

are taking that period of time, from your expertise, would you consider those figures within the ballpark?

MR. CHARNOFF: I thank you, Mr. Chairman.

MR. TOALSTON: There are a number of pages here. I think I would have to look at each page separately.

CHAIRMAN GARFINKEL: Go ahead.

MR. CHARNOFF: Could you do that, Mr. Toalston? Can you look at each page?

CHAIRMAN GARFINKEL: Do you need five minutes? Would that be enough, or do you need more than that?

MR. TOALSTON: If I could just take time to look right now.

MR. CHARNOFF: I think if Mr. Toalston would address himself to each page separately.

CHAIRMAN GARFINKEL: What about each page separately? Don't worry about the time, we want the answer here.

MR. TOALSTON: If I look at each page separately I think I could say whether they are ballpark figures.

MR. KALUR: Could we have a definition of "ballpark figure"?

CHAIRMAN GARFINKEL: Seeming reliable, within the general area of reasonableness.

(Discussion off the record.)

MR. TOALSTON: Would you read back the pages I am

supposed to look at . 37?

MR. CHARNOFF: I think the first table concerned is on page 37.

MR. TOALSTON: Okay.

A Starting on page 37, the part is captioned, "CAPCO Service Reserve for December, 1974," shows with Davis-Besse, 21.9 percent. I think based on the more recent figures this reserve is a little bit higher; maybe in the order of 26 or 27 percent. These are not exact figures, just my recollection now.

CHAIRMAN GARFINKEL: When you say "26," that's with Davis?

MR. TOALSTON: With Davis-Besse.

CHAIRMAN GARFINKEL: Okay. What about without Davis-Besse?

MR. TOALSTON: Well, of course the 7 percent reduction looks reasonable, so that this would also be in that same order of --

CHAIRMAN GARFINKEL: Okay.

MR. TOALSTON: I never tried to check it with maintenance, so since we do not have maintenance figures supplied in these reports --

CHAIRMAN GARFINKEL: So that part you can't answer?

MR. TOALSTON: That part I cannot say really one

way or the other.

Q Mr. Toalston, is periodic maintenance a factor in giving higher or lesser degrees of assurance with regard to reliability of service?

A Maintenance would --

MR. TOALSTON: Would you read that back?

Q Let me ask it this way: If maintenance is not performed regularly would that lessen the reliability of the availability of the capacity?

A It would lessen the reliability of the capacity, yes. I don't think it would lessen the reliability of the availability. I am not sure what that means.

Q But it would lessen the reliability of the capacity?

A Yes.

Q And, therefore, maintenance is a desirable practice?

A Maintenance is very definitely not only desirable but necessary.

Q And in talking about reliability, therefore, wouldn't one want to include in his considerations of the situation with maintenance --

A Yes.

Q As a form of practice?

A You must consider maintenance. However, --

Q So that if one is looking at reliability one ought to look primarily at a situation where maintenance is performed as distinguished from situations where maintenance is precluded from being performed?

A Yes, one should look at maintenance performed.

Q Thank you. Why don't you proceed to the next page.

CHAIRMAN GARFINKEL: Are you now looking at page 38, Mr. Toalston?

MR. TOALSTON: Page 38, Table I.

A It says, "CAPCO Peak Load Week."

(END OF PAGE)

This under December, 1974, this table appears to be simply a derivation of what we discussed on the previous sheet.

My same comments would apply, that during the winter peak of 1974 I would expect these reserves to be a little higher based on the more recent figures.

CHAIRMAN GARFINKEL: But let me ask you this: With respect to the figures contained therein would you consider from your expertise that they are reasonable type figures?

THE WITNESS: Yes.

CHAIRMAN GARFINKEL: For that period.

THE WITNESS: They are not wild.

CHAIRMAN GARFINKEL: Okay.

MR. KAUR: I object to the speculative nature, continuing to go through this. The witness has said he hasn't made a study of these, and you are asking him simply to speculate on how things come in and how they figure.

CHAIRMAN GARFINKEL: I think the background of this individual indicates that he is an expert in the electrical engineering field. Consequently I think, as an expert, I am allowed to ask hypothetical questions based on evidence in the record. That's an axiom of legal process, and I am talking about information in the record. And he is qualified as an expert to testify on that.

So your objection is overruled.

A (Continued) Table 3 on page 39 pertains to the Toledo Edison Company in particular. Again under December, 1974, I would say that these reserves are in the ballpark.

CHAIRMAN GARFINKEL: Mr. Charnoff.

MR. CHARNOFF: I have no further questions.

CHAIRMAN GARFINKEL: Do you have any redirect at this time or do you want to wait for the rest of the cross-examination?

MR. ESSY: I have no redirect, Mr. Chairman.

MR. KALUR: I only have two on cross.

CHAIRMAN GARFINKEL: All right.

CROSS-EXAMINATION

BY MR. KALUR:

Q Mr. Toalston, I think you described to us four methods by which an electrical utility could cut down its electrical demand when it knew it had a very slim margin of reserves, did you not?

A I don't believe there were four methods of cutting down the demand, no.

Q Didn't you indicate there were methods that could be used when they have a load problem, a reserve problem?

A Yes, but this did not cut down the demand, except for maybe one or two of those methods.

Q What does it do? What do those alternatives you

are talking about do?

A It gets the system operators ready for this contingency so that they know how to react when it happens.

Q Have you done anything, studying, with respect to how a utility faced with low reserves can expect to cut demand several years from now by decreasing advertising?

A No.

Q What about regressive rate structures? Have you done any study on that -- if that policy were reversed what it would do to cut down the need for electrical power several years hence?

A I am not in the Rate Division.

MR. KALUR: That's all I have.

CHAIRMAN GARFINKEL: Any redirect by --

MR. ESSY: None, Mr. Chairman.

CHAIRMAN GARFINKEL: Any further cross by you, Mr. Charnoff?

MR. CHARNOFF: No.

CHAIRMAN GARFINKEL: You are excused.

(Witness excused.)

CHAIRMAN GARFINKEL: And you are free to go home if you desire.

We are recessed until 1:30.

And I assume you will have the documents that he--

MR. CHARNOFF: We will have the contract and we

will have our advertising executive.

CHAIRMAN GRENFINKEL: Very well.

We are recessed until 1:30.

(Whereupon, at 12:40 o'clock p.m., the hearing was recessed until 1:30 o'clock p.m.)

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AFTERNOON SESSION 1:35 p.m.

CHAIRMAN GARFINKEL: The hearing now resumes. Everybody come to order.

At this point, Mr. Kalur, you have cross-examination with respect to advertising and some other matters, especially with the contract.

Will you commence your cross-examination, and which witness do you want now?

MR. KALUR: Well, I would like Mr. Kostanski.

CROSS-EXAMINATION

BY MR. KALUR:

Q Mr. Kostanski?

A Kostanski.

Q You are the controller of Toledo Edison?

A Yes, sir, I am.

Q Are you familiar with the annual corporate budget?

A Yes, I am.

Q Will you tell me how much Toledo Edison spent on advertising in 1971.

A If you will allow me a second here, sir, I will -- if I can find it amongst all my papers.

In 1971 Toledo Edison spent $650,000 on advertising.

Q Are you aware of a program -- either a joint

program by Toledo Edison and CEI, or one by Toledo Edison alone, to publicize nuclear power?

A No, sir.

Q Do you have estimated costs for the next four-year period for advertising for Toledo Edison, on a yearly basis?

A No, I do not.

Q Do you have any reason to believe that this $650,000 figure for 1971 will decrease over the next four years?

A No, I don't.

CHAIRMAN GARFINKEL: Let me ask a question, just to continue: Do you have any projection figures, irrespective of actual cost, that the company has prepared, summaries?

THE WITNESS: We do have forecast figures, yes. I do not have them with me.

CHAIRMAN GARFINKEL: Is there anybody here who can testify with respect to the forecast figures?

MR. CHARNOFF: May I have a moment?

CHAIRMAN GARFINKEL: Surely.

MR. KALUR: May I continue?

CHAIRMAN GARFINKEL: Yes, go ahead. Continue.

BY MR. KALUR:

Q As the controller can you form any opinion with respect to an ending of advertising expenditures, how that

might be related to the demand for electrical power by the Toledo Edison Company?

A Well, yes. Our advertising programs, as I understand them, are really designed -- it is really designed in order to improve our load factor. By that I mean it's intended to utilize our equipment to the greatest extent.

For instance, we have been experiencing, and we anticipate in the future a summer peak. Therefore the capacity in the wintertime is available; so we have been advertising electric space heating. Other items -- well, as an example, private outdoor lighting is another good example of improving the load factor.

What you are attempting to do is utilize your equipment when it is available.

Q The purpose of advertising is increased consumption of electrical power; isn't it?

A The purpose of it is to improve the load factor, and what you will accomplish by improving the load factor is improving your entire cost picture. As long as you have the equipment available, then it is in your best interest to utilize that equipment, so that in the overall we are able to serve our customers at a lower cost.

Q Do you have any figures with respect to what part advertising plays in your total load demand?

A I don't believe that it would contribute to the

total peak. Our advertising, as I say, is designed in order to improve the load factor.

Q Can you give us any figures on the advertising? If it was to be discontinued today, what that would mean with respect to demand for electrical power in 1974?

A No.

MR. KALUR: No further questions.

CHAIRMAN GARFINKEL: Mr. Malsch, do you have any cross-examination?

MR. MALSCH: No questions.

CHAIRMAN GARFINKEL: Mr. Charnoff?

MR. CHARNOFF: Yes. I think I do.

REDIRECT EXAMINATION

BY MR. CHARNOFF:

Q Mr. Kostanski, there is a little complication. You testified with respect to improving the load factor. Could you distinguish between the load factor and peak demand?

The question really is, is the advertising intended to increase the peak load demand, or is the advertising intended to smooth out the valleys between the peaks?

A It is designed to smooth out the valleys between the peaks. It is not intended to increase the peaks.

Q So you would not expect that a curtailment of the advertising programs would reduce the projected peak demands

in 1974 and 1975?

A No, sir.

MR. CHARNOFF: Thank you.

CHAIRMAN GARFINKEL: Mr. Kalur.

RECROSS-EXAMINATION

BY MR. KALUR:

Q You must know that advertising -- the result of advertising is unpredictable; isn't that true?

A It's not measurable.

Q And it could be true also, couldn't it, that continued advertising could cause one of these peaks to go right through your load expectations?

A I don't believe it would.

MR. KALUR: Nothing further.

CHAIRMAN GARFINKEL: Mr. Malsch?

MR. MALSCH: No questions.

MR. CHARNOFF: May I have a --

CHAIRMAN GARFINKEL: Wait, I am not finished. I want to make sure.

Does the Board have any questions?

The Board doesn't have any questions.

MR. CHARNOFF: May I ask another question in reply to --

CHAIRMAN GARFINKEL: Yes, go ahead.

MR. CHARNOFF: I don't know how many turns we keep

going around the cycle.

CHAIRMAN GARFINKEL: As long as you elicit information.

FURTHER REDIRECT EXAMINATION

BY MR. CHARNOFF:

Q Mr. Kalur asked you questions with regard to advertising making the demands go right through the peak forecast. Is the advertising program selectively designed to add demand of the character that is addressed to the offpeak uses of electricity?

A The one example -- yes. And the one example that I have given is, for instance, private outdoor lighting. This is usage in the night hours, and we are not experiencing any peak situation in night hours; so this is an example.

Q When is the peak, Mr. Kostanski?

A The peak in the -- we have been experiencing a peak in the summer hours and the peak is generally, ch, in the morning.

Q In the summer hours, is that peak significantly contributed to by the demand for air conditioning?

A Yes.

Q In 1972 is Toledo Edison Company doing any advertising to encourage air conditioning?

A No. And in fact in 1971 we have not had any expenditures for air conditioning.

MR. CHARNOFF: Thank you.

CHAIRMAN GARFINKEL: Mr. Kalur?

FURTHER RECROSS-EXAMINATION

BY MR. KALUR:

Q Mr. Kostanski, does the Toledo Edison Company employ a regressive rate structure?

MR. CHARNOFF: I thought Mr. Kalur's follow-on questioning, Mr. Chairman, is in a sense limited by the prior questioning.

CHAIRMAN GARFINKEL: I will allow it just to get the information in the record. And I hope this is the last of the back and forth on direct and cross.

MR. CHARNOFF: I have to insist though that I have the last chance.

CHAIRMAN GARFINKEL: Okay, but if he goes too far.

MR. CHARNOFF: But it certainly should be recognized it is beyond the scope of the prior --

MR. KALUR: The cross was beyond the scope of the direct?

CHAIRMAN GARFINKEL: I am allowing you to cross-examine and ask these questions. Go ahead.

THE WITNESS: Will you repeat the question.

(Question read.)

A By that --

Q Do industrial customers pay less the more they use?

A Yes. That is the general pattern of our --

MR. KALUR: You have answered --

A -- rate structure.

MR. KALUR: -- the question.

That's all I have.

CHAIRMAN GARFINKEL: You are excused.

Oh, I am sorry. Mr. Charnoff may have some more.

MR. CHARNOFF: I have no questions.

CHAIRMAN GARFINKEL: You are excused.

(Witness excused.)

MR. CHARNOFF: Mr. Chairman, we have with us the Babcock & Wilcox equipment contract, which I am perfectly happy to make available to Mr. Kalur for his review. I will appreciate it, at the request of Babcock & Wilcox, which considers considerable elements of the contract to be proprietary to it, if we could have a protective order which would limit the availability of this document to Mr. Kalur for his purpose in this hearing, and to be used depending upon the nature of the inquiries, and perhaps after Mr. Kalur would examine it he could tell us and we could determine whether the specific area of inquiry would have to be in an in-camera session or not.

Clearly elements such as the price and other

provisions in this contract are proprietary to the Babcock & Wilcox Company to protect their competitive position. We are perfectly willing to have full use of the document made during the course of the hearing provided there is suitable protection for the proprietary interest of the vendor.

CHAIRMAN GARFINKEL: This is the way I want to proceed with that. With your cooperation you will turn the documents over to Mr. Kalur to look at, for his personal use at this hearing, just to look at. Prior to going back on the record we will have an informal meeting of counsel up at the bench. Then we will see where we are going. It may not be necessary for any protective order.

So on that basis let's see what Mr. Kalur has to say.

Is that all right?

MR. CHARNOFF: I would like to modify it a little bit, as you stated it. We will make it available to Mr. Kalur for his review for the purposes of this hearing.

CHAIRMAN GARFINKEL: That's all.

MR. CHARNOFF: In that sense at this point that is a sufficient protective order. But I wish that to be understood a protective order. I am not personally concerned about Mr. Kalur, but I am doing this at the request of the Wilcox & Babcock Company.

CHAIRMAN GARFINKEL: As far as I am concerned,

that document is not being turned over to Mr. Kalur for his personal possession, to be taken out of the room or anything else.

MR. CHARNOFF: Or even for discussion of the contents therein with other people for other purposes, at this time?

CHAIRMAN GARFINKEL: I don't see any possibility of that. He only has just these people here. Are you objecting to Mr. Kalur discussing it with the people at his desk?

MR. KALUR: I think I have the right to.

MR. CHARNOFF: I would like to limit it to counsel, sir, at this time, and Mr. Kalur is a very able counsel and therefore he probably has good recall, and I will tell you very respectfully I have no concern with Mr. Kalur disclosing this, but I do want the record to protect the Wilcox & Babcock Company from the standpoint of any information recall from this contract, even if the document is returned to us today.

This is consistent with the way proprietary documents are handled.

CHAIRMAN GARFINKEL: I have no question about that. The question I am concerned about is Mr. Kalur looking at the document and not being able to consult right now for the purpose of this hearing with his colleagues.

MR. CHARNOFF: I would like to take a step at a

time. Let me first show it to Mr. Kalur and let him tell us which elements of that contract he would like to show to his clients.

The reason for that is that Mr. Kalur is a member of the bar and therefore has certain obligations in effect as soon as he receives a document of this sort. And with all due respect to his clients they are not members of the bar, and that is not to say members of the bar are any more respectful of other people's rights than other people are. But the fact is that your directions are more binding, if you will, on Mr. Kalur than they are on his clients.

So I would appreciate it if we could start it a step at a time and if Mr. Kalur needs to discuss any section of the contract with his clients, then he could discuss that with us and with you at the bench. That would be helpful.

CHAIRMAN GARFINKEL: All right, let's do it that way first.

MR. KALUR: There is no objection to that procedure.

CHAIRMAN GARFINKEL: Fine.

MR. KALUR: I would like ten minutes to review it.

CHAIRMAN GARFINKEL: Surely.

(Short recess.)

MR. CHARNOFF: Excuse me. May I have Mr. Kostanski excused?

CHAIRMAN GARFINKEL: Any objection?

Mr. Malsch?

MR. MALSCH: Pardon?

CHAIRMAN GARFINKEL: Mr. Charnoff wants Mr. Kostanski excused. Do you have any objection?

MR. MALSCH: No objection.

CHAIRMAN GARFINKEL: Mr. Kalur?

MR. KALUR: No.

CHAIRMAN GARFINKEL: Okay, he is excused.

(Witness excused.)

CHAIRMAN GARFINKEL: May we be on the record.

Mr. Kalur, concerning the document that was furnished to you by Mr. Charnoff dealing with the contract, do you have any questions regarding that?

MR. KALUR: I do not.

CHAIRMAN GARFINKEL: Have you returned that document to Mr. Charnoff?

MR. KALUR: Yes, I have.

MR. CHARNOFF: Yes, we have received it.

CHAIRMAN GARFINKEL: Do you have any further cross-examination?

MR. KALUR: No, I do not.

CHAIRMAN GARFINKEL: Okay, we are finished with cross-examination of the Applicants' witnesses.

Does the Applicant have any further direct case, or does he rest his case in chief?

MR. CHARNOFF: Let me pause for a moment on that, Mr. Chairman.

Before I do that, let me indicate for the record Mr. Silberg has distributed to the parties duplicate copies of Exhibits 2-1 through 7 that were identified this morning by the Intervenors, and marked I guess as Intervenors' Exhibits 2-1 through 7.

CHAIRMAN GARFINKEL: The Board has received copies of those documents.

Mr. Malsch has received copies of those documents.

MR. CHARNOFF: And I understand that Exhibits 2 and 3 that have been introduced into evidence, Applicants' Exhibits 2 and 3, the BCAP documents, have similarly been made available.

CHAIRMAN GARFINKEL: That's right.

MR. CHARNOFF: Mr. Chairman, we have certain further examination of witnesses that I could have handled on rebuttal, to follow the later testimony or to clarify certain of the information of yesterday, but we can put much of that on right now if you would like.

CHAIRMAN GARFINKEL: Let me put it this way: If you have rebuttal testimony, it is going to be limited to the case presented by both Mr. Malsch and Mr. Kalur, and no further.

MR. CHARNOFF: Very well.

CHAIRMAN GARFINKEL: So therefore if you think it is appropriate now, do it. It is your decision.

MR. CHARNOFF: Yes. We have certain further examination I would like to put on now, partly reflecting questions outstanding of yesterday.

CHAIRMAN GARFINKEL: Does that include different witnesses?

MR. CHARNOFF: In one respect only, sir.

CHAIRMAN GARFINKEL: Is it merely adding

testimony that was previously furnished, or is it in the form of really cross-examination, or new additional direct testimony?

MR. CHARNOFF: Well, let me give you an example. Yesterday a question was asked with regard to a report by Dr. Ayres, and as to why certain information was not presented in certain formal application information to the Atomic Energy Commission, and we said we would put that on today.

CHAIRMAN GARFINKEL: Fine. That's okay.

MR. CHARNOFF: For that purpose I would like to call Mr. Lowell Roe again, please.

Mr. Roe, would you step up to the stand, please.

MR. CHAIRMAN GARFINKEL: You are still under oath, Mr. Roe.

THE WITNESS: Yes, sir.

DIRECT EXAMINATION

BY MR. CHARNOFF:

Q On page 267 of the transcript of yesterday certain questions were asked of Mr. Roe with regard to the limnology report by Dr. Ayres, and the testimony indicated that applicable portions of Dr. Ayres's report were included in the Environmental Report. And the question was asked, "Could you tell us what sections were left out?"

And Mr. Roe said he would have to get certain information from the office with respect to that.

Could you please identify the areas of Dr. Ayres's

report that was left out, and tell us whether this is the first time that this kind of information is being revealed, and --

CHAIRMAN GARFINKEL: Mr. Charnoff, ask one question at a time.

MR. CHARNOFF: All right.

Q (Continued) Could you tell us what portions of Dr. Ayres's report were left out of the Environmental Report?

A Yes, of the report as submitted to us, page 25 of Part 1 of the report concerns the probability of tornado damage. This section was not included in the PSAR, Preliminary Safety Analysis Report, as tornado frequency calculations had also been made by our meteorologist, the research corporation, and were included in the Meteorology Section 2-B of the PSAR.

Q Is that the extent of the deletion?

A Excuse me.

Also on Part 1 of the report was the size and structure of the thermal plume. This section was also not included in our PSAR as Dr. Ayres had used loading plumes to develop his plume model equation. These floating plumes produced little or no mixing with the surrounding water at the point of discharge.

After we received Dr. Ayres's report we decided to use a relatively high velocity heated water discharge into the lake. This would produce rapid mixing with the

adjacent lake water, and as a result reduce the plume temperature faster than by the floating plume method. Dr. D. W. Pritchard from Johns Hopkins University had developed the mathematical models for thermal plumes where high velocity discharges had been used and we retained him to analyze this type of discharge.

In July 1970, a decision was made by the Applicants to install a cooling tower at Davis-Besse. This decision made sections of Dr. Ayres's Limnology Report that pertained to the heated water discharge and the intake and discharge canal dikes extending into the water irrelevant. At this same time, the AEC regulatory staff directed us to use a probable maximum meteorological event along with Platzman's method of analyzing wind tides on Lake Erie to calculate the probable maximum high and extreme low lake levels. As a result, Dr. Ayres's sections, "Maximum Variations in Lake Erie Water Level" (pages 13-21 of Part I) and "The Maximum Wind-Wave" (pages 22-24 of Part I), were removed from Section 2D of the PSAR with Amendment No. 8. The results of the new water level calculations were inserted in Section 2.4.1.2 of the PSAR.

Part IV of Dr. Ayres's Limnology Report was received by us in July 1970, which was too late to be included in the PSAR before the full meeting of the Advisory Committee on Reactor Safeguards (ACRS) reviewed the Davis-Besse application in August 1970.

Additional sections of Dr. Ayres's Limnology Report were deleted when we prepared the Davis-Besse Environmental Report in June and July 1970. All references in Part I to use of lake water for condenser cooling were removed due to our cooling tower decision. The details on each of the current pole runs given in Part II were deleted and only the summary of this data was retained in the Environmental Report. Also, all references to the heated water plume were deleted from Part II. Sections of Part III Limnology Report pertaining to Big Rock and Enrico-Fermi Nuclear Power Stations were also removed for use in the Davis-Besse Environmental Report as they were not pertinent.

Q Mr. Roe, were you present? Did you attend all of the sessions of the Atomic Energy Commission hearing about a year and a half ago at the end of 1970 and early 1971, on the construction permit issue in the Davis-Besse proceeding?

A Yes, sir, I did.

Q Was Dr. Owen Davies present at this hearing?

A Yes, sir, he was.

Q Did Dr. Owen Davies ask the same question at this hearing?

A Yes.

MR. KALUR: Objection.

CHAIRMAN GARFINKEL: Let it go in for what it is worth.

A (Continued) Yes, he did.

Q Did Toledo Edison respond to that question at that public hearing?

A Yes, we did.

Q Is it in the transcript of that public hearing?

A Yes, it is. It was in Exhibit 15, to this transcript, and I would read --

Q Were copies of the deleted sections made available to Dr. Davies?

A Yes, sir, they were sent to him.

Q Mr. Roe, were you present at the Ohio State Water Board hearings last July?

A Yes, sir, I was.

Q When you were seeking a water quality certification?

A Yes, sir, I was.

Q Did Dr. Owen Davies raise the same questions at that hearing?

A Yes, he did.

Q Did you give him the same answer again?

A Yes.

MR. CHARNOFF: Thank you.

That's all I have, Mr. Roe.

CHAIRMAN GARFINKEL: Let me ask you one question. Are you asking us, as the Board, to take official notice of

the testimony in those hearings, and what is in the PSAR?

I have a problem because you do refer to the PSAR, and the question is, the PSAR technically speaking is not a part of this record unless you are asking us to take official notice.

MR. CHARNOFF: I will reply to that question in a moment.

CHAIRMAN GARFINKEL: Surely.

MR. CHARNOFF: I would like to introduce as Applicants' Exhibit No. 4 the copy of the question and answer which appears on pages LA31-1, and -31-2, in Exhibit No. 15 to the Davis-Besse Atomic Energy Commission construction permit hearing.

I would like to have that marked as Applicants' Exhibit No. 4.

CHAIRMAN GARFINKEL: Mark that, Mr. Reporter.

(The document referred to was marked Applicants' Exhibit No. 4 for identification.)

BY MR. CHARNOFF:

Q Mr. Roe, is that a true and correct copy?

A Yes, it is.

Q Of what appears in Exhibit 15?

A Yes.

MR. CHARNOFF: Mr. Chairman, the reason I brought

this out is simply because I don't think it is dispositive of issues in this particular proceeding but I want the public record to show once and for all what we go through with public proceedings and hearings on Atomic Energy licensing plants, following hearings, following hearings, and issues repeated ad nauseam. This kind of thing is silly and is detrimental to the public interest.

Thank you, Mr. Roe.

CHAIRMAN GARFINKEL: Wait. Wait a minute.

Are you offering that into evidence?

MR. CHARNOFF: I just marked it and want it in the record as such. I will offer it into evidence; yes, sir.

CHAIRMAN GARFINKEL: Thank you.

Mr. Kalur, do you have any objection to that going into evidence?

MR. KALUR: Yes, I will object. I don't think it is relevant to these proceedings.

CHAIRMAN GARFINKEL: I want to get Mr. Malsch's statements and I will rule.

Do you have any objection?

MR. MALSCH: I have no objection. As I recall, the issue was formally raised by Mr. Kalur.

CHAIRMAN GARFINKEL: Objection is overruled. It will be received into evidence as Applicants' Exhibit No. 4.

(The document referred to, heretofore marked Applicants' Exhibit No. 4, was received in evidence.)

MR. CHARNOFF: Does anybody have cross-examination of Mr. Roe on that?

CHAIRMAN GARFINKEL: This is what I am waiting to hear.

Mr. Malsch?

MR. MALSCH: No questions.

CHAIRMAN GARFINKEL: Mr. Kalur?

MR. KALUR: No questions.

CHAIRMAN GARFINKEL: You are excused.

(Witness excused.)

MR. CHARNOFF: I would like to call Mr. Reynolds.

CHAIRMAN GARFINKEL: Mr. Reynolds, you are still under oath.

MR. REYNOLDS: Yes, sir.

REDIRECT EXAMINATION

BY MR. CHARNOFF:

Q Mr. Reynolds, are you familiar with the concept or the theory that a reversal of rate structures might reduce the usage or demands for power?

A Yes, sir, I am. It has been around for a few years now. It grew out of a legitimate concern over the use of electric power primarily in households. It was thought that the usage could be reduced if we had a rate structure that would penalize large users, or we would have an increasing rate per kilowatt hour as opposed to the current situation

where we have a decreasing rate per kilowatt hour.

Q What in your judgment would be the probable result of the implementation of such a rate structure, or reversal of the present rate structure?

A. The probable results would be a very slight if ary reduction in the rate of growth in kilowatt-hour sales to households.

Q Why do you say that?

A The reason for this is that simply the demand for residential electric power is a derived demand. The primary demand is the demand for household appliances, and the demand for household appliances is income elastic, we would say, so that the dominant determinant of the level of usage of electric power in the household is household income.

I have found through my studies that the impact of varying rates is very slight.

MR. CHARNOFF: Thank you.

I have no further questions of Mr. Reynolds. If any of the other counsel want to cross-examine him they may.

CHAIRMAN GARFINKEL: Mr. Malsch?

MR. MALSCH: No questions.

CHAIRMAN GARFINKEL: Mr. Kalur?

RECROSS-EXAMINATION

BY MR. KALUR:

Q Toledo Edison advertising program seeks to

increase the number of appliances purchased, doesn't it?

A. I don't know of any appliances we are advertising now aside from outdoor lighting, which is sort of a safety device for people primarily in rural areas -- unless you are referring to residential electric heating as an appliance.

Q. Do you have any knowledge about the Cleveland Electric advertising program?

A. I can't speak for them.

MR. KALUR: Nothing else.

CHAIRMAN GARFINKEL: Any further questions?

MR. CHARNOFF: No, sir.

I would like to have Mr. Reynolds excused. He teaches at night at the university locally here, and if he may be excused I will appreciate it.

CHAIRMAN GARFINKEL: Hearing that there are no objections, you are excused, Mr. Reynolds. You are completely excused and you may leave if you so desire.

MR. CHARNOFF: I would like to call Mr. Joseph Dimunno.

Whereupon,

JOSEPH J. DIMUNNO

was called as a witness and, being first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CHARNOFF:

Q Mr. Dinunno, have you prepared a statement of your educational and professional qualifications?

A Yes, sir.

MR. CHARNOFF: Mr. Silberg is going to distribute copies of that statement.

Will you give a copy to Mr. Dinunno, please, Mr. Silberg.

I would ask that counsel and the Board's members examine that document and if there is no objection I would propose that it be introduced into evidence as Mr. Dinunno's statement of his qualifications.

Let me ask Mr. Dinunno:

Q Do you adopt this as a statement of your professional qualifications?

A Yes, sir, I do.

CHAIRMAN GARFINKEL: Any objections?

MR. KALUR: No.

MR. MALSCH: No, sir.

CHAIRMAN GARFINKEL: The qualifications of Mr. Dinunno is received in evidence as if read.

(END OF PAGE)

JOSEPH J. DINUNNO
TECHNICAL DIRECTOR
ENVIRONMENTAL SAFEGUARDS DIVISION

EDUCATION

Pennsylvania State University, B.S., Electrical Engineering, 1942
University of Maryland, M.S., Electrical Engineering, 1954
Oak Ridge School of Reactor Technology, 1956-57

EXPERIENCE

NUS CORPORATION, 1972 - Present
U.S.Atomic Energy Commission, 1959-1972
Director, Division of Environmental Affairs
Special Assistant (Environmental Affairs) to General Manager
A.E.C. Overseas Scientific Representative, Paris Office
Assistant Director, Division of Reactor Standards (Regulatory)
Chief, Special Projects Branch, Division of Reactor Licensing
U.S.Navy, Civilian Engineer
Naval Reactors Branch, AEC/Bureau of Ships, 1956-1959
Project Officer, Nuclear Plant, Cruiser, U.S.S.Long Beach
Reactor Control Specialist, Advanced Developments
U.S.Naval Ordnance Laboratory, 1946 - 1956
Electronics Specialist, R&D
Electrical Section, Bureau of Ships,1942-1945
Shipboard Power Generation & Distribution Systems

Coordinates and supervises assessments of environmental implications of power plant siting and operation. Long time association with public protection aspects of nuclear facility siting. A major contributor to existing rules and procedures governing the siting and safety review of nuclear facilities. Background includes both regulatory and R&D experience. Environmental and nuclear safety background superimposed upon years of practical experience in the engineering field.

At U.S.A.E.C., participated in the development of siting criteria and in the development of review guides, coordinated safety research requirements with the reactor development division. More recent activities have involved the development of procedures required in fulfillment of NEPA and the review of environmental impact statements for AEC projects, such as the LMFBR, the internal coordination of environmental research with programmatic needs and environmental interface activities with Federal and State agencies, with utility, industry and with many national and local environmental organizations concerned about the environment.

BY MR. CHARNOFF:

Q Mr. Dinunno, I see among other things that when you were employed by the Atomic Energy Commission over the last thirteen years -- Let me establish for the members of the public who are present here: Are you now employed by the Atomic Energy Commission?

A No, I am not.

Q Who is your current employer?

A I am with the NUS Corporation.

Q Were you formally employed by the Atomic Energy Commission?

A Yes, I have been.

Q I noticed in your list of qualifications that you were director of the Division of Environmental Affairs and prior to that you were special assistant of Environmental Affairs to the general manager; is that correct?

A That's correct.

Q In those positions did you have oversight and responsibility with respect to the Atomic Energy Commission's environmental research programs?

A Well, the job I had to do was to attempt to pull together the need in the environmental area with respect to the atomic energy matters and that research was being done, to advise the general manager with respect to the adequacy of his R&D program.

Q Yesterday there was some testimony by Mr. Roe

on cross-examination by Mr. Kalur, with respect to certain studies with regard to radiation effect on lower forms of Could you please describe the kinds of studies that the Atomic Energy Commission has conducted in terms of the scope and extent of these studies with regard to radiation effects on man and on lower forms of life, if that term is appropriate for aquatic life and birds.

A Well, environmental effects programs have been going on under the federal sponsorship for many, many years. These date back at least twenty-five years

I am aware of the fact, for example, that in that period of time the federal government, within the Atomic Energy Commission itself, has spent something in the order of a billion dollars on environmental effects programs. The annual budget as of right now is running something in the order of $70 million a year.

CHAIRMAN GARFINKEL: When you say annual budget, the annual budget of what?

THE WITNESS: For environmental effects studies.

CHAIRMAN GARFINKEL: By the federal government?

THE WITNESS: By the Atomic Energy Commission itself.

A (Continued) Now while the major thrust to those programs has been toward the effect on man, because it has been found that he is the most radiosensitive, a large number

of these studies have been directed to the nonhuman forms of both plant and animal life, including birds.

MR. CHARNOFF: Thank you.

Under the Chairman's direction we won't get into the results of those studies.

Q But I gather that the thrust of your testimony, Mr. Dinunno, is that there is a substantial amount of information that has been accumulated with respect to radiation effect on man, birds, lower forms of aquatic life, et cetera.

A There are hundreds of studies that have been done, and these things have been documented, and a study of the literature will show a very vast store of knowledge.

MR. CHARNOFF: Thank you.

I have no further questions of Mr. Dinunno.

CHAIRMAN GARFINKEL: Any cross-examination, Mr. Malsch?

MR. MALSCH: No questions.

CHAIRMAN GARFINKEL: Mr. Kalur?

CROSS-EXAMINATION

BY MR. KALUR:

Q Mr. Dinunno, you don't know of any Atomic Energy Commission studies of the Navarre Marsh area with reference to the wildlife?

A There are a number of studies on marsh areas.

Q No, my question is, Do you know of any about

that particular marsh?

A On the Navarre Marsh? Excuse me, I didn't hear your question.

The answer is no.

MR. KAUR: No other questions.

CHAIRMAN GARFINKEL: No further questions of the witness?

He is excused and he may leave if he so desires.

MR. CHARNOFF: He does desire.

(Witness excused.)

MR. CHARNOFF: Mr. Silberg would like to ask a few questions of Mr. Miller to clarify some of the questions that were left outstanding yesterday by the Board and other members of the hearing.

Mr. Miller.

CHAIRMAN GARFINKEL: Mr. Miller, you are still under oath.

DIRECT EXAMINATION

BY MR. SILBERG:

Q Mr. Miller, on page 135 of the transcript yesterday you indicated that you would provide the cost of transmission associated with the Davis-Besse plant. Would you please state those costs at this time.

A Yes.

The total budgeted cost for the transmission

lines, the three lines, is $10,250,000.

Q Thank you.

Now, Mr. Miller, you also testified yesterday that the total irretrievable cash expenditures during the NEPA review period, which is shown on page 26 of the prepared testimony, totaled $33,778,000. On page 26c of that testimony, the total additional abandonment cost as of December 31, 1972, assuming that construction is allowed to continue until that time, is shown as exceeding the abandonment cost, as of December 31, 1972, assuming a suspension on June 1, 1972, and that excess is shown as $28,639,000.

Could you explain why these two numbers are different?

A. The figures shown on page 26 are the cash -- the construction -- excuse me -- the construction costs that are irretrievable during the review period.

The figures shown on page 26c, of $28,639,000, is the difference between the abandonment cost to the Toledo Edison Company, if construction were to be suspended on June 1, and we would abandon the project on December 31, between the cost of continuing construction through December 31, and then be ordered to abandon the project at that time.

The difference in these two figures is the

cancellation charges for the contracts that would be outstanding at 12-31-72.

Q Would thecancellation charges be greater were construction to continue after -- from June 1, 1972, to December 31, 1972? Or smaller?

A They would be lower.

MR. SILBERG: Thank you.

CHAIRMAN GARFINKEL: Mr. Malsch, any questions?

MR. MALSCH: No, no questions.

CHAIRMAN GARFINKEL: Mr. Kalur?

MR. KALUR: No.

CHAIRMAN GARFINKEL: You are excused, Mr. Miller.

MR. CHARNOFF: Mr. Chairman, we have no further direct testimony.

CHAIRMAN GARFINKEL: Mr. Malsch, will you put on your case in chief now.

MR. MALSCH: Yes, Mr. Chairman.

MR. KALUR: Does that mean the Applicants are resting?

CHAIRMAN GARFINKEL: They are resting their case, right, subject to rebuttal of course.

MR. MALSCH: First, Mr. Chairman, I would like to offer into evidence the document entitled "Preliminary Report on Environmental Considerations Related to Suspension of Construction Activities Under Construction Permit No. CPPR-80

for Davis-Besse Nuclear Plant," Docket No. 50-346, by the U. S. Atomic Energy Commission, Division of Radiological and Environmental Protection, dated May 3, 1972.

I am offering into evidence the document with the exception of the information under Roman II entitled "Site and Plant Description."

The document is sponsored in evidence by George Knighton, a branch chief of the Division of Radiological and Environmental Protection; Robert Weit, also with the same division; Harold Glauberman, with the same division; and Dr. David Edgington and Dr. Norman Frigerio, both of Argonne National Laboratory.

In view of prior rulings by the Board concerning the scope of issues in the proceeding, the parties agreed I could make this offer in the absence of the individuals I have just identified as sponsors.

CHAIRMAN GARFINKEL: That's correct.

MR. LYMAN: Does that just comprise pages 1 and 2, or is there more to it?

MR. MALSCH: "1" and "2" as summary. "Site and Plant Description" are on pages 3, 4, and 5.

CHAIRMAN GARFINKEL: You are introducing this document with regard to the environmental effects of operations of the nuclear plant, am I correct?

MR. MALSCH: That's correct.

The document deals exclusively with the environmental effect of operation, with the exception of the last portion under Roman IV, which is a brief paragraph dealing with the benefits of operation.

In either case they deal with operation of the facility.

CHAIRMAN GARFINKEL: Does any party other than Mr. Malsch want to make a statement with respect to this offer?

MR. CHARNOFF: I understand why it is offered, and I would simply express the Applicants' regret that this material is not being permitted to be entered into evidence, but we understand the Chairman's rulings in that regard.

CHAIRMAN GARFINKEL: Mr. Kalur?

MR. KALUR: We have the same comment.

CHAIRMAN GARFINKEL: I want to make a further comment, because I think it is going to be applicable not only to Mr. Malsch but applicable to Mr. Kalur.

Environmental considerations in connection with the operation of a nuclear plant really relate to reasons, or findings as they will pertain to the ultimate decision of the NEPA review.

We believe that it is inappropriate, speculative, and unwarranted to be received into this record.

We have permitted the Applicant, the Regulatory

Staff, and the Intervenor to introduce evidence with respect to all alternatives. Alternatives are the decision apparatus of the NEPA review.

We firmly believe that implied in this decision of allowing all alternative decisions, or alternatives to the plant to be introduced, implies automatically that all the various decisions with respect to environment, safety, and health, are included, whether they be adverse or favorable to the decision-making function.

We are assuming all these findings, because these findings have to relate to the decision. Therefore, there is absolutely no need to go into these considerations, since they are automatically implied in the decisions which are the alternatives, or which includes abandonment. It's automatically assumed.

Radioactivity, what is the purpose of going into radioactivity, if it isn't to relate to something in connection to the plant, whether it be abandonment, modification, and what have you. And we have considered all the alternatives in our decision. And that implies adverse decision, or favorable decision, with respect to radioactivity with respect to environment, including land, air, and sea.

It is for that reason that primarily this Board found no need to go into them. All you would be doing is

bringing out the construction permit situation. You would be going in here getting another crack and bringing out these factors when the final NEPA review comes out, And thirdly, you would bring up this factor again when it comes out to the operational stage.

So therefore we are not saying it's not relevant, but we think that is secondary evidence to what we consider the primary issue, the decision.

On that basis we have excluded all relevant -- all issues concerning operation, and all issues concerning health, safety, and environment, for this particular type proceeding.

It doesn't mean it won't be considered some place else.

This statement is applicable to any offer of proof that Mr. Kalur may want to introduce; so I find no need to reiterate this statement when Mr. Kalur presents his case.

With that, Mr. Malsch, you may continue with your direct case.

MR. MALSCH: Well, I should like to have the document identified, with the deletions identified, marked for identification as an offer of proof. Just have it marked for identification.

CHAIRMAN GARFINKEL: Please do that.

That would be Regulatory Staff Exhibit what?

MR. MALSCH: Exhibit 1.

CHAIRMAN GARFINKEL: Off the record.

(The document referred to was marked Regulatory Staff Exhibit No. 1 for identification, and was rejected.)

CHAIRMAN GARFINKEL: I am receiving the Regulatory Staff Exhibit 1 marked for identification as an offer of proof, but not received in evidence.

MR. MALSCH: Mr. Chairman, I might indicate for the record that the copies I handed to the reporter have lines drawn through Section II, "Site and Plant Description," which I included in my offer.

CHAIRMAN GARFINKEL: Let me ask you, you also excluded the summaries on pages 1 and 2?

MR. MALSCH: No, I haven't excluded the summaries.

CHAIRMAN GARFINKEL: But I rejected that.

MR. CHARNOFF: I wonder if it would be helpful for the record, if Mr. Malsch would explain -- I understand the reasons -- why he has deleted Section II from this offer of proof.

CHAIRMAN GARFINKEL: Please do.

MR. MALSCH: The reason why is that Section II contains descriptive material of the site and plant --

Description, under the Board's rulings, would be relevant; however, in view of the state of the record thus far it appears to be essentially cumulative evidence, and I saw no reason to have the five sponsoring witnesses stay around just for the introduction into the record of essentially cumulative evidence.

CHAIRMAN GARFINKEL: That's accepted.

Mr. Malsch.

MR. MALSCH: I would next like to call Mr. Albert Swintzer to the stand, please.

Whereupon,

ALBERT SWINTZER

was called as a witness and, being first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. MALSCH:

Q. Mr. Swintzer, could you please give us your full name, your present employer, and your present position with that employer.

A. My name is Albert Swintzer. I am presently employed by the Atomic Energy Commission Regulatory Staff; and my present position is Chief, Pressurized Water Reactor Branch No. 4, Directorate of Licensing.

Q. Mr. Swintzer, have you ever attended college or university? And if you have, what if any degrees did you

obtain?

A. Yes, I attended the Michigan Technological University. I received a degree, a Bachelor's degree, in Electrical Engineering, in 1951.

Q. When did you first join the Atomic Energy Commission, Mr. Swinauer?

A. I joined the Atomic Energy Commission in October, of 1967.

Q. Since joining the Atomic Energy Commission, what positions have you held and what responsibilities and duties did those positions involve?

A. My initial position was that of reactor engineer in the Instrument Power Technology Branch. My duties in that position included health and safety reviews of instrumentation, and control systems, for the ~~Perry~~ Prairie Island Nuclear Reactor and for the SNAP 8 DR Space Reactor.

Then in November, 1967, I was assigned to the Reactor Projects Branch No. 3, where as a project leader I coordinated the health and safety evaluations covering all aspects of the Arkansas Nuclear Unit 1, construction permit application; the initial stages of the TVA ~~Sequoia~~ Sequoyah Nuclear Station construction permit, and the Duke Power Company, ~~Oconee~~ Oconee Nuclear Station Unit 1, operating license review.

In July of 1971 I was appointed to my present position as chief of the Pressurized Water Reactor Branch

No. 4.

The duties of this position include responsibility for the coordination of the health and safety evaluations on power reactor construction permits, and operating license applications performed by project leaders under my supervision.

Q Is the Davis-Besse plant currently assigned to your branch?

A Yes, the Davis-Besse plant has been assigned to my branch since February of this year.

Q Mr. Swinnen, have you ever visited the Davis-Besse site?

A Yes, I visited this site on two occasions. The first occasion was April 24, of this year, and then again on May 2.

Q How long during each visit did you spend on site?

A On the April 24 visit I was there from approximately 10:30 in the morning until about 3:00 in the afternoon. On May 2 the visit was a late afternoon visit from approximately 4:30 to 6:00 o'clock.

Q In connection with your official duties as an Atomic Energy Commission employee, have you had occasion in the past to visit the sites of other nuclear power plants under construction?

A Yes, I have visited several nuclear plants under construction, approximately six.

Q This is not the first time you have visited a construction site; is that true?

A Yes, sir, that's correct.

Q Mr. Swintzer, on either or both visits to the Davis-Besse site, did you have occasion to observe the areas near the marsh and the dikes?

A Yes.

Q Would you describe for us, please, your observations.

A On the 24th we toured the entire area around the marshes and the dikes. On May 1 we covered a portion of this area. My observations on these occasions were that the dike system around the marsh appears to be essentially complete. The wildlife appears to be abundant in themmarsh area. By that I mean that I observed several species of duck, heron, gulls, and other waterbirds, as well as several land animals, including rabbits, muskrat, a turtle, and -- there was one other animal -- a woodchuck. I saw a couple of woodchucks.

We also observed a large number of carp on the first visit, on April 24. It is difficult to tell how many, but there were perhaps several thousand at the various locations around the marsh, near the dike area.

On the second occasion I did not tour the whole area but there was a marked absence of carp. The only area that we observed the carp was at the end of the drainage ditch, both inside the drainage ditch and on the outside of the dike which closes off the drainage ditch.

The carp ranged in size from, oh, about 10 to 20 inches.

The marsh itself, I observed a number of muskrat nests in the area, also a number of blinds that people could sit in, in the center of the marsh. There appeared to be ample vegetation growth to provide nesting facilities for the birds, and we did see -- I did see a large number of ducks on the -- in the marsh area, on the water.

A portion of the marsh I observed has been isolated by a dike system, and my understanding is that it is intended for an experimental area for wildlife studies. This area of the marsh appeared to be recently diked off.

The dike system, by my observation, appears to isolate the marsh area from water runoff that might occur from the construction activities on the site. The whole area seems to have a high earthen dike system, and also any water runoff from the construction site itself was collected by a system of drains, and was introduced into the drainage ditch.

Q Did you notice any construction noise or noise

apparently from construction activities while you were visiting the marsh areas?

A Visiting the marsh areas, no. I might add that there was construction activity at the site, construction site itself, on both occasions, such noises as crane operation, trucks moving in and out of the site, and some activity in the quarry. However, down in the marsh area itself, as we toured the dike areas I could not hear this construction noise.

Q Did you also have occasion during either one or both visits to observe the area around the intake canal at the beach area?

A Yes, I visited these areas on both occasions. As I indicated earlier the beach area does appear to have a high natural ridge or dike extending the entire distance of the marsh area between the lake and the marsh. And there did appear to be evidences of some additional raising of this area to maintain some minimum elevation.

I also had an occasion to observe the lake itself where the car was stopped and we got out and looked at the beach area. The beach is littered with a large number of shells, clam shells and other types, some wood, driftwood debris. The water itself was dark in color; however, the beach appeared to be sandy and clean. I saw no evidence of scum on the beach.

As far as the intake canal is concerned it appeared to be dry except for runoff water and also possibly aquifer water.

The intake canal, as I observed it, was divided into two portions by a dike and a roadway. On the plant side of this dike the canal appeared to be dry. On the lake side of the dike there was some water in, but not up to lake level. I would presume that that was runoff water.

The birdlife along the shore and along the northern boundary of the property appeared to be abundant.

I observed most of the species that I observed in the swamp, in the marsh area, along the shore area, with the exception that there was an increase in the number of gulls, perhaps because of the proximity of the lake.

Q How about the area around the settling pond and drainage ditch? Did you observe those areas also?

A I observed that area on April 24. The water pumped from the construction area excavations goes to the settling pond and I observed the outlet of the settling pond. The water drains into a narrow channel to the drainage ditch from this region. I also observed a pipe downstream of the settling pond where the runoff water from the construction area enters this ditch.

The water then continues on down into the wide portion of the existing drainage ditch, which is approximately

150 feet wide.

Q Did you notice any fish in the drainage ditch on either or both occasions?

A Yes. As I indicated earlier, on the first occasion there was an abundance of carp. On the second occasion only a few carp at the end of the drainage ditch itself, and into the -- on the Toussaint River side.

Q Did you also observe the area around the borrow pit and quarry?

A Yes, I observed this from a distance. It appeared to be typical of construction sites. One pit was observed as being used as a dump site for construction solid waste materials.

Also in the vicinity of the borrow pits there was a substantial pile of crushed rock near the Route 2 boundary of the site.

Q Did you also view the area, on-site area, near the transmission lines and railroad spur?

A Yes, on both occasions.

The transmission lines and the rail spur were only viewed from the site location. The on-site rail spur appeared to be essentially completed.

On the May 2 visit I did observe there were some additional ties being laid to bring the spur into the buildings proper, but other than that it appeared to be

completed.

The transmission towers or superstructure for the electrical switch station had been started and a number of these structures were in place.

I also observed some transmission towers leading away from the site, new towers.

Q. How about the area around the cooling tower and underground pipings? Did you observe these areas also?

A. Again these areas were observed on both occasions. On the first occasion the cooling tower was completed up to slightly beyond the base ring. I would estimate the height was approximately 40 feet. The slip forms were in place, and there were two cranes in place, and it looked like work was in progress.

On the second occasion the height had increased to somewhere between ~~60~~ 80 and 90 feet, by observation, and again it looked like work was continuing in progress.

The tower at this elevation, and at this rate of progress, apparently will soon become a prominent landmark at the Davis-Besse site.

Q. Did you also observe the areas around the reactor building and other related structures?

A. Yes, this was observed on April 24, and briefly the reactor building concrete is up approximately to the dome level. The dome was not in place.

The inside steel containment vessel was up just above the polar crane. The supports for the puller crane were in process of being put in place. The containment reactor cavity concrete work was under way. I observed placing of rebar.

Other below-grade structures, construction, appeared to be nearly complete. I observed some equipment in place. I observed four gas decay holdup tanks that were set in place. The intake structure, as I already mentioned, appeared to be at its final grade.

The turbine building and the office building, steel work, is very far along -- substantially complete. I would judge.

On the second visit I did notice that the turbine building crane was starting to be erected. I would judge about half of it had been lifted into place.

As far as the area around the reactor, I would characterize this as being roadways that are very dusty with gray silt; and the concrete trucks, other vehicles moving along were creating dust.

Q. Did you notice any dust in any of the marsh areas?

A. No, I did not.

MR. MALSCH: Thank you.

I have no further questions.

CHAIRMAN GARFINKEL: Mr. Charnoff, do you want to cross-examine?

MR. CHARNOFF: No.

CHAIRMAN GARFINKEL: Mr. Kalur?

MR. KALUR: No.

CHAIRMAN GARFINKEL: Mr. Witness, you are excused. You may go home if you so desire.

THE WITNESS: Thank you.

(Witness excused.)

CHAIRMAN GARFINKEL: Is that your case in chief?

MR. MALSCH: That's my case in chief.

CHAIRMAN GARFINKEL: Mr. Kalur, will you present your case in chief.

MR. KALUR: Before putting on my oral testimony, I should like to make a proffer of evidence. I can do that, reading to the court reporter in open court, or --

CHAIRMAN GARFINKEL: How long do you think it will take to read it?

MR. KALUR: Well, just a minute or two.

CHAIRMAN GARFINKEL: Please read it right in.

MR. KALUR: All right.

Because of the Board's ruling excluding evidence with respect to plant operations, and environmental effects, we are offering in evidence the following proof offer.

MR. CHARNOFF: You are offering into evidence?

MR. KALUR: We are offering -- Strike the evidence.

CHAIRMAN GARFINKEL: Into the record.

MR. KALUR: Into the record. Not in evidence. We are making an offer of proof.

Had we been allowed to put on this testimony, Dr. Eugene Perrin would have given testimony regarding the environmental effects of the failure of the Emergency Core Cooling System. He would have also given testimony regarding the anticipated radiological effects upon the wildlife in and around the proposed Davis-Besse plant.

We would have called second, Dr. Charles W. Huver. Dr. Huver would have given testimony regarding tridium concentrations in the western Lake Erie basin, both present and anticipated, and would have related this testimony to possible harm to wildlife and human beings.

He would further have testified concerning radionucleide concentration reports in migratory birds at the Hanford, Washington, facility and relate those results to the proposed operation of the Davis-Besse Nuclear Power Station.

A third witness would have been Dr. Tony J. Peterle. Dr. Peterle would have testified with respect to radionuclei[illegible] reconcentrations in the Navarre Marsh area and in wildlife, and would have testified concerning his

ongoing study of the topic under the guidance of the Bureau of Sports, Fisheries and Wildlife.

CHAIRMAN GARFINKEL: Is that your offer of proof?

MR. KALUR: Yes.

CHAIRMAN GARFINKEL: Mr. Kalur, while I appreciate your offer of proof as part of the record, let me state though very clearly that you are still free to present any evidence of alternative systems other than, or the same as that was offered by the Applicant and the Regulatory Staff.

That means you are free to introduce evidence that continued construction during this period would have an adverse effect on the present system that's in effect, that they would foreclose any alternative. We are not stopping you in doing that. That has no relationship to what the environment decides. We are assuming and we can assume for the record any adverse environmental findings.

Consequently, based on such findings you are free to introduce any alternatives that you want, and we will stay here and listen to the alternatives, other than what has come out in the record, or the ones that you want to bring out. So I want the record to indicate what we are clearly permitting in this case.

With that you may present your case in chief.

MR. KALUR: May I make a short statement in

reply to your statement so our position is clear on the record.

CHAIRMAN GARFINKEL: Sure.

MR. KALUR: We believe that on the contrary while we might be free to put forth evidence on alternatives, we believe those alternatives could not be realistically considered by this Board without identification and quantifying the potential environmental radioactive harms due to this plant from operation -- coming from this plant due to operations.

CHAIRMAN GARFINKEL: You may continue with your case in chief, unless of course someone, Mr. Malsch wants to comment on my statement.

MR. MALSCH: No comments.

CHAIRMAN GARFINKEL: Mr. Charnoff?

MR. CHARNOFF: No comments.

MR. KALUR: We will call Dr. Owen Davies.

Whereupon,

OWEN DAVIES

was called as a witness and, having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KALUR:

Q For the record will you state your name and home address.

A My name is Dr. Owen Davies. My residence is 13436 Harlon Avenue, Lakewood, Ohio, Zip Code 44107.

Q Mr. Davies, will you tell us your qualifications with respect to the field of ornithology.

A I want to make it clear in this statement I am going to restrict myself entirely to those qualifications.

I have been a member of the National Audubon Society from 1941 to the present time. I have been a regular contributor to the regional reports of the Audubon Field Notes from 1958 to the present.

I have been a member of the American Ornithologists' Union from 1962 to the present.

My nomination to the American Ornithologists Union was sponsored by Dr. George Lowry, of Louisiana State University.

I have been a member of the Laboratory of Ornithology of Cornell University from 1964 to the present; and this was on special invitation of Dr. O. S. Pettingill, director of the Laboratory.

Prior to that time I served as acting head of the Department of Ornithology for the Cleveland Museum of Natural History, during the period 1950 to 1951.

Because of my location of residence in western Cuyahoga County in the immediate vicinity to the Lake Erie edge, I have been especially privileged to have the

opportunity to study bird migration patterns as they relate to both the transLake migration and around-the-lake migration--in other words, restricted migration routes.

In addition to this I have had the opportunity to observe the trans-Gulf migration at selected marvelous points along the entire Gulf Coast of the United States.

In addition to this I have had a chance to make extensive measurements and observations of the fall migration, the birdlife from the upper peninsula of Michigan, particularly the eastern portion of the upper peninsula of Michigan.

In addition to this I am extremely interested in the field of migration, and have contributed reports to surveys of migration conducted by the Fish and Wildlife Service, and also to certain workers in the field who have been tagging birds so that they could be observed in the life.

I think that gives you a fair indication of it.

CHAIRMAN GARFINKEL: Dr. Davies, let me ask you a question. In terms of your educational background in this field, do you have any educational training in this field at all?

THE WITNESS: I have some educational training in this field.

CHAIRMAN GARFINKEL: Will you tell us about

that.

THE WITNESS: To the extent that at the undergraduate level in Western Reserve University I have college credit in a beginning zoology course, a beginning botany course, and in ecology.

CHAIRMAN GRINKEL: Fine.

BY MR. KALUR:

Q Dr. Davies, are you familiar with the Ottawa Wildlife Refuge area and the Magee Marsh area?

A Yes, sir.

(END OF PAGE)

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Q Would you describe for us the marsh unit of the Ottawa Wildlife Refuge with respect to its availability as a bird habitat.

A With regard to the Navarre Marsh proper, I have somewhat limited experience. At the present time, however, I have observed the habitat that is there, I find it to be extremely marvelous as far as the untouched portions of the marsh are concerned. The portion of the marsh between the beach and the first dike appears to be in tremendous shape and beautiful condition. It is far superior in my opinion to the Darby Marsh unit, which is similar, general location. It is not by comparison to the McGee Marsh area as typical a location to anticipate to see tremendous concentrations of birds because they are not restricted to an area right at the beach edge. If you recall by comparison of the McGee Marsh there is a tremendous desiduous type woodland area right behind the beach area which is fairly extensive in size; and behind that is an extensive marsh habitat which would not be extremely suitable for transiant land birds themselves.

In other words, what I think I am saying is that the extreme concentrations that one might anticipate at McGee of transient land birds, on the ground and in the trees, are probably superior because the extent of the habitat is improved. However, there is nothing, in everything I can see there, to indicate that there should be tremendous

8A-2

differences in the species or in the composition of the birds to be involved there. Both of them are tremendous areas as far as migration stopover points for transient water fowl. I think we are familiar with the fact that this whole marsh area in this section of the state is one of the pivotal areas with regard to stopover and feeding areas for a considerable portion of the population of the water fowl in the entire flyway.

Q Yesterday you heard testimony of an individual from the Detroit Edison Company regarding bird kills at their Monroe plant, did you not?

A Yes, sir, I did.

Q Would you comment for us on the circumstance that was testified to that they had not seen bird kills in the Monroe area?

A In order to explain your -- to answer your question, Mr. Kalur, I think I have to step back and get a little bit of preliminary information before I come to the exact point that I wish to stress with regard to that. I will try to make this as brief and as precise and as much to the point as possible.

On the Lake Erie edge we find two situations. We have a barrier to bird migration as well as an avenue for bird migration. And this in many respects depends upon the species composition of the bird involved in the different

8A-3

flyways and the different migration routes in the immediate vicinity of the lake edge.

There are some species which when migrating during the daytime and come to a body of water the size of any of the Great Lakes will not under normal conditions fly on across the lake but will fly along the edge or in the immediate vicinity thereto, maybe over the water, yes, but parallel to the edge rather than going out against the main direction of the flow if they were continuing in the same direction they were proceeding.

There are other birds, especially in the night migrants which will tend to continue on across a body of water of this type, without particular regard to the fact that the lake is there, they may be influenced to land, depending upon the weather conditions that they encounter at the time that they reach a barrier of this type. In other words, they are very prone not to fly across Lake Erie into a bucking wind situation in which they are flying against the wind. This is one of the reasons that the lake -- the edges of the Great Lakes can be tremendous concentration points for migrants.

However, depending upon the exact weather conditions the birds may be on the other side of the lake from you rather than on your side. That is the distinct advantage of studies made in the upper peninsula of

8A-4

Michigan because you have a Lake Superior edge and a Lake Michigan edge not separated by tremendous distances and, therefore, you can sample on the same day the concentrations of birds on a north edge of a lake and on a south edge of a lake.

Now, with regard to the bird migration, I want to stress at this point bird migration along the edge of the lake. This tends to occur under the following situation: One, the birds are migrating north generally with a trailing southerly direction wind, or with a southwesterly direction wind. When they reach the vicinity of the lake they will tend to go parallel to this lake edge and often tend to use the wind to aid them in their travels, so that they are spending the least amount of effort in this. The species that do this predominantly are such things as crows, jays, blackbirds, robins, meadowlarks, some of the finches, woodpeckers, even some of the shore birds like killdare.

In general you will see these in migration during the daytime, especially before a cold front passage in the area, and it seems almost as if the birds are trying to stay in front of the passage of the cold front.

On the other hand we have -- let me add two more groups to that. Hawks would be inclined to do this same thing. And I would say that bluebirds -- and I have not

SA-5

indicated them previously -- would do the same.

There are places along the Great Lakes where one anticipates having corridors of bird migration passing from one side of the lake to the other. This does not mean that anywhere along the lake you cannot have evidences of bird migration across the lake during the night period. However, what I am saying is that you will find areas along this lake where the concentrations will be much higher than those atother portions of the lake.

This type of study has been very carefully documented by Mr. Perkins and if this is of value in particular I will come back to this later.

With regard to the western end of Lake Erie there are two predominant bird migration paths. There is a path across the lake which includes the island-hopping machanism area as described by Trowbman. It includes more than that too, it includes the McGee, Ottawa Navarre area, and it is described by Perkins officially as the west end flyway for Lake Erie.

On the other hand, there is a second migration route in the western portion of the lake. I would like to give an exact description of the names of the locations that are involved in that, if you will pardon me for just a minute.

CHAIRMAN GARFINKEL: Mr. Davies, let me ask you

8A-6

something: The original question here was really in relation to the testimony of the Detroit Edison --

MR. DAVIES: I am almost to that point.

CHAIRMAN GARFINKEL: Okay, get to that as soon as possible.

A (Continued) I thought you had to have that background information to interpret properly what I am going to say.

Very briefly, without even describing this there is another migration path in that portion of the lake, which goes around the west end of the lake, it includes the Monroe area as a major portion thereto. This, however, is predominantly restricted to day-migrant birds. We would anticipate on the basis of every study that has been made on the TV aerial kill, on crane kills, on building kills, that they are predominantly night-migrant birds that are involved in these kills. And since the main migration path, in through the Monroe area, involves day-migrant birds. And generally they will not be moving under extremely adverse weather conditions where they would not have sight of these obstructions, then you would not anticipate on the basis of everything you know with regard to the flyways in the western end of the lake to have an extremely appreciable kill at the Monroe area.

CHAIRMAN GARFINKEL: So what you are saying here,

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based on your testimony, is to the effect that the situation as raised by the Detroit Edison witness is not --

DR. DAVIES: Is not comparable to the Davis-Besse site.

CHAIRMAN GARFINKEL: Is not comparable to the Davis-Besse site. That is your testimony.

DR. DAVIES: That is my testimony, yes, sir.

MR. KALUR: Thank you, Mr. Chairman.

Q Based on your knowledge of ornithology, Dr. Davies, do you have an opinion as to the effect on birds that the completed cooling tower, the transmission lines leaving the plant, and the reactor building will have upon bird migration?

A I will anticipate that during certain --

Q Do you have an opinion, first?

A Yes, I do have an opinion.

Q Will you tell us what that opinion is?

A My opinion is that these obstructions in a major migratory path for night migrants should be of the kind that you would anticipate that under adverse weather conditions you should anticipate that there will be bird kills at these structures.

I would indicate also that these will not be extremely heavy kills on every migration pattern, and every migration season. This is not the history of this type

8A-8

affair.

The small kills that may be occurring often are not recognized as such because the people who are looking for them are not there at daybreak or before to observe whether there are any dead birds or any stunned birds in the vicinity.

Q Now, I believe in the testimony of Toledo Edison there are references to lighting of the cooling tower pursuant to FAA regulations. Will that have any effect on the birds passing through the area?

A Every indication from kills at such an affair indicates that the birds in general are attracted to the lighted areas, that they mill around in the vicinity of these lights until they either collide with a guy wire that is nearby that is not lighted, with another bird, with some obstruction in the immediate vicinity. You do not absolutely have to have a light to do this but you are likely to have higher kills in the presence of the light than in the absence. I am not making any comments with regard to any of the FAA regulations.

Q What type of weather conditions would you believe would be more detrimental to bird life at the site?

A With regard to a lighted tower of this type, you anticipate bird kills under the conditions where you have a fairly thick and fairly deep -- or high, cloud cover.

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If you have mist or if you have murkiness, or if you have obscured vision conditions of the kind which would normally force birds of this type to be flying at somewhat lower elevations than they might otherwise be, and in addition to this and the background of experiments that have been conducted if you have a favoring wind so that there is an appreciable migration under those conditions into the area then you would anticipate the major kills. I am not at all sure that these weather conditions have existed during the time in which any of these towers and buildings have been to the height where they might be considered as a hazard, to the present.

MR. KALUR: Those are all the questions I have on direct.

CHAIRMAN GARFINKEL: I will start with Mr. Charnoff for cross-examination.

CROSS-EXAMINATION

BY MR. CHARNOFF:

Q Dr. Davies, you indicated you were at one point employed as the acting head of a museum in Cleveland, is that correct?

A No, I did not indicate that. I think that the record would show that I indicated I was acting head of the department of ornithology at the Cleveland Museum.

Q And what is your current employment?

A I do not understand that current employment is critical to this evaluation of the qualifications of the witness. At the present time, however, for the record, I would indicate that I am physical sciences consultant to the Ohio Audubon Council.

(END OF PAGE)

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Q Is that full-time employment, sir?

CHAIRMAN GARFINKEL: Let's take a five-minute break.

(Short recess.)

CHAIRMAN GARFINKEL: On the record.

Mr. Charnoff, continue with your cross-examination.

MR. CHARNOFF: I have no further cross-examination of Dr. Davies.

CHAIRMAN GARFINKEL: Mr. Malsch.

CROSS-EXAMINATION

BY MR. MALSCH:

Q Dr. Davies, we have been referring to you as "Dr." You are not a medical doctor, are you?

A No, sir.

Q Based on your experience would you expect to have a significant number of bird kills during daytime during good weather conditions?

A No, sir.

Q How about during the nighttime during good weather conditions?

A It will depend upon what you are referring to as "good weather conditions."

Q Well, by "good weather conditions" I am referring to an absence of thick or deep cloud cover in the area.

A Are you saying with a trailing wind or with a

9-2

bucking wind?

Q Either one.

A Are you saying at the boundary of the lake or otherwise?

Q I am referring to the area around the structures where the birds might impact.

A I think this would have to be answered on the basis of individual cases. You want to take, for example, Davis-Besse?

Q Yes.

A I would anticipate that if you have the following situation, no cloud cover, no north direction wind, that under most conditions you are very unlikely to see tremendous concentrations of land birds at low elevations in migrations there. They will generally, if they are moving, go on across Lake Erie, they will not stop on this side. I would say under those conditions that you would not anticipate seeing tremendous bird kills at Davis-Besse site.

Q Under what weather conditions would you expect to see significant number of bird kills?

A It would have to depend upon the month of the year. Let's assume that this is during the middle of the migratory period, and just for simplification let's say spring migration. And let's assume that we have a south direction wind that starts the birds migrating into this

9-3

general area, and then let us assume that about the time the birds get to this location they no longer have a south direction wind but encounter a north direction wind, high thick and low dense cloud covers, so that the birds are forced fairly low, maybe a bit of mist or rain, and an obstruction in the line of flight that is lighted will produce the biggest kill, though it is not necessary that the thing be lighted.

CHAIRMAN GARFINKEL: Let me ask you one question, Dr. Davies.

DR. DAVIES: Surely.

CHAIRMAN GARFINKEL: What are the chances of the conditions you are raising, occurring?

DR. DAVIES: The chances of occurring will be encountered of the order of probably three to four times during a spring migration if you assume it to be a fairly normal migration with regard to weather patterns. Last year was not. And I am talking about the weather patterns must be during the peak of the migration period to have a tremendous kill.

CHAIRMAN GARFINKEL: Let me ask you just one question so that I have it. I am sure Dr. Lyman is going to ask some questions.

DR. DAVIES: Any questions you want to ask.

CHAIRMAN GARFINKEL: What normally is the peak

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period for migrations?

DR. DAVIES: In this area the peak period for land bird migration would normally be in the period -- say approximately middle April to, oh, conceivably late May.

CHAIRMAN GARFINKEL: Okay.

DR. DAVIES: Depending upon the particular season involved. It can be either toward the early end or toward the late end, depending on whether spring is fast or not.

CHAIRMAN GARFINKEL: I am sorry I interrupted Mr. Malsch. Go ahead, continue.

MR. MALSCH: I have no further questions.

CHAIRMAN GARFINKEL: Mr. Charnoff, any further questions?

MR. CHARNOFF: No.

CHAIRMAN GARFINKEL: Mr. Kalur?

MR. KALUR: No redirect.

CHAIRMAN GARFINKEL: Dr. Lyman.

DR. LYMAN: Dr. Davies, are you familiar with the scavengers that would live near the lake and eat dead birds?

DR. DAVIES: There are a considerable number of them that could be encountered. Which would be most critical in a given area I don't know that I could predict. Gulls would be one example. Horned owls would be another example.

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Both of these are in the vicinity of this particular site. If we were for instance in a place like Monroe, Michigan, we might have to consider Norway rats or something of that kind. And in various and sundry places there are still others. If you were in the south you would be involved with a number of scavengers that would be in larger abundance, for instance vultures, than you would have in this particular site.

DR. LYMAN: Do these things eat the birds feathers and all?

DR. DAVIES: The owls will often gulp the whole affair leaving no trace whatsoever. Even some of the mammals will take some of the small birds as just essentially a bite and leave no trace whatsoever of them. If you were encountered with the problem of ants eating them you would generally not see them disappear immediately. Although that is one of the problems with museums for use of bird specimens, almost any bird that is brought in will show evidence of ant attack and is not in condition for display purposes.

DR. LYMAN: Are any of these species you have identified in the flyways near the site, are any of these what you would put in the category of endangered species?

DR. DAVIES: The ones that I have described in the immediate vicinity of the flyway I would say

9-6

there are endangered species involved in the things that I have described at the present time. And those I would say, of the ones I have mentioned to the present, are some of the species of hawks. I would also indicate that there is a problem with regard to water fowl also, which are in the site area, in that it is, appears to be a problem of suitable habitat, not necessarily just here, but in the nesting grounds as well as in the wintering grounds. And so in a respect we are not dealing, say, with something which is in a critical state, except with regard to peregrine falcons and the hawks, and some that are blue-list species like the red-shouldered hawk, and the osprey, and coopers and sharp-shin. The one species that is in the immediate area here, which I would consider very close to be in the endangered category is the bald eagle. They are not in the category of birds which are going to be doing a tremendous amount of migrations, but there are nesting sites in the immediate vicinity of the Lake Erie marshes. I think if my recollection is correct that last year there were eight known nests of bald eagles in the State of Ohio, all of which were in this immediate area, in the state.

DR. LYMAN: And there was a reference in previous testimony to bird kills at the Perry Monument. Are you familiar with that situation?

DR. DAVIES: I am familiar to just a slight

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extent with this. Dr. Troutman of Ohio State has done some extensive work in that field, and he has observed examples of this kill of birds flying into Perry's Monument on Putnam Bay in South Bass Island. As just an example, on May 12, 1956 he noted seventy birds of twenty-three different species killed in a short time, and on May 24, 1954 one hundred birds killed in fifteen minutes by impacting the tower itself.

DR. LYMAN: Were there eagles or peregrine falcons among these?

DR. DAVIES: To the best of my knowledge there were not. They would not normally be involved in flights at night under the conditions in which the impacts with the lighted tower would be involved.

The hawks in general and eagles are day birds in general, they fly during the day and they would do any migrating they would be doing during the day. And day migrants in general are not susceptible to this type of an affair.

DR. LYMAN: Are you at all familiar with bird population dynamics?

DR. DAVIES: Are you talking now with regard to such things as breeding bird censuses, or winter censuses, or roadside censuses?

DR. LYMAN: Rates of propagation and life span and so on.

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DR. DAVIES: To a certain extent, yes. You may have some questions that you want to ask of me that I may not know the answers to, and if not I will say so.

DR. LYMAN: I wondered if you felt qualified to comment on the reproduction rate of any given species of bird?

DR. DAVIES: You name the species that is involved and then I will tell you.

DR. LYMAN: Let's talk about crows, you mentioned crows.

DR. DAVIES: Okay. Crows are in no problem whatsoever with regard to population at the present time. They are very well holding their own. As far as a life span is concerned I can't give it to you, but they are becoming extremely diversified, they are even going into the cities at the present time nesting in towns and feeding on pigeon eggs.

DR. LYMAN: Are they becoming more abundant?

DR. DAVIES: I would indicate from everything I can see, at least in the areas that I am familiar with I would say the crow population is tending to build up, yes.

DR. LYMAN: Let's pick a species of bird that seems to have a stable population. How about robins?

DR. DAVIES: I would hesitate to use a robin as an example, because there are a beautiful example of

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problem-area birds with regards to pesticides, so I would prefer to take something else that is not dependent on a food chain that would immediately go up to that.

Let's take examining -- how about a woodpecker, a flicker?

DR. LYMAN: How many times in a year does a flicker nest and how many nestlings does it produce?

DR. DAVIES: The normal number of nestlings in most of the woodpeckers would run, depending upon the hatch, in the vicinity of two to four. There are certainly cases in which you would have exceptions beyond that. You would anticipate that depending upon the nestling success that you could have possibly two nestlings during a season, although in a particular case such as this this will depend to a certain extent upon the pressures existent upon the habitat in which the bird is located.

DR. LYMAN: But you might say then that each pair of birds might produce five young birds in an average year?

DR. DAVIES: This -- well, just for purposes of illustration we might say so. And the majority of these will not survive to any appreciable extent beyond one year, if that much. In general there is a rate of bird mortality which very closely approximates the numbers that are present at the beginning of a given year. In the fall

9-10

migration you will have larger numbers than you would have during the spring, and nevertheless there are an increased number of inexperienced birds, and very often they will encounter more problems than the adults themselves during migration periods.

DR. LYMAN: It's the inexperienced birds then that tend to have the impacts?

DR. DAVIES: No, I am not saying that at all. There is an indication that some of the inexperienced birds often end up in the wrong directions in migration, for reasons that are not very clearly known at the present time.

DR. LYMAN: But you have indicated though that the average life span of a bird --

DR. DAVIES: Of a migratory, land bird, is generally very short.

DR. LYMAN: Of the order of a year or less?

DR. DAVIES: Maybe we should say two years or less, maybe, rather than just one or less. There is a range, certainly.

DR. LYMAN: Well, I think by the example you gave of the flicker that unless the flicker population is increasing --

DR. DAVIES: I would not say that it was.

DR. LYMAN: Five flickers have to die between one nesting season and the next for every pair of flickers to keep this population constant?

9-11

DR. DAVIES: This is about what the situation is.

DR. LYMAN: And it seems to average out at only slightly over a year of average life span?

DR. DAVIES: In this particular case I agree with you.

DR. LYMAN: Thank you.

DR. DAVIES: You are quite welcome.

CHAIRMAN GARFINKEL: I have no questions.

Mr. Malsch.

You are free to treat it as cross-examination, any statements made, or any questions asked by the Board.

MR. MALSCH: I have no questions.

CHAIRMAN GARFINKEL: Mr. Charnoff.

MR. CHARNOFF: Just one or two questions, Dr. Davies.

CROSS-EXAMINATION

BY MR. CHARNOFF:

Q You testified that Troutman had some data with regard to the Perry Monument and you referred to 1956 and 1954. Are you familiar with whether or not the Perry Monument has bright searchlights on it, floodlights? Do they use floodlights at the Perry Monument?

A I am sorry, I am not extremely familiar with the situation of the lighting on Perry's Monument, I have never been there at night.

9-12

Q And you have no personal knowledge of whether it is floodlighted or not?

A I can't answer that question.

Q Therefore, you don't know whether if they have floodlights since the period of concern you talked about, they now turn it off during the heavy migration period and now encounter a different experience than the two examples you cited?

A I would be surprised if the lighting was turned off completely, because this would certainly be a danger to air travel.

Q Just the floodlights, not the navigation lights, do you know whether they turn off the floodlights?

A I do not, sir.

MR. CHARNOFF: Thank you. I have no further questions.

CHAIRMAN GARFINKEL: Mr. Kalur.

MR. KALUR: I have no redirect.

CHAIRMAN GARFINKEL: You are excused, Dr. Davies.

Further witnesses?

MR. KALUR: I would like to ask the regulatory staff if Mr. L. Manning Muntzing is here pursuant to our oral request and written request to Mr. Malsch the other day.

MR. MALSCH: No, he is not.

MR. KALUR: I would like to proffer into

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evidence the fact that had Mr. Mutzing appeared he would have been questioned on the effect of the AEC's commitment of substantial resources during the NEPA review period on the final environmental decision made after a full NEPA review period. But the AEC has chosen not to have Mr. Mutzing present here.

CHAIRMAN GARFINKEL: I would like to ask a few questions on that.

With respect to Mr. Malsch. Did Mr. Kalur comply with the regulations in making his request?

MR. MALSCH: I have not seen the letter. My understanding is that a letter was forwarded to my office asking if I would bring Mr. Mutzing up with me to the hearing. For the record let me say that Mr. Mutzing is the Commission's director of regulations, and is the chief officer, if you will, over the regulatory staff.

CHAIRMAN GARFINKEL: And isn't it true under the regulations, under Part II, that the rules specifically bar making a -- requesting even by subpoena, a particular employee of the AEC by name?

MR. MALSCH: Well, the rules do provide that no subpoena may generally be issued for any named AEC employee. My understanding was that Mr. Kalur wasn't making any formal motion to the Board.

CHAIRMAN GARFINKEL: You weren't making --

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MR. KALUR: I didn't subpoena him. But I did make a request and the rules do provide for my making a request.

CHAIRMAN GARFINKEL: Okay. Your request. Very well.

MR. KALUR: And the request hasn't been honored.

CHAIRMAN GARFINKEL: Is that your case in chief?

MR. KALUR: Since the Board has ruled out the rest of my case, that's it, yes.

CHAIRMAN GARFINKEL: Mr. Chanoff, you have the right to put in rebuttal evidence if you so desire.

MR. CHANOFF: I so desire.

Now?

CHAIRMAN GARFINKEL: Let's do it now. Let me ask you: How much time is your rebuttal case going to take?

MR. CHANOFF: Probably about fifteen minutes.

CHAIRMAN GARFINKEL: Okay. On that basis we will go through the whole case.

MR. CHANOFF: May I have a one-minute recess?

CHAIRMAN GARFINKEL: Yes, six.

(Short recess.)

CHAIRMAN GARFINKEL: On the record.

MR. CHANOFF: I would like to call -- I don't know whether to call him a doctor or a professor. I get

confused. I would like to call William F. Jackson.

And ask him to be sworn, please.

Whereupon,

WILLIAM F. JACKSON

was called as a witness and, having been duly sworn, was examined and testified as follows:

CHAIRMAN CARPINELL: Please be seated.

DIRECT EXAMINATION

BY MR. CHARNOFF:

Q Did you say you don't care? Because one of the Board members preferred the title "Professor" to "Dr."

A Call me Bill.

Q I surely do want to get the favor of the Board member.

Dr. Jackson, will you please recite for the record your educational experience?

A My undergraduate degree, Master's degree in zoology was at the University of Wisconsin. My Doctoral degree is at Johns Hopkins University. All of them are in the areas of ecology with an emphasis particularly in mammalogy and ornithology.

Q Could you recite your other experience besides your educational experience, namely what has been your professional experience?

A I have been involved as a commissioned officer

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in the Public Health Service with responsibilities in the area of vector control. I have been on a variety of research expeditions dealing with ecological investigations in the Tropics. Since 1958 I have been a staff member at Bowling Green University. I am currently professor of biology and director of environmental studies at the university. I have conducted a variety of research in the areas of mammalogy, ornithology, ecology, population regulation.

I am a member of a variety of societies, the American Ornithologists' Union, a fellow and a past vice-president of the Ohio Academy of Science. I am a member of Mammalogists, Behaviorists, the American Association for the Advancement of Science, and other appropriate professional organizations.

Q At the university, Dr. Jackson, have you taught any courses in ornithology?

A Yes, I have taught ornithology for a number of years although I am not currently teaching a course. I am also a convenor of the Bi-Annual Bird Control Conference at Bowling Green which is an internationally-established conference. It has been running for about a decade.

Q Have you published a number of papers, Professor Jackson?

A Yes. Perhaps the one closest related to this

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arena was the result of a study of crow populations in and about the Toledo Airport. These crows were affecting navigation landing problems. We did a fairly major study involving radar tracking of movements, and made recommendations to the airport authorities for the alleviation of the problem.

I have also been involved in an a cooperative study of the red-wing blackbird populations in the Lake Erie area over a number of years, looking at their basic biology, movement patterns and so forth.

Q Dr. Jackson, yesterday in the course of some of the questioning by Mr. Nalur a remark was made about serious bird kills at the Commodore Perry Monument, as was done today in the examination by the Board of Dr. Davies. First will you tell me whether the monument has a floodlight on it.

A The monument normally is flood lighted at night.

Q And do they make changes in the floodlights or lighting conditions during bird migration seasons?

A Yes. The practice has been, in the last decade or so the practice has been during peak bird migratory seasons to turn the floodlights off.

Q And when they turn them off do they still leave on the navigation lights?

A Yes.

Q And can you tell me whether there has been any

9-18

change in the bird mortality caused by the Perry Monument once they adopted the practice of turning off the floodlighting during the bird migratory season?

A Yes. There has been a very striking decrease in the bird kill, and this was the kind of experimentation that was going on when I came to Ohio about fifteen years ago, and it was about this time that they instituted this program. Generally on an average kind of night during migratory season they may experience a half a dozen or so birds killed.

Under conditions where there is very low ceiling, where weather conditions are very adverse, and the lights are not on, the kill may go up to several dozens, perhaps fifty, sixty birds.

Q Roughly how many times a year might that have occurred?

A I have not examined the meteorological data, and I do not have a day-by-day statistical series, but I would estimate it might occur several times.

Q So your general impression is that the experience certainly with the Perry Monument is that navigational lighting poses far less a hazard to birds, or tends to reduce the hazard as compared to the combination of navigation lighting and floodlighting?

A The floodlighting certainly has been the problem

9-19

not only at Perry Monument but at installations elsewhere in the country where bird kills have been significant.

Q Dr. Jackson, there has been some talk about predators coming along and eating dead birds at the Davis-Besse site. There was testimony yesterday that the reactor building has been up to its full height for more than a year, that the top of that has a boom extending still higher, and the meteorological tower is a very high structure, has been up for about three years, and that there has been no noticeable -- no noticed or observed deaths through collision or impact with the structures. Do you think -- what do you think the probability is that predator animals would have consumed all of the dead birds, or so much of them that they would not have been noted in the vicinity of these structures?

A I think it is rather unlikely. I think we have to look at predators in several categories. There would be mammals which really would be more scavengers than they would be predators, raccoons, and skunks, rats; these certainly would leave tell-tale traces, partially-devoured carcasses, this sort of thing, which a reasonable observer would have noticed.

There will be scavengers in an avian form, the gulls, which would be daytime feeders, and would come in at times, I would assume personnel would be there, and

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would be noted.

Such birds as the hawks or owls would generally be feeding on living targets, birds that perhaps were disabled and could not effectively fly. And the owls would be night feeders and hawks would be daytime feeders.

Quite often the disabled birds result from banging into high wires, breaking a wing, rather than bashing their heads and having a fatal injury when they hit a very solid structure. So I would anticipate the number of damaged but still living birds, thus birds subject to ready predation by hawks or owls, would be slight. Consequently I would conclude that if dead birds were not found upon reasonable examination of the premises that kills of any magnitude are very unlikely.

Q Now, there was some discussion here with Dr. Davies in regard to endangered species such as falcons and bald eagles, and I believe he testified they were day migrants rather than night migrants.

Is it your judgment that difficulties at all with birds migrating and impacting with tall structures is a day or night phenomenon?

A It is certainly a nighttime phenomenon.

Q So that the birds concerned are day migrants, and this concern with those birds would not be particularly relevant?

9-21

A That's correct. And certainly experience with bird hazards elsewhere in the country does not indicate these daytime migrants as being in any great involvement.

Q Are you familiar with the structure design and height that is going to be erected at the Davis-Besse site?

A In a general way, yes.

Q It is going to include FAA type navigational lights, is that correct?

A That's my understanding.

Q Is it your understanding too that it will not be floodlighted?

A That is my understanding.

Q Will you give me your opinion then, Dr. Jackson, with respect to the likelihood of any real significant adverse impact of that structure on the migrating birds in the area?

A I would not consider the structure to have a significantly adverse effect. I think there could be some conditions occurring rarely, when the ceiling was low, when wind circulation was of a certain pattern, rain or fog, in which some numbers of birds could be killed by collision. But I think this would be a relatively infrequent phenomenon.

Q Putting it in some perspective, Dr. Jackson, to other types of mortality-causing events that birds encounter, would you consider this to be a significant increment to the kinds of events that might cause bird

9-22

mortality?

A No, I don't think so. If we are talking about even several hundreds of birds being involved in a given incident, several times a year; if we compare this with population dynamics on a continental or subcontinental basis we have this kind of a perspective to look at. We are dealing with songbirds, warblers. These are primarily the birds that were intercepted at the Perry Townsend, we are talking about an individual female which will lay four to five eggs, may, depending on the conditions, bring off two broods during the course of the summer. So that we are talking about three, four, perhaps more young which are surplus in the population since we only need two individuals to replace the existing pair. A pair of birds may live a year or two, in terms of the small songbirds.

So we have got half a dozen, eight, ten individuals which will die in one way or another, hitting a tower, being eaten by the neighborhood cat, being knocked down by somebody's B.B. gun, being hit by a car on the freeway, falling prey to a predator, being subject to a disease or a parasite, a whole host of things. And if we are looking at the millions of birds involved in the eastern flyways I don't regard the several hundreds which seem to me to maximize this kind of condition, as being a serious detriment or deduction from the

continental population.

MR. CHARNOTT: Thank you. I have no further questions of Dr. Jackson.

CHAIRMAN GARFINKEL: Mr. Kalur?

CROSS-EXAMINATION

BY MR. KALUR:

Q Dr. Jackson, are you familiar with a study done by Herbert L. Stoddard on bird casualties at Leona County, Florida, TV Tower?

A Yes, sir.

Q That wasn't a lighted tower, was it, except for the FAA lights?

A I am not familiar with the details of the arrangement of that tower. I know that he had on occasion some major kills, and that the impression I got from reading the description and looking at the pictures in the paper, is that one of the significant factors here was the very extensive guy wire arrangement.

Q Would you describe for me -- you said you are familiar in a general sort of way with the Davis-Besse buildings. Will you describe the size of the cooling tower for me?

A My notes on the cooling tower indicate that it will be approximately 400 feet tall.

Q Do you have a diameter reading?

9-24

A Something in the neighborhood of 200 feet.

Q I didn't understand your answer on the Perry Monument. You said on a bad night with the worst conditions you might have fifty or sixty birds when the lights were out, is that right?

A This has been the data that I have received in talking with colleagues who have been involved in studies at the monument.

Q And you said this might happen several times?

A Yes.

Q Is that several times in a migratory season?

A I am talking about several times a year.

Q As I understand your comments with regard to the effect of possible kills from Davis-Besse on the total bird population, it seems to be "What are a few birds more or less," is that it?

A No, I don't think my comments were intended to be of that crass an observation.

I think all components of the ecosystem are important. But --

Q So some loss diminishes the total, doesn't it?

CHAIRMAN GARFINKEL: Let the witness answer the question fully.

You may continue with your answer.

A But I think it is important to recognize that

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there is an energy flow which takes place within any kind of an ecosystem, and that this energy flow involves excess production over survival, and that this production is taken out of the population in a host of ways. With the increasing advent of environmental management by man we have created via highways, various kinds of structures, various kinds of activities, new forces and new subtracting devices in this whole ecosystem arrangement, and we can no longer adequately talk about a balance of nature. This is really a fallacy.

So what I am trying to say is that yes, birds are going to be killed in what I consider to be relatively small numbers during most of the time. There may be some incidents in which larger numbers are killed. I think this is undesirable from an esthetic point of view. But I don't regard it as being a detrimental, highly detrimental sort of thing from the viewpoint of continental population dynamics.

MR. KALUR: Thank you, Doctor. That's all I have.

CHAIRMAN GARFINKEL: Dr. Lyman.

DR. LYMAN: You mentioned that the guy wires can be very important. What about high-voltage transmission lines, which are essentially guy wires going horizontally?

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DR. JACKSON: Yes. I haveno direct experience with this. The literature, of course, indicates that some of the larger predators, hawks and eagles, not infrequently short themselves out by trying to perch on high-voltage lines. And I am sure that if there are birds coming in low under adverse environmental conditions and they collide with wires, there are going to be some mortalities. But I have no quantitative data to compare the horizontal wire pattern with any kind of vertical guy wires.

DR. LYMAN: You are not aware of any case histories or published studies of kills from this source?

DR. JACKSON: Not of songbirds. There have been a variety of notes, and documentation, of the larger birds being electrocuted. But these are largely daytime phenomena. An osprey will come down and spread out his wings across the circuits.

CHAIRMAN GARFINKEL: Any further questions, Dr. Lyman?

DR. LYMAN: No.

CHAIRMAN GARFINKEL: I have no questions.

Any further cross-examination of the witness?

None. You are excused. Thank you.

Any further rebuttal witnesses?

MR. CHARNOFF: No, sir.

CHAIRMAN GARFINKEL: You rest your case?

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MR. CHARNOFF: Yes, sir.

CHAIRMAN GARFINKEL: Mr. Kalur, do you rest your case?

MR. KOLUR: Yes.

CHAIRMAN GARFINKEL: Mr. Malsch, do you rest your case?

MR. MALSCH: We have no further evidence at this time to present.

CHAIRMAN GARFINKEL: Let this record show that the record for the reception of evidence is closed.

Now, with respect to proposed findings, I will not change the schedule merely because we terminated one day early. As I indicated I expected three working days from the date of the reception of evidence. I will allow the submittal of proposed findings, proposed order, and a brief in support thereof, to be filed or placed in the mail by the close of business, which will be five o'clock Wednesday of next week.

MR. CHARNOFF: May 10th?

CHAIRMAN GARFINKEL: Yes.

May we be off the record for a second.

(Discussion off the record.)

CHAIRMAN GARFINKEL: On the record.

With respect to proposed findings to be submitted, will the parties submit the copies to Dr. Lyman at his

normal address, in North Carolina; and to Dr. Luebke at Santa Barbara, California; and to me in Washington, D. C. at the Atomic Energy Commission.

MR. CHARNOFF: Do I understand that the Wednesday you are assigning for that is Wednesday, May 10?

CHAIRMAN GARFINKEL: That is next Wednesday.

MR. CHARNOFF: I just wanted the record to show that next Wednesday is still May 10.

MR. KALUR: We will stipulate that it is.

CHAIRMAN GARFINKEL: I haven't got my calendar to take a look.

That's correct.

MR. CHARNOFF: Mr. Chairman, in connection with post-hearing pleadings may I suggest that corrections to the transcript be filed on Friday, May 12th, two days later?

CHAIRMAN GARFINKEL: I have no objection to that.

I will issue an order at the same time initial decision is issued concerning the corrections.

Normally I would -- in normal situations I would have issued it before, but I think time is of the essence that I will issue it with our initial decision, corrections of the transcript.

Those that I believe to be obvious.

Those where there is no real change, I may not indicate in my order.