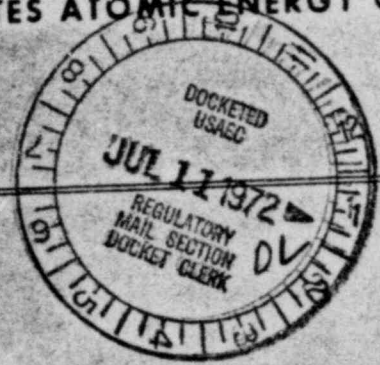


Reg

**REGULATORY DOCKET FILE COPY**

**UNITED STATES ATOMIC ENERGY COMMISSION**



**IN THE MATTER OF:**

THE TOLEDO EDISON COMPANY

and

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

Docket No. 50-346

Place - Cleveland, Ohio

Date - 7 July 1972

Follows Page 504

Pages 2782-3000

**REGULATORY DOCKET FILE COPY**

DUPLICATION OR COPYING OF THIS TRANSCRIPT BY PHOTOGRAPHIC, ELECTROSTATIC OR OTHER FACSIMILE MEANS IS PROHIBITED BY THE ORDER FORM AGREEMENT

Telephone:  
(Code 202) 547-6222

THIS DOCUMENT CONTAINS  
POOR QUALITY PAGES

FEDERAL REPORTERS, INC.

Official Reporters

415 Second Street, N.E.  
Washington, D. C. 20002

NATIONWIDE COVERAGE

8002 260840 T

3774

UNITED STATES OF AMERICA  
ATOMIC ENERGY COMMISSION

-----  
In the Matter of:

THE TOLEDO EDISON COMPANY

and

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

:  
:  
: Docket No. 50-346  
:  
:  
:

Holiday Inn  
Brookpark Road,  
The Great Hall  
Brookpark, Ohio

Friday, July 7, 1972

Pursuant to notice, the above-entitled matter was  
convened at 9.30 a.m.

ENFORCE:

MR. JEROME GARFINKEL, Chairman.

MR. JOHN R. LYMAN, Member.

MR. EMMETT A. LUEBKE, Member.

APPEARANCES:

FRANCIS S. DAVIS, ESQ. and DAVID KARTALIA  
United States Atomic Energy Commission,  
Washington, D. C.

GERALD CHARNOFF, ESQ. and JAY B. SILBERS, ESQ.,  
Shaw, Pittman, Potts, Trowbridge; and  
WILSON W. SNYDER, ESQ., and LOWELL ROU  
On behalf of Permittees.

JEROME S. KALUR, ESQ., Jamison, Ulrich, Burkhalter &  
Messer; on behalf of Interveners, Coalition for  
Safe Nuclear Power and Living in a Finer  
Environment.

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

I N D E X

1			
2	<u>WITNESSES</u>	<u>DIRECT</u>	<u>CROSS</u>
3	LOWELL ROE	2858, 2957	
4	DR. MORTON I. GOLDMAN	2858, 2956	
5	JAMES EDWARD MARVIN	2888	2896

E X H I B I T S

6			
7			
8		<u>FOR IDENTIFICATION</u>	<u>IN EVIDENCE</u>
9	INTERVENOR'S EXHIBIT 1	2923	
10	APPLICANT'S EXHIBIT 5	2960	
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

PROCEEDINGS

1  
2 CHAIRMAN CARPINKEL. Will this hearing come to order.

3 Will the reporter note that we are reconvening the  
4 Davis-Besse hearing pursuant to memorandum and order of  
5 the Commission dated June 29, 1978. In this order the  
6 Commission specifically directed that this hearing board  
7 receive evidence relating to the environmental effects that  
8 may occur subsequent to the NEPA review as well as the  
9 environmental effects of operation.

10 With respect to environmental effects of operation  
11 the Commission's mandate reverses this hearing board's  
12 prior initial decision on this point. In the original  
13 initial decision the Licensing Board concluded that the  
14 environmental effects of operations were not relevant to  
15 the proceeding. Exceptions to that were filed by all the  
16 parties. The Commission agreed that further evidence should  
17 be received.

18 However, in view of the fact that time for remand  
19 and hearing was not available as a result of the requirement  
20 of returning the case to the United States Court of Appeals  
21 for the District of Columbia, the Commission was compelled  
22 to stay the order until the Court would rule on the Commission's  
23 motion for an extension to receive further evidence.

24 On June 27, 1978, the Court of Appeals, without ruling  
25 on the merits of the case, granted the Commission's request

HDps2-2

1 for an extension of time and for the extension to receive  
2 further evidence pursuant to the Commission's June 5, 1972,  
3 memorandum and order.

4 Based on informal telephonic conferences with counsel  
5 for all the parties, the Chairman ruled on the telephone that  
6 with respect to the evidence received under Section E-2(a)  
7 (b) and (c) of Appendix D 210 CFR Part 50, the Licensing  
8 Board's order was affirmed. It was agreed by all parties  
9 that evidence with respect to Section E-2(a) (b) and (c) and  
10 the findings entered with respect to the evidence received  
11 on those sections were not in issue in this remand.

12 Consequently, the Chairman advised counsel for the  
13 parties that with respect to Section E-2(a) (b) and (c)  
14 no further evidence will be received on those provisions.  
15 The sole issue in this proceeding is the matters that  
16 involve the Court's original order in the coalition case  
17 which was rendered, I believe, on April 7, 1972.

18 Mr. Charnoff, is my statement with respect to the  
19 issues involved in this hearing correct? Do you object?

20 MR. CHARNOFF: No, sir, I think that is correct.

21 CHAIRMAN GARFINKEL: Mr. Kalur?

22 MR. KALUR: I think the only correction I might make  
23 is purely for the record. I don't think the Applicants  
24 made exception to the original refusal to accept evidence  
25 on plant operations. I think all parties did.

mDps2-3

1 MR. CHASNOFF: You had indicated, Mr. Chairman, that  
2 all parties had accepted to the Board's ruling with regard  
3 to the non receipt of evidence with respect to operational  
4 effects on the environment and while it was true that at  
5 the hearing the applicants were fully prepared to present  
6 evidence with respect to that matter and at the hearing the  
7 applicants disagreed with the Board's ruling, that upon  
8 analysis of the Board's decision after completion of the entire  
9 record we felt that the Board's ruling was quite reasonable  
10 and quite valid. We did take exceptions to the Board's  
11 decision but not in the context of that particular ruling.  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

WS3-1vo

1 CHAIRMAN GARFINKEL: I stand corrected. Mr.  
2 Kalur.

3 Mr. Katalia, you don't have any objections, do you,  
4 with respect to the issues of this case as of now?

5 MR. KATALIA: I have no objection.

6 CHAIRMAN GARFINKEL: O. K.

7 Now, under the Commission's regard, the order  
8 indicated that we should receive evidence dealing with the  
9 environmental effects of post-NEPA review, construction  
10 activities, as well as plant operation.

11 The Commission stated that this could be done by  
12 requiring a preliminary estimate of the cost benefit balance  
13 resulting from full NEPA review, or by any other means which  
14 the licensing board may deem appropriate to avoid undue  
15 protraction of the proceeding.

16 Another aspect of the Commission's order is that  
17 we, the Board, should consider the effect of the incremental  
18 expenditures, and then consider alternatively the waiver of  
19 those expenses.

20 Now, in our initial decision we did not consider  
21 the waiver in view of the fact that the Regulatory Staff would  
22 not give any weight to that waiver at the original hearing.

23 In view of the Commission's mandate, we will  
24 expect the Regulatory Staff to indicate its position with  
25 respect to the waiver.



1           Because of the time element involved in this case,  
2 in which the Commission directed that an initial decision be  
3 rendered by this Board prior to midnight, July 11, 1972, I  
4 advised counsel for the parties there will be no proposed  
5 findings received, no conclusions and no proposed order.

6           This Board will have to make its own determination  
7 without the benefit of the views in writing of the various  
8 counsel.

9           The first order of business is the motion of  
10 Mr. Kalur wherein he requests that the Board certify the  
11 question of requiring the presence and testimony of the  
12 Director of Regulation.

13           In view of the fact that this motion in effect is  
14 directed to the Regulatory Staff, and in effect to the  
15 Commission, I will hear from Mr. Katalia first on the motion,  
16 Mr. Charnoff and last response by Mr. Kalur.

17           Mr. Karpalia.

18           MR. KARPALIA: Thank you, Mr. Chairman. Perhaps  
19 I should identify myself for the record, since I haven't  
20 appeared in the proceeding before.

21           My name is David E. Karpalia. I am an attorney  
22 in the office of the general counsel, United States Atomic  
23 Energy Commission, Washington, D. C. 20545.

24           I am appearing today in place of Mr. Martin  
25 Malsch, who appeared previously in this proceeding.

1 I would like to note for the record that Mr.  
2 Francis X. Davis of my office is with me appearing as co-  
3 counsel today.

4 CHAIRMAN GARFINKEL: Thank you, Mr. Kartalia.

5 MR. KARTALIA: Now, I am addressing myself to  
6 Mr. Kalur's motion for the production of Mr. Munsing as a  
7 witness. I think that I would like to begin by explaining  
8 who Mr. Munsing is, who the Director of Regulation is.

9 The bare record at this point doesn't really make  
10 that altogether clear.

11 The Director of Regulation happens to be one of  
12 the principal officials of this agency.

13 He reports directly to the Commission. He super-  
14 vises several hundred individuals, most of whom are in  
15 Bethesda, but some of whom are in various field offices  
16 around the country, people who comprise the entire regulatory  
17 side of the Commission.

18 Since Mr. Kalur has made much of Mr. Munsing's  
19 unique knowledge I would like to point out that he not only  
20 supervises individuals engaged full-time in the NEPA review  
21 process, but he supervises individuals involved in a wide  
22 variety of other and equally important functions, and I  
23 would like to identify a few of them, although I do not  
24 intend this to be an all-inclusive list.

25 First of all, the issue in this case involves the

1 environmental review of a power reactor, while Mr. Muntzing's  
2 subordinate officials also deal with this health and safety  
3 review of power reactors.

4 They are involved in the reviews of research  
5 reactors, fuel fabrication and fuel processing plants, and in  
6 the licensing of radioisotopes, for a wide variety of appli-  
7 cation, such as, for example, radiography.

8 Mr. Muntzing's employees are also involved in the  
9 continuing surveillance program of the Commission by which  
10 the Commission keeps track of operating reactors and fuel  
11 facilities for example, and of license facilities that are  
12 under construction.

13 That is the former Division of Compliance of the  
14 Commission. The enforcement arm of the regulatory side of the  
15 Commission is also under Mr. Muntzing's jurisdiction.

16 Mr. Muntzing is also responsible for supervising  
17 officials who are actively full-time engaged in the development  
18 of policies and regulations of general applicability for all  
19 of the licensed activities under Mr. Muntzing's juris-  
20 diction.

21 In addition he not infrequently acts as the  
22 Commission's spokesman on regulatory matters, and this  
23 involves, among other things, appearing before various  
24 Committees of Congress.

25 So I would turn now to Section 3.720, H to I, the

1 Section which applies to Mr. Kalur's motion and the section  
2 which he in fact cited.

3 It provides that the attendance and testimony of  
4 the Commissioners and named personnel at a hearing or at  
5 deposition may not be required by the presiding officer by  
6 subpoena or otherwise with only one exception, and that  
7 exception is exceptional circumstances, which is spelled  
8 out in the rule, and I think that is a fairly strong case of  
9 the intent of this regulation, the named officials are not  
10 ordinarily to be produced.

11 However, there are substitutes for this procedure.  
12 There is a provision for filing interrogatories and more  
13 importantly to this case, there is a provision which in effect  
14 directs the Director of Regulation to make available a witness  
15 with knowledge of the issues relevant to the proceeding.

16 ENDSWSvc  
17  
18  
19  
20  
21  
22  
23  
24  
25

HDps4-1-1

1 This is a rule which applies to the personnel generally.  
2 But I would submit, Mr. Chairman, if there was ever a  
3 situation where the Atomic Safety and Licensing Board should  
4 rigorously enforce the exceptional circumstances provision  
5 of our rule, this is it. The Director of Safety is too  
6 important to allow his whereabouts to be litigated by the  
7 whims of parties in adversary proceedings.

8 I think Mr. Kalur has made an effort to put his  
9 grounds in the form of an exceptional circumstances showing  
10 but I think he has completely failed. It is very clear that  
11 Mr. Kalur has the burden of showing that exceptional  
12 circumstances exist. He is the moving party. It does not  
13 fall upon me to prove that no exceptional circumstances  
14 exist, though I think it is important to focus on exactly  
15 what Mr. Kalur has said in his motion.

16 Yet basically all that he has come up with is  
17 the bare conclusion that Mr. Muntzing has unique knowledge,  
18 as I have taken it down -- I really don't have a copy of  
19 this, just a personal copy -- of the effective increase to  
20 the construction costs and the effect of such costs upon  
21 the ultimate NEPA decision.

22 Mr. Chairman, if that is sufficient then I think  
23 an equally sufficient motion could be directed on any number  
24 of subjects because Mr. Muntzing's duties cover a wide  
25 variety of functions, some of which I have indicated in my

1 previous remarks.

2           There was only one Director of Regulation and he  
3 is unique and any knowledge he has is unique, but I don't  
4 think this is the kind of uniqueness that, by itself,  
5 warrants the issuance of a subpoena and the compulsion of  
6 Mr. Muntzing's testimony.

7           Finally, as I noted before the Commission's  
8 rules provide alternatives to the subpoena of named AEC  
9 personnel. One of these, and the one I have mentioned in  
10 the case of this proceeding, is the production of individuals  
11 designated by the regulatory staff with knowledge of the  
12 facts.

13           Now, in this case I am not absolutely certain  
14 what Mr. Kaluz wants to inquire into. We have spoken of  
15 his proposed examination generally on two occasions, once  
16 in a telephone conference involving all of the parties  
17 to this proceeding and once when Mr. Kaluz and I spoke  
18 subsequently. I would have to be a mind reader to know  
19 exactly what he wants to get into.

20           In the circumstances we have agreed to produce and  
21 we have or will produce, since there were two individuals  
22 involved, Mr. George Knighton, who is a branch chief of  
23 what used to be called the Division of Radiological and  
24 Environmental Protection. He actively supervised the  
25 project managers who were involved in directing and coordinating

KSMKEMZ 1  
HDps4-1-3

2 individual environmental reviews. He is involved full time  
3 in our NEPA review process.

4 In addition we will produce -- he is on the  
5 way here, as I understand it -- Mr. Charles Shortt.  
6 Mr. Shortt is one of the Commission's cost benefit specialists.  
7 He is professionally an economist and he too is involved on  
8 a more or less full-time basis in our NEPA review process,  
9 particularly with respect to power reactors.

10 I don't know whether this will satisfy Mr. Kalur  
11 but I think that we have done a reasonable thing here, that  
12 it is the only reasonable response to this kind of a motion,  
13 and that with the knowledge I have that the only reasonable  
14 response was to produce the people who have the qualifica-  
15 tions of Mr. Knighton and Mr. Shortt.

16 In summary, for all these reasons I would just like  
17 to point out again that I think Mr. Kalur has simply failed  
18 to make the showing required. He has a bare conclusion that  
19 he is rescinding this portion on. For that reason I think the  
20 motion should be denied.  
21  
22  
23  
24  
25

HD4-2-1vo

1 CHAIRMAN GARFINKEL: Mr. Charnoff?

2 MR. CHARNOFF: For the record, my name is Gerald  
3 Charnoff. Appearing with me today for Toledo Edison, we have  
4 Mr. Jay Silberg, seated two seats to my left. Both of us  
5 are associated with the law firm of Shaw, Pittman, Potts  
6 & Trowbridge at 910 Seventeenth Street N. W., Washington,  
7 D.C.

8 Also appearing on my right is Mr. Wilson Snyder  
9 of the law firm of Fuller, Henry, Hodge & Snyder, in Toledo,  
10 Ohio.

11 Also on my left is Mr. Roe of Toledo Edison  
12 Company.

13 MR. CHAIRMAN, I will be very brief. I believe  
14 that the rule is very clear that --

15 CHAIRMAN GARFINKEL: Mr. Charnoff, can you speak  
16 a little louder so people in the back can hear?

17 MR. CHARNOFF: I believe the rule is very clear  
18 which was discussed by Mr. Kartalis quite clearly and quite  
19 well, namely that the Licensing Board is explicitly not given  
20 the authority to command the appearance of specific REC  
21 personnel in licensing cases.

22 The rationale for that is quite obvious. Mr.  
23 Kartalis has touched upon it. There could be chaos in the  
24 overall administrative process if with the MANY hearings that  
25 take place advocates representing different parties in such



1 cases could command the appearance of specific individuals.

2           Clearly, the regulation recognizes the duty and  
3 responsibility of the AEC staff to participate in such  
4 hearings and to have available at such hearings persons who  
5 are capable of dealing with matters that are relevant to  
6 such hearings.

7           As I understand it, both from our telephone  
8 calls the other day and from Mr. Kartalia's remarks this  
9 morning, he has made a sincere effort to bring to this hearing  
10 persons who are capable of responding to the general line of  
11 inquiry.

12           Whether it be relevant or not is a matter that we  
13 might set aside for the moment. He has indicated he will have  
14 persons here who can respond to the general line of inquiry  
15 that was identified by Mr. Kalur.

16           It is perfectly clear, I think, from the motion  
17 that was filed on the brief in support of that motion by  
18 Mr. Kalur, that he has not shown the showing that is required  
19 by the ruling, namely that there be exceptional circumstances  
20 which would require or justify the appearance of a specific  
21 named individual in this kind of hearing.

22           I would also point out that Mr. Kalur has once  
23 before asked for Mr. Muntzing, if you will recall, at a  
24 conference called, I believe, preceding the last set of  
25 hearings.

HDvd1-2-3-vo

1 Mr. Kalur had indicated then, too, that he would  
2 like to have Mr. Muntzing appear but there was no indication  
3 beyond that which we have seen here that there is any  
4 particular rationale for having Mr. Muntzing appear.

5 It is strange, given all this time and given the  
6 decision by the staff the last time not to have Mr. Muntzing  
7 appear and it was not questioned by Mr. Kalur the last time,  
8 that Mr. Kalur did not take advantage of 2.730(N) 2 (d),  
9 which would have enabled him to file written interrogatories  
10 with the staff which would have enabled him at least to show  
11 the nature of the line of questioning that he was concerned  
12 with.

13 I believe that there has been no showing of the  
14 kind required to authorize the board not to require Mr.  
15 Muntzing to appear but simply to justify you certifying this  
16 question to the Commission, which is the particular notion  
17 submitted in writing by Mr. Kalur on Monday night, I believe.

18 We believe the motion should be denied.

19 CHAIRMAN GARFINKEL: Mr. Kalur, you may speak.

20 MR. KALUR: To make this uniform, I think I had  
21 better identify myself as attorney for the Coalition for Safe  
22 Nuclear Power. I am Jerome S. Kalur with the law firm of  
23 Jamison, Ulrich, Burkhalter & Pesser.

24 Mr. Chairman, in a telephone conversation recently  
25 Mr. Kartalia did advise me that the Commission, in compliance

GDvo4-2-4vo 1

with the provisions of Section 2.720 of 10 CFR would produce  
as substitutes Mr. Knighton and Mr. Shortt. Is that correct?

MR. KARTALIA: That is right.

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

WSpr5-1-1

1 MR. KALUR: I am willing at this time to have  
2 my motion held in abeyance until these individuals have  
3 testified. Until that time and until I have time and chance  
4 to cross examine them it will obviously be impossible for me  
5 to reach a determination as to whether they are an adequate  
6 substitute for the unique knowledge we claim Mr. Muntzing  
7 possesses.

8 With respect to general comments, I would call  
9 this Board's attention to the decision of the Court of Appeals  
10 which is cited in the paragraph I am referring to , which is  
11 cited in the Commission's order which remanded for these  
12 hearings.

13 In the middle of the paragraph the Court stated,  
14 and is quoted by the Commission, "This additional irretrievable  
15 commitment of substantial resources might effect the eventual  
16 decision reached on NEPA review."

17 The Court then went on to say that that is the  
18 paramount consideration on this review.

19 Now, as I read those words, I think it is quite  
20 obvious that the Court is asking this Board to look into the  
21 internal decisional process of the Atomic Energy Commission  
22 on full NEPA review.

23 Now, in this case, as in every other case, as I  
24 understand it, of suspension review, Mr. Muntzing, as the  
25 Director of Regulation, has overall responsibility.

WSps5-1-2

1 In this particular case he signed an issued  
2 the orders which originally refused to halt construction on  
3 Davis-Besse during the NEPA review.

4 I find it difficult in the structure of the  
5 bureaucracy of the AEC to pinpoint any other individuals  
6 who might have particular knowledge on this type of subject  
7 as to what goes on in the internal evaluation procedure  
8 of whether to suspend or not to suspend, and how they view  
9 the possible environmental harm of a plant.

10 Now, Mr. Kartzalia has advised me that his two  
11 witnesses will be able to supply this information.

12 MR. KARTZALIA: Correction. I hate to interrupt  
13 another attorney when he is arguing, but I simply did not  
14 make that representation, and I tried to make that clear in  
15 my remarks earlier today.

16 I simply am not in a position to say that you are  
17 going to get answers to the questions you are going to ask.  
18 I don't know the questions.

19 MR. KALUR: Let me say this: If these individuals  
20 are capable of giving that information I will, of course,  
21 withdraw my motion.

22 If they are not capable of giving it I will  
23 renew the motion.

24 CHERRILAN GARTENKEL: Let's treat your motion  
25 as withdrawn subject to resubmission after your examination

WSps5-1-3

1 of the regulator staff's two witnesses who are going to  
2 testify, assuming you call them.

3 MR. KALUR: I am not going to agree to that. I  
4 will agree to holding it in suspended ruling.

5 CHAIRMAN GARFINKEL: All right. Then we will  
6 hold the ruling in suspense until after the examination  
7 of the witnesses that are being made available by the  
8 Regulatory Staff.

9 MR. KALUR: Thank you.

10 CHAIRMAN GARFINKEL: After that I will rule  
11 and there will be no discussions on the point except on  
12 the question of whether they comply with what you want.

13 MR. KALUR: Thank you, Mr. Chairman.

14 MR. FARTALIA: Could I merely say that even if  
15 these witnesses are not able to answer Mr. Kalur's motion  
16 I will still insist that the required showing for the  
17 production of Mr. Munsing has not been made.

18 CHAIRMAN GARFINKEL: I will rule on the motion.

19 MR. FARTALIA: I see.

20 CHAIRMAN GARFINKEL: On the merits of the motion.  
21 But since Mr. Kalur has made his latest statement, the ruling  
22 at this time is a little bit premature.

23 MR. CHARNOFF: The only comment I would like to make  
24 is you had indicated that you would rule after that without  
25 further discussion, and it may well be that Mr. Kalur then

WFS 5-1-4

1 resubmits or asks you to consider that motion, and if  
2 there is to be any consideration of the nature of the  
3 testimony given by Mr. Kartalia's witnesses we would like  
4 to have the right to participate in any kind of dialogue  
5 with the other attorneys and the Board in connection with  
6 whether or not that testimony by Mr. Kartalia's witnesses  
7 does or does not affect the conclusion that you will agree.

8 CHAIRMAN TARPINNEL: Yes, he may so participate.

9 All counsel will participate on that point.

10 Now, before we commence with the case in chief  
11 of the applicant, let me say again the applicant carries the  
12 burden of proof with respect to this proceeding.

13 In our informal telephone conference between  
14 counsel for the parties it was agreed that thermal and  
15 chemical releases will not be an issue in this remand hearing.

16 It was agreed that radiological effects of opera-  
17 tional operation and of accidental incidents are the issues  
18 that are relevant to this proceeding, and I have indicated  
19 that Mr. Kaluz will have full rein of cross examination in  
20 accordance with the rules of evidence.

21 I also indicated that I would strike all my findings  
22 in my initial decision relating to the irretrievable investment  
23 as they affect the final NEPA review, and that I would issue  
24 a new initial decision with respect to that point, and that  
25 would include all aspects of the environmental effects of

WSPs5-1-5

1 operation, post NEPA review, and any other costs that come  
2 into that process which the Court of Appeals requested we  
3 look into.

4 I indicated that I will incorporate by reference  
5 all my other findings which relate to Section E-2 (a), (b)  
6 and (c). So I will not issue in a sense a new initial  
7 decision that specifically recites the prior findings  
8 relating to E-2 (a), (b) and (c). They will be listed in  
9 my initial decision by proposed finding or conclusion number.  
10 So all the parties are aware of that, and this was agreed by  
11 all the parties.

12 Now, with that preliminary statement, Mr. Charnoff,  
13 will you commence your case in chief?

14 MR. CHARNOFF: Yes, Mr. Chairman. I would like to  
15 make one comment with regard to the stipulation, with regard  
16 to the fact that as I understood that stipulation on the  
17 phone by the parties and the Licensing Board at present was  
18 that the issues that we would be dealing with in a controverted  
19 manner here would be the radiological matters, normal and  
20 accidental, and that we would be permitted to put in our  
21 testimony insofar as it relates to non-radiological matters  
22 in writing as if read, because we specifically determined  
23 whether a number of those witnesses had to be present, and  
24 it is in that context that we will be presenting our direct  
25 case.



WSps5-1-6

1 I would like to call on Mr. Silberg to make an  
2 opening statement at this point, if that is appropriate,  
3 and then to proceed with the presentation of our direct case.

4 His opening statement will indicate the nature of  
5 the direct case we are making this morning.

6 CHAIRMAN GARFINKEL: Go ahead, Mr. Silberg.

7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

WSvo5-2-1

1 MR. SILBERG: Thank you, Mr. Chairman.

2 On June 5, 1972, after a hearing before the  
3 Licensing Board, which took place from May 2 to May 4, 1972,  
4 after this Board's initial decision and its affirmance by the  
5 Atomic Safety Licensing Appeal Board, the Commission ordered  
6 the conduct of further hearings by the Licensing Board because  
7 the April 7, 1972 opinion by the Court of Appeals for the  
8 District of Columbia Circuit required that the record at this  
9 proceeding be returned to the Court by June 6, 1972.

10 The Commission requested from the Court an  
11 extension of time to conduct these additional hearings.

12 On June 27, 1972, the Court granted that extension.

13 On June 29 the Commission set forth the schedule  
14 for these additional hearings and fixed the following as a  
15 ground rule, and I quote from its order:

16 "The evidentiary record shall be limited to the  
17 consideration specified in our memorandum and order of  
18 June 5, 1972. The Licensing Board shall exercise its dis-  
19 cretion so as to avoid re-examination of cumulative or  
20 repetitious matters."

21 As the June 5, 1972 order makes clear, the  
22 Commission has ordered that the record in this proceeding be  
23 re-opened only to include "evidence dealing with environmental  
24 effects of NEPA review construction activities and plant  
25 operation."

WSvo5-2-2

1 The Commission stated that this supplementary  
2 evidence was necessary in order to answer the additional  
3 criterion set forth in the Court's April 7 opinion.

4 That is, whether the additional irretrievable  
5 commitment of resources during the NEPA review period might  
6 effect the eventual decision reached on the NEPA review.

7 Thus the evidence already presented on the three  
8 criteria of Section H-2 of Appendix D to 10-CFR Part 50, as  
9 the Chairman of the Board just noted, not to be reopened in  
10 these hearings.

11 The Licensing Board's findings and conclusions  
12 with respect to first the environmental impact of continued  
13 construction during the NEPA review period; second, the  
14 foreclosure of all alternatives by continuing construction,  
15 other than the alternative of abandonment, and, third, the  
16 effect of delaying construction or operation in the public  
17 interest.

18 None of these three issues are at issue in this  
19 remand hearing.

20 The criterion set forth in the Court of Appeals  
21 decision involves two aspects. Cost of abandonment of the  
22 Davis-Besse facility and the eventual decision on the  
23 NEPA review.

24 The first aspect, the cost of abandoning Davis-  
25 Besse is not to be reopened in this hearing, because the cost

WSvo5-2-3

1 of abandonment was fully litigated at the prior hearing before  
2 this Board. The Board's findings and conclusions on the  
3 amount of this cost are dispositive.

4 What is to be reexamined here is the Licensing  
5 Board's evaluation of the effect of these additional ir-  
6 retrievable costs on "The eventual decision reached on the  
7 NEPA review."

8 And "The outcome of the final NEPA process," both  
9 of those quotes coming from the Court of Appeals decision.

10 Pursuant to the Commission's orders of June 5  
11 and June 29 this reexamination is to be based upon evidence  
12 concerning post-NEPA review construction activity and plant  
13 operation.

14 In order to present the additional evidence called  
15 for by the Commission, and to create the kind of record  
16 required by the Commission's orders, applicants, the Toledo  
17 Edison Company and the Cleveland Electric Illuminating Company  
18 will offer in this hearing the following:

19 First, written testimony proffered at the May 2  
20 hearing and deleted on the grounds that it dealt with the  
21 effects of plant operation.

22 Second, those sections of applicant's supplement  
23 to Environmental Report which is Applicant's Exhibit 1,  
24 proffered at the May 2 hearing and deleted on the grounds that  
25 they dealt with matters taking place after the end of the NEPA

W3vo5-2-4

1 review period.

2 Third, oral testimony by Mr. Lowell Roe describing  
3 and indicating the effects of construction which will take  
4 place after the NEPA review period.

5 Fourth, oral testimony by Mr. Roe presenting  
6 the costs of alternatives relating to thermo discharges and  
7 rad waste systems.

8 Fifth, testimony by Dr. Charles Hurdendorf on  
9 the dredging which will occur after the NEPA review period.

10 We expect that Dr. Hurdendorf will be here  
11 Saturday morning, although he may possibly be here earlier  
12 than that.

13 Oral testimony by Dr. Morton Goldman of  
14 NUS Corporation on the environmental effects of radiological  
15 releases.

16 Finally the cost benefit analysis prepared for  
17 the Davis-Besse facility under the direction of the Toledo  
18 Edison Company and filed with the Atomic Energy Commission  
19 on July 6, 1972, pursuant to a request by the Commission for  
20 such a cost benefit analysis.

21 CHAIRMAN GARFINKEL: I hate to interrupt, but that  
22 was not given to either Mr. Kaluz -- Does Mr. Kartalia have  
23 that? I know I don't have that.

24 MR. SILBERG: That is correct, Mr. Chairman,  
25 and when we do introduce that we will provide copies to all the

ISvo5-2-5

1 parties.

2 CHAIRMAN GARDINER: Fine.

3 MR. SILVER: Pursuant to the agreement of counsel  
4 for all the parties during the conference called between  
5 counsel and the Licensing Board Chairman, which the Chairman  
6 referred to in his opening remarks, written testimony dealing  
7 with non-radiological matters is to be admitted by the stipu-  
8 lation.

9 Testimony on the radiological matters will be  
10 sponsored by Mr. Roe, Dr. Goldman and Dr. James Martin of the  
11 Environmental Protection Agency.

12 Of course, we do have with us expert witnesses who  
13 would be able to reply to any questions with respect to post-  
14 NEPA review construction, plant operation and the effects of  
15 these on the environment.

16 Our testimony will show both for radiological and  
17 non-radiological matters that there will be no significant  
18 environmental impact on the environment, either from con-  
19 struction of the Davis-Besse facility after the conclusion  
20 of the NEPA review period, or from its operation.

21 Having thus examined the cost side of this  
22 preliminary cost benefit balance, a Licensing Board would  
23 then be able from information that is already in the record,  
24 to conclude that the additional irretrievable expenditures  
25 during the NEPA review will not affect the eventual decision

Svo3-2-6

1 reached in the NEPA review, because the environmental cost  
2 aspect of the equation will be shown to be insignificant,  
3 the substantial benefits clearly show that the balance will  
4 not be close enough to be affected by the additional ex-  
5 penditures.

6 In addition to this determination, the Commission's  
7 order of June 5 also required the Licensing Board to assess  
8 applicant's waiver of all consideration of the initial  
9 investment to be made during the review period as that waiver  
10 affects the decision whether or not to suspend.

11 Since we believe that the Licensing Board will  
12 conclude that even without the waiver the additional ex-  
13 penditures will not affect the eventual outcome of the NEPA  
14 review, consideration of the waiver if it is to be meaningful  
15 should assume for the purposes of argument that there might be  
16 significant environmental costs, even though our evidence  
17 will establish that those costs will not occur.

Dvo3-1-lvo

18 The fact that there may be significant adverse  
19 impacts on the environment does not, of course, preordain  
20 the Board's decision, because NEPA does not bar projects  
21 which have significant adverse impacts upon the environment.

22 Even with these assumptions we believe that the  
23 Board should conclude that applicant's waiver will assure that  
24 the final balance cannot be tilted by the additional ex-  
25 penditures during the review period.

Hlvc5-1-2

1 Since the Court of Appeals in its criterion is  
2 only interested in the effect of the additionally retrievable  
3 expenditures during the NEPA review period, on the final  
4 decision reached on the NEPA review the waiver which will fix  
5 the amount of these additional irretrievable expenditures at  
6 zero for the purposes of this consideration assures that the  
7 eventual NEPA decision will not be affected by continued  
8 construction.

9 CHAIRMAN GARPINKEL: Are you finished with your  
10 statement?

11 MR. SYLBERG: Yes, I am, Mr. Chairman.

12 CHAIRMAN GARPINKEL: I prefer, Mr. Kalur and Mr.  
13 Kartalia, that each party make an opening statement at the  
14 beginning of their case if there is no objection to that.

15 MR. KALUR: No objection.

16 MR. KARTALIA: No objection.

17 CHAIRMAN GARPINKEL: I am going to raise the  
18 question of the waiver at this point, Mr. Kartalia. I think  
19 we should have that above-board before we go into the direct  
20 case of the applicant as well as the cross-examination by  
21 Mr. Kalur.

22 I am going to ask you a series of questions.  
23 The first question is --

24 MR. KALUR: Mr. Chairman, before you do that, I  
25 would appreciate it if you would give me a permanent objection.



HDv06-1-3

1 to participation of the staff in these proceedings.

2 I am again renewing my motion.

3 CHAIRMAN GARFINKEL: Right, you have a continuing  
4 objection.

5 MR. KARTALIA: I believe there is a law of the  
6 case on that point.

7 MR. KALUR: I don't think the law of the case  
8 precludes objections.

9 CHAIRMAN GARFINKEL: Mr. Kartalia, what is the  
10 Regulatory Staff's position with regard to the waiver?

11 MR. KARTALIA: First, we don't expect to be in a  
12 situation in this case where we would have to decide what we  
13 are going to do about the waiver. We think that the waiver is  
14 going to turn out to be immaterial for essentially the reasons  
15 that Mr. Silberg has stated, as I understand it.

16 CHAIRMAN GARFINKEL: That is one issue but the  
17 Commission made it very specific that we will consider the  
18 waiver. It is not a question that it may not have any effect  
19 or it may be moot. The Commission wants this Board to con-  
20 sider the waiver.

21 Now, I am asking -- and I made it very clear in the  
22 telephone conference -- that I want the position of the  
23 Regulatory Staff with respect to the waiver.

24 MR. KARTALIA: I realize this. It is simply the  
25 order of the discussion here. I think the point that I am on

HD706-1-4

1 and that you joined me on is an important point, I want to  
2 discuss that for a minute.

3 I remember what you told me and I will try to  
4 respond to your question.

5 We think that the Board is in fact going to be  
6 able to come to the conclusion that the waiver is immaterial,  
7 that it is unlikely that the staff would ever be put in the  
8 position of having to try to decide what to do about that  
9 waiver.

10 I don't think that what I am suggesting here is  
11 in any way inconsistent with the Commission's order. As a  
12 matter of fact, I think that one sensible interpretation of  
13 what it tells the Board is to see whether this waiver issue  
14 really matters very much.

15 Do the comparisons, in the Board's own mind, as  
16 it were, considering first the balance which takes into account  
17 the outlays of the applicant during the NEPA period, and then  
18 do it the other way and see if it matters. I will just  
19 finish on that point.

20 I think that is a legitimate way of disposing of  
21 the issue and that is what we think the record will show when  
22 all of the evidence is in.

23 Our position on the waiver is essentially as Mr.  
24 Malsch has stated. We would not give the waiver dispositive  
25 effect.

Dvo6-1-5

1 CHAIRMAN GARPINKEL: I would like a reason for  
2 that.

3 MR. KARTHA: It is our reading of the Calvert  
4 Cliffs decision basically the deciding to give credence to the  
5 waiver can be construed as resolving to ignore reality. We  
6 are not sure that we can do it. That is why we are not  
7 prepared to say that we will give full faith and credit to that  
8 waiver no matter what.

9 On the other hand, we cannot rule out the possi-  
10 bility of taking the waiver into account as another factor.  
11 It is very difficult to foresee how that is going to be done  
12 unless you have a concrete situation and can determine just  
13 what kind of problem is going to be involved.

14 I don't know the calculus and I can't offer any  
15 to the Board.

16 CHAIRMAN GARPINKEL: Here is my problem -- And I  
17 will give the other parties time to comment on that. But my  
18 problem with that -- and I am talking now as a lawyer, not as  
19 a scientist. My colleagues here are the scientific experts.  
20 To me it sounds incredible, in view of the aspect of this case  
21 and where we are -- the result is not -- the issue here is not  
22 what the final NEPA review will actually come out. We can't  
23 interpret exactly what the NEPA review is.

24 The issue in this case is whether the incremental  
25 costs will affect that final decision, taking into account now

HDrc6-1-6

1 the environmental effects of operation and environmental  
2 effects of construction.

3 Now, my difficulty here is that the applicant is  
4 willing to waive every single bit of that loss, technically  
5 speaking. He is saying, "We are willing to assume every single  
6 dollar of loss should the Commission's final NEPA review come  
7 out and say that this plant should be abandoned."

8 That is all they are saying here.

9 Now, in effect, they are saying, "Regulatory Staff,  
10 when you balance the factors for the NEPA review for this type  
11 of proceeding, don't give it any weight." So in effect they  
12 are telling Skelly Wright that as far as the applicant is  
13 concerned "We are indicating to the world we don't want our  
14 continued construction to influence the final NEPA review."

15 So they are saying as to that aspect it is a zero  
16 cost.

17 The response you are giving here is that -- and it  
18 may be legitimate and I am not ruling on this -- is that we  
19 have these costs and we can't close our eyes to them because  
20 they exist. But that is on the final, actual NEPA review.

21 We are now in the case dealing with an order to  
22 show cause why we should stop construction. I am worried  
23 about the argument. Is that the argument that Skelly Wright  
24 or the Court of Appeals is concerned about or not? They are  
25 only saying with respect to this construction here that you

HDvo6-1-7

1 shouldn't consider it.

2 Now, I am concerned with why can't the Regulatory  
3 Staff accept that and not consider it as influencing the actual  
4 decision.

5 I am accepting all the evidence that was previously  
6 received and it shows that 192 or 162,000,000, whichever figure  
7 you want to use -- and this is round numbers -- has already been  
8 spent.

9 As Mr. Kalur points out, we are talking about  
10 \$23 million. That is all we are talking about during this  
11 construction. And whatever additional costs may come out at  
12 the post-construction period.

13 MR. CHERNOFF: Excuse me. We are not talking about  
14 any costs --

15 CHAIRMAN GARFINKEL: Excuse me, post-NEPA.

16 MR. CHERNOFF: I don't believe that is true at all.  
17 I don't believe there is a question at all of what the costs  
18 will be after the NEPA review.

19 CHAIRMAN GARFINKEL: Well, we will worry about  
20 that later, but in any event there is \$23 million. I was  
21 concerned why Mr. Malsch couldn't make some commitment one way  
22 or the other with respect to the \$23 million, although our  
23 initial decision didn't raise it. I think we have to raise  
24 it and we are going to have to comment about that.

25 I will advise you now that our initial decision

HDvo6-1-8

1 clearly will indicate our concern as far as I am concerned.  
2 The Regulatory Staff's answer is quite vague as to the answer  
3 with respect to what value they will give to the final --  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

H2035-2-1

1 MR. KARTALIA: I want to be sure we are  
2 communicating about the same subject. I will agree it is  
3 not a precise answer. It happens to be the best answer that  
4 I can give.

5 CHAIRMAN GARFINKEL: Well, don't take this  
6 personally, Mr. Kartalia.

7 MR. KARTALIA: I never do.

8 CHAIRMAN GARFINKEL: This is the Regulatory  
9 Staff.

10 MR. KARTALIA: I just wanted to be sure that I  
11 was responding to the right question. I thought your  
12 question was suppose the applicant's waiver stands.

13 CHAIRMAN GARFINKEL: They agree now. This is  
14 their waiver.

15 MR. KARTALIA: I thought your question was,  
16 with that preposition, what is the Staff going to do in  
17 its full NEPA review of this plant. Is that the question?  
18 That is the question I think I have answered.

19 CHAIRMAN GARFINKEL: I think in the full NEPA  
20 review as to what they are going to do but in terms --  
21 my problem here is in making a decision as to the full NEPA  
22 review, the question of whether the Staff could or could not  
23 say that the 28 million dollars would not influence that  
24 final decision. Yes, I am making that statement.

25 If there is a waiver of the 28 million dollars

HDp36-2-2

1 from the consideration. This is the consideration of the  
2 license of the applicant. I am having difficulty  
3 understanding, from an intellectual point of view, why  
4 the Regulatory Staff can't dismiss it from the final NEPA  
5 decision if it is above board.

6 MR. KARTALIA: I see.

7 CHAIRMAN GARFINKEL: You are talking about --

8 MR. KARTALIA: We were talking about the same  
9 question.

10 CHAIRMAN GARFINKEL: That is right, we are.

11 And the problem is you are talking about the abstract that  
12 we may be influenced; that we can't, you know, control  
13 our thinking. But I am sure you have experts in this field.

14 MR. KARTALIA: No, not necessarily. I certainly  
15 wouldn't want to admit that we might be influenced by some  
16 factor that we are not supposed to be influenced by, although  
17 I do think that the Court's decision makes it pretty clear  
18 that the Board ought to be going about its business by  
19 assuming that we will look at the worst case in order to see  
20 what happens in that event.

21 CHAIRMAN GARFINKEL: But you were assuming the  
22 worst. I am saying suppose Mr. Kalar through his astute  
23 cross examination demolishes the applicant's case with  
24 regard to the environmental effects of operation. Then I  
25 can't make that conclusion and just leave it out in the air  
somewhere.



WDps6-2-3

1 MR. CHARNOFF. That is an assumption, too, Mr.  
2 Chairman.

3 CHAIRMAN GARFINKEL: That is correct, it is an  
4 assumption. Then I am going to be faced squarely with the  
5 issue of a waiver.

6 MR. KARELLIA: That is right. My position is  
7 that you are not now and are not likely to be, as a result  
8 of this hearing.

9 CHAIRMAN GARFINKEL: The point is we cannot go  
10 back -- this is not a ping pong game here. This is the last  
11 crack. That is one of the reasons I wanted to get answers,  
12 because I don't want to make the wrong decision. I don't  
13 want the Board to make the wrong decision. I don't want to  
14 be faced with the situation where we have to go back, because  
15 Mr. Kalur may very well file another petition and it may  
16 very well cause us to go back. At that time we may very  
17 well be punishing the applicant.

18 I don't know what the Court would do if they  
19 are not satisfied with the record. That is why I want a  
20 complete record and that is why I wanted that answer, so  
21 that if the Board is wrong the record is complete and there-  
22 fore it wouldn't be reversible error in terms of the Licens-  
23 ing Board. It may be on a higher level, but I want as complete  
24 a record as I can have so that it doesn't require a new  
25 hearing. But that is your answer representing the Regulatory

HDps6-2-4 1 Staff and we have to live with that.

2 Mr. Kalar, I will let you go second about my  
3 statement.

4 MR. KAMUR: Mr. Chairman, we believe that  
5 Calvert Cliffs recognizes the concept that waiver of  
6 cost increment is impossible because of the Court's judicial  
7 notice that such a waiver conflicts with the reality of the  
8 AEC decisional process.

9 I should also like to mention the AFE-CIO reactor  
10 development case in '61 when Justice Douglas mentioned in  
11 a dissent that no agency wants to be the architect for a  
12 white elephant. I would therefore deem it impossible for a  
13 waiver of these costs not to be considered by the AEC,  
14 whether or not they said they were considering a 28 million  
15 dollar cost increment.

16 CHAIRMAN GARTENKEL: I don't think that case  
17 dealt with the National Environmental Policy Act. I think  
18 with respect to safety you cannot waive safety. No agency  
19 can waive safety. I am not quarreling with you.

20 In fact, if you convince this Board that construc-  
21 tion -- continued construction after the NEEA review as well  
22 as the overall balancing indicates significant harm for  
23 construction, we have many options. No. 1. we can stop the  
24 continued construction here. We also can issue a condition.  
25 That is open. There is no question about it. We can also

HD-86-2-5

1 have, as far as I am concerned -- I haven't cleared this  
2 with my Board and the Board would have to rule -- but from  
3 a legal point of view we can condition the further construc-  
4 tion if the evidence so warrants. I am not quarreling with  
5 that.

6 But this is a little different now. We are  
7 dealing with cases under -- actually it is a material  
8 regulation because ultimately I envision that there won't  
9 be any construction hearings at all until the final NEPA  
10 review is prepared and the whole thing goes right through.

11 The regulations presently in effect are really  
12 a stop-gap measure and that is what I am operating under.  
13 So I don't think those cases are really applicable for this  
14 purpose.

15 MR. MALUR: I didn't finish my statement.

16 CHAIRMAN GARFINKEL: Oh, I am sorry. Go ahead.

17 MR. MALUR: I should like to add that I believe  
18 if this Board bases its decision on a waiver of those cost  
19 increments -- and if I may be permitted to look into the  
20 future I believe we will be back for additional hearings  
21 because I don't believe the Court would accept that type of  
22 a decisional basis.

23 CHAIRMAN GARFINKEL: Mr. Malur, I can assure you  
24 that we will not base the decision solely on the waiver.  
25 In fact, if you read the Commission's mandate we are to

1 consider that subsequent to the balancing of all of the  
2 factors. But we at the Board have to consider it.

3 I am concerned that I haven't obtained a full,  
4 adequate position paper, in effect, from the Regulatory  
5 Staff on that point, as to what they view it in the decisional  
6 process.

7 MR. KALUR: I am not quarreling with the Board's  
8 interpretation of that. I just want the Board to know that  
9 we will object and I will object to any consideration of  
10 waiver as being totally irrelevant to the suspension.

11 CHAIRMAN GARPINKEL: And you are objecting to  
12 the Commission's mandate to consider that?

13 MR. KALUR: Yes, I am.

14 CHAIRMAN GARPINKEL: All right.

15 Mr. Charnoff.

16 MR. CHARNOFF: Just two minor observations.  
17 I am a little intrigued by Mr. Kalur's reference to  
18 Justice Douglas' dissent in the case in 1962 because the  
19 key word there is that that was the dissent. It was a  
20 majority opinion which it seems to me went exactly the other  
21 way. So far as I know in our system of law we usually  
22 look to the majority opinions to determine what the law of  
23 the case is and the law of the land is.

24 With regard to the waiver, our position remains  
25 exactly the way it was stated on Page 28 of the transcript,

HDps6-2-71

namely it is our view that the waiver really does substantially  
moot this particular question. We have no objection and we  
do intend to put in our evidence with regard to the question  
of environmental effect.

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

IDvo6-3-1

1                   But I do want to point out the significance of the  
2 waiver in that by reference to the May 1972 U. S. Atomic  
3 Energy Commission guide for submission of information of costs  
4 and benefits of environmentally related alternative designs  
5 for defined classes of computed and partially computed nuclear  
6 facilities, which applies to the Davis-Besse facility. They  
7 say in the introduction, the guide reflects the following  
8 key principles.

9                   "1. Benefits and costs are to be quantified to  
10 the fullest extent practicable."

11                   I would submit that our waiver allows the maximum  
12 quantification of the extent to which this particular incre-  
13 mental cost should be considered, mainly, as Mr. Silberg said,  
14 that you are entitled to and we would urge the Atomic Energy  
15 Commission if the waiver is to be granted any weight at all  
16 in this case that in December when they finish their environ-  
17 mental review, that they set a value of zero for the investment  
18 between this time and the end of December in their calculus  
19 or calculation with regard to whether or not the plant should  
20 go ahead and the extent to which it ought to be modified in  
21 any way.

22                   MR. GARFINKEL: With those comments, Mr. Charnoff,  
23 will you commence the case in chief?

24                   MR. CHARNOFF: Mr. Silberg.

25                   CHAIRMAN GARFINKEL: Let me point out, Mr.

HDvo6-3-2

1 Charnoff, when we commence this proceeding there will only be  
2 one counsel for a particular document or witness. That means  
3 if you let Mr. Silberg waive the issues and handle the direct  
4 testimony of a particular document I will not permit another  
5 attorney for the same side to intervene and raise questions  
6 on that document.

7 MR. CHARNOFF: With respect to the direct presen-  
8 tation?

9 CHAIRMAN GARTENKEL: Yes.

10 MR. CHARNOFF: I have a high degree of confidence  
11 in Mr. Silberg's ability, Mr. Chairman, and I think he will  
12 do just fine without my interruptions, even though that may  
13 be difficult for me.

14 MR. SILBERG: As the first part of our direct  
15 case we would like to put into evidence those parts of the  
16 testimony that were offered at the hearing on May 2 to May 4  
17 which were deleted on the grounds that they dealt with non-  
18 radiological aspects of the plant operation and post-NRPA  
19 review construction.

20 Pursuant to the stipulation of counsel during the  
21 various conference telephone calls which all the parties had  
22 previously referred to, the admission of these documents,  
23 these sections of documents, is by stipulation.

24 MR. KADUR: I don't think that was quite the  
25 stipulation.

Dvc6-3-3

1 CHAIRMAN GARFINKEL: Let's take the documents  
2 one by one and let's not call it stipulation. I have my notes  
3 and I will rule but let's take them one at a time on the  
4 documents. Let's take the direct testimony on behalf of  
5 Toledo first and that is the one that is dated April 27,  
6 1972.

7 MR. SIMBERG: For the record I would just note that  
8 this testimony was authenticated and sponsored on May 2 and  
9 the reference in the transcript of the May 2 hearing is  
10 Transcript Pages 5 to 53.

11 The document itself is incorporated in the  
12 transcript following Page 100.

13 On Page 16 of this document, starting at the last  
14 two lines, through Page 19, the first two lines, this is  
15 testimony which deals with water quality. It was deleted by  
16 the Board's order and the reference to that deletion is  
17 Transcript Page 73.

18 CHAIRMAN GARFINKEL: Before you continue, because  
19 we may have some difficulty in procedure, Mr. Kalur and Mr.  
20 Kartalis, do you want him to put down the pages and then we  
21 have a five-minute recess to indicate whether there will be  
22 objections to the various items he wants to introduce, rather  
23 than having objections page-by-page? Do you have any problems  
24 with that approach?

25 MR. KARTALIS: I have no problem with that but I



HDvc6-3-4

1 would like to be heard, however briefly, on this very point  
2 because it affects me, too. I don't recall a stipulation to  
3 the effect that elements as to chemical and thermo affects,  
4 for example, would be admitted into evidence without the  
5 necessity for a foundation.

6 CHAIRMAN GARFINKEL: There is a stipulation to  
7 that effect.

8 MR. CHARNOFF: That was in the conversation --

9 MR. KARTALIA: Without foundation --

10 CHAIRMAN GARFINKEL: That was with Naloch, that  
11 it would go straight in. On the question of thermo releases,  
12 no witnesses would have to be present, and also with respect  
13 to chemical releases.

14 Non-radiological releases would go in without the  
15 need, as far as the applicant is concerned --

16 MR. CHARNOFF: And Mr. Naloch made the same re-  
17 quest --

18 CHAIRMAN GARFINKEL: That is right.

19 MR. KARTALIA: What I don't understand, we are going  
20 to start hearing objections on this testimony --

21 CHAIRMAN GARFINKEL: No, this was stricken the  
22 first time.

23 MR. KARTALIA: I realize that.

24 CHAIRMAN GARFINKEL: The only reason I struck it was  
25 not on the question of authenticity or competency of the people.

HDv06-3-5

1 I only struck it on the basis that it wasn't relevant to the  
2 case, the initial case. So therefore any objection that Mr.  
3 Kalur may have could be on the ground -- also I struck docu-  
4 ments on a question of conclusory statements.

5 So Mr. Kalur will have these two grounds to  
6 object, on the ones that are non-radiological now; on the  
7 grounds of relevancy and the grounds of legal conclusions.

8 MR. KAPRALIA: On the first one I have absolutely  
9 no objection because as a lawyer Mr. Silberg can argue the  
10 question of relevancy and I can do the same thing with respect  
11 to my own testimony.

12 But on this conclusion point it really puts us in  
13 a bind because we have been induced to leave witnesses at  
14 home.

15 Now, you may end up striking a conclusion in the  
16 applicant's testimony or a conclusion in my testimony, although  
17 I don't think I have this same problem. A conclusion which  
18 could be readily substantiated if the witness were here and  
19 permitted to testify.

20 CHAIRMAN GARFINKEL: This is testimony -- I made  
21 it very clear -- you weren't involved in my hearings.

22 MR. KAPRALIA: I realize this but I have reviewed  
23 the transcript and I know your position on it.

24 CHAIRMAN GARFINKEL: Very strong.

25 Mr. Charnoff knows my views on this. There was no

HDvoc6-3-6

1 agreement that I will allow testimony to come in if there is  
2 objection based on legal conclusions rather than fact.

3 MR. CHARNOFF: The issue didn't come up that  
4 clearly, Mr. Garfinkel.

5 CHAIRMAN GARFINKEL: This is my views, anyway.

6 MR. CHARNOFF: I understand that, but it is clear  
7 and I think we won't have a problem. I think we ought to wait  
8 and see how it goes. But I would submit to you that it was  
9 very clear that the Licensing Board Chairman and Mr. Kalar and  
10 Mr. Kartalia and Mr. Charnoff all agreed that we need not have  
11 any witnesses present to sponsor, introduce or deal with  
12 testimony dealing with non-radiological matters.

13 CHAIRMAN GARFINKEL: That is right, valid testimony.  
14 I am not objecting. We don't have to have any witnesses to  
15 sponsor it. There won't be any cross-examination of that.  
16 So that is clear.

17 MR. CHARNOFF: I think we ought to proceed because  
18 Mr. Silberg was careful in going through this to leave out  
19 conclusionary opinions. Let's see where we go. But I do  
20 believe the point Mr. Kartalia has raised is quite valid.

21 CHAIRMAN GARFINKEL: You understand my rulings.  
22 My ruling is that if you have a valid objection, not on the  
23 basis of relevancy to the proceeding and not on the basis that  
24 it deals with thermo releases -- you know, something dealing  
25 with the actual merits of this -- you still have your right to

Dvo6-3-7

1 object, that if it is a legal conclusion you still have the  
2 right to object and you still have a right to object if it  
3 is not relevant.

4 MR. KALUP: Just as to procedure, if Mr. Silberg  
5 is going to read through the sections which they are now  
6 offering I presume we are still going to have time after  
7 that is read to look through those sections --

8 CHAIRMAN CARTER: I am going to give you a  
9 five or ten-minute recess to look at it, but I am suggesting  
10 you take notes on the pages.

11 Go ahead, Mr. Silberg.

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

75ps7-1-1

1 MR. SILBERG: Just to review, the first section  
2 we are re-offering would be from the last two lines of  
3 Page 16 to the first two lines of Page 19.

4 These pages deal with matters of water quality.

5 Next on Page 19, the last two paragraphs.

6 CHAIRMAN GARPINKEL: Let me mark this down.

7 16 to 19?

8 MR. SILBERG: Yes, from the bottom two lines of  
9 Page 16 to the top two lines of Page 19. Those were stricken  
10 on the grounds that they related to matters of operation  
11 dealing with water quality. We are re-offering those at  
12 this time.

13 The last two paragraphs on Page 19 to the bottom  
14 of page --

15 CHAIRMAN GARPINKEL: You know what I am going  
16 to do? I think I am going to change the procedure, rather  
17 than wait to the end I am going to take each item up, it's  
18 easier.

19 MR. SILBERG: All right, fine.

20 CHAIRMAN GARPINKEL: Mr. Kalur, do you have  
21 any objections to that?

22 MR. KALUR: I would have to ask for a moment  
23 when to look through this.

24 CHAIRMAN GARPINKEL: Surely. Go ahead. May we  
25 have a five-minute recess, please?

WSpa7-1-2

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

The Board will take a five-minute recess..

(Short recess taken.)

CHAIRMAN GARFINKEL: Okay. Mr. Kalur, with respect to those pages now do you have any objections?

MR. KALUR: I have no objections on Pages 16 to 19.

CHAIRMAN GARFINKEL: Well, it's only the top of Page 19 so far.

MR. KALUR: Right.

CHAIRMAN GARFINKEL: Mr. Kartalia, do you have any objections?

MR. KARTALIA: No objections.

CHAIRMAN GARFINKEL: Okay. Continue now.

MR. SILBERG: The next testimony would be the last two paragraphs on Page 19 to the end of the third paragraph on Page 20. This testimony deals with the water quality certification and state approvals.

MR. KALUR: I have no objection to the last two paragraphs on Page 19.

I do object to the second full paragraph on Page 20.

CHAIRMAN GARFINKEL: Beginning on what?

MR. KALUR: First full paragraph, excuse me.

CHAIRMAN GARFINKEL: A two-day public hearing?

MR. KALUR: Yes. Starting with the second

WSos7-1-3

1 sentence in the paragraph.

2 I think Exhibit H there that is referred to in  
3 the paragraph speaks for itself, and I think it probably  
4 violates the best evidence rule and is repetitive and  
5 conclusory from the statement.

6 I think the Board is capable of drawing its own  
7 conclusions from Exhibit H.

8 MR. SILBERG: Mr. Chairman, it is certainly  
9 entitled to the reference that the body of the report of  
10 the exhibit makes which we have attached to it.

11 CHAIRMAN GARFINKEL: That's all right. I am  
12 waiting for Mr. Kartalia now.

13 MR. KARTALIA: Well, technically I think that  
14 Mr. Kalur is right.

15 My own feeling on this is it just should probably  
16 be admitted for what it's worth, so I have no objection.

17 CHAIRMAN GARFINKEL: It will be received in  
18 evidence subject to the fact that you are calling the  
19 individual who is a member of the Environmental Protection  
20 Agency.

21 MR. SILBERG: Mr. Chairman, we are not calling  
22 that individual. Pursuant to the stipulation it was agreed  
23 that we would not be required to produce such --

24 MR. KALUR: I have no objection to Exhibit H, again.

25 CHAIRMAN GARFINKEL: Okay, it will be in on that

MSps7-1-4  
1 basis, that so long as Exhibit H is in that will speak and  
2 this Board can make whatever decision Exhibit provides.

3 MR. SILBERG: Next information is the last  
4 paragraph on Page 20 through the first complete paragraph  
5 on the top of Page 21, which deals with atmosphere effects.

6 MR. KALUR: No objection.

7 MR. KARTALIA: No objection.

8 CHAIRMAN GARFINKEL: Received in evidence.

9 MR. SILBERG: The next is on Page 21, the second  
10 complete paragraph, Section D, Intake System, which deals  
11 as the title indicates with the intake structure for the  
12 Davis-Besse facility.

13 CHAIRMAN GARFINKEL: Is that all of Section D?

14 MR. SILBERG: Mr. Chairman, the second paragraph  
15 of Section D was not stricken.

16 CHAIRMAN GARFINKEL: I see.

17 MR. SILBERG: At the prior hearing.

18 CHAIRMAN GARFINKEL: Fine. Any objections,  
19 Mr. Kalur?

20 MR. KALUR: No objection.

21 CHAIRMAN GARFINKEL: Mr. Kartalia?

22 MR. KARTALIA: No objection.

23 CHAIRMAN GARFINKEL: Received in evidence.

24 MR. SILBERG: On Page 23, the first two paragraphs  
25 deal with noise and chemical releases from the operation,



W9967-1-5

1 non-radiological chemical releases from the operation of  
2 the facility.

3 CHAIRMAN GARFINKEL: Mr. Kalur.

4 MR. KALUR: No objection.

5 CHAIRMAN GARFINKEL: Mr. Kartalia.

6 MR. KARTALIA: No objection.

7 CHAIRMAN GARFINKEL: Received in evidence.

8 MR. SILBERG: The next item is on Page 24, the  
9 second paragraph under Section 7, a paragraph which starts,  
10 "In some instances." No, I'm sorry, Mr. Chairman. Strike  
11 that.

12 That will come in at a later time, since it deals  
13 with radiological.

14 The next item would be Exhibit G, which deals --

15 CHAIRMAN GARFINKEL: Let me say, Mr. Silberg,  
16 I really don't care whether it has radiological or not.  
17 If there is no objection by Mr. Kalur on this we can get  
18 it in. It's a question of how evidence.

19 MR. SILBERG: Mr. Chairman, because of the stipula-  
20 tion we agreed there would not be the necessity for having  
21 witnesses to sponsor various documents. I wanted to get in  
22 all the evidence which required no sponsorship at one time,  
23 then we can go on to the sponsored material.

24 CHAIRMAN GARFINKEL: Fine. Go ahead.

25 MR. SILBERG: Exhibit G to the report is a report

aps7-1-6

1 by Dr. Donald Pritchard and it deals with thermoplumes from  
2 operation of the facility.

3 CHAIRMAN GARFINKEL: Any objections?

4 MR. KAUFER: No objections that.

5 MR. KANTALIA: No objection.

6 CHAIRMAN GARFINKEL: Received in evidence.

7 MR. SILBERG: Exhibit H is a statement by  
8 George L. Harlow, Director, U. S. Environmental Protection  
9 Agency, Fairview Park, Ohio, which also deals with the  
10 thermal effects of operation of the facility. This is  
11 the Appendix that was previously referenced in the body of  
12 the testimony.

13 MR. KANTALIA: I thought we had an understanding  
14 that that was going to be in evidence.

15 MR. SILBERG: I am just listing those items which  
16 we have understood will be in evidence.

17 CHAIRMAN GARFINKEL: All right. Mr. Kaufur.

18 MR. KAUFER: I can't ever remember agreeing with  
19 anything Mr. Harlow said, but I have no objection to this  
20 statement.

21 MR. KANTALIA: I have no objection.

22 CHAIRMAN GARFINKEL: Received in evidence.  
23  
24  
25

WS7-8-1vo

1 MR. SILBERG: The next items are in the Supplement  
2 to Environmental Report which is Applicant's Exhibit 1.

3 This exhibit was authenticated and sponsored at  
4 the May 3rd hearing. Transcript references to that transcript,  
5 Pages 113 and 114. It was accepted as Exhibit 1 subject to  
6 the deletions on that same day, Transcript Page reference  
7 129.

8 At this time I would like to have into evidence  
9 those sections dealing with non-radiological matters which  
10 would occur after the NEPA review period and during operation.

11 First starting on the last two paragraphs on  
12 Page 2-6 to the second line, the third line, excuse me, of  
13 Page 2-7.

14 MR. DAVIS: Will you wait one moment, please?

15 MR. SILBERG: Surely.

16 MR. DAVIS: Would you repeat those?

17 MR. SILBERG: On Page 2-6 of the Supplement to  
18 Environmental Report through to the top of Page 2-7, the  
19 third line. This testimony again deals with the environmental  
20 protection agency testimony on water quality effects, and it  
21 is basically the same information as Exhibit II of the prepared  
22 testimony.

23 CHAIRMAN GARDINER: Mr. Kalur.

24 MR. KALUR: We have no objection to the statement  
25 saying that the Director of Cleveland Office, U. S. Environmental

WS7-2-200

1 Protection Agency testified, and that his testimony is in-  
2 cluded as Appendix 2-1. However, the restatement, the  
3 attempted restatement of his testimony contained thereafter  
4 is objected to.

5 CHAIRMAN GARFINKEL: Mr. Kartalia.

6 MR. KARTALIA: Do I understand this is the same  
7 witness whose testimony is set forth on the --

8 MR. SILBERG: What is correct, and whose testimony  
9 in the next item I would move to would be Appendix 2-H, which  
10 is the actual testimony, the same as in Appendix H in our  
11 prepared testimony.

12 MR. KARTALIA: What part do you want to strike,  
13 Mr. Kalur?

14 MR. KALUR: The last full paragraph of Page-36.

15 MR. KARTALIA: I will join in that objection.

16 CHAIRMAN GARFINKEL: Overruled.

17 MR. KARTALIA: O. K.

18 CHAIRMAN GARFINKEL: We will receive it. Let me  
19 state that my reliance is going to be more on the exhibit  
20 itself.

21 This is just obviously based on Mr. Silberberg's  
22 statement. It is a repetition of what is actually contained  
23 in the document.

24 So I am relying on the document, which is Exhibit  
25 2-H, which I assume he is now moving to admit.

WSyo7-2-3

1 MR. SILBERG: Yes. The next item would be  
2 Exhibit 2-H. This is the same as Exhibit H, as I mentioned  
3 before, the prepared testimony.

4 CHAIRMAN GARFINKEL: Mr. Kalur, are you objecting  
5 to 2-H?

6 MR. KALUR: No. We didn't object to it last time  
7 so I won't object this time.

8 MR. KARSALIA: No, I have no objection.

9 CHAIRMAN GARFINKEL: O. K. Received in evidence.

10 MR. SILBERG: Thank you.

11 On Page 3-3 and 3-4.

12 CHAIRMAN GARFINKEL: Please, just let us get to  
13 that. This is Section 3.3 of the "Meteorology".

14 MR. SILBERG: That section is basically an intro-  
15 duction to Appendix 3-A, which I would also move to be  
16 accepted into evidence.

17 CHAIRMAN GARFINKEL: Do I hear any objections?

18 MR. KALUR: No objection.

19 MR. KARSALIA: None by the staff.

20 CHAIRMAN GARFINKEL: Received into evidence.

21 MR. SILBERG: On Page 3-4 and 3-5, Section 3.4.1,  
22 entitled "Fish and Lake Biota," which is a description and  
23 ecological description.

24 CHAIRMAN GARFINKEL: The entire 3.4.1, am I  
25 correct?

WSvo7-2-4 1 MR. SILBERG: That is correct.

2 MR. KALUR: May I have a moment on this?

3 CHAIRMAN CARPINKEL: Surely.

4 MR. KARTALIA: Mr. Chairman, I think I can say I  
5 have no objection to it.

6 MR. KALUR: No objection from the intervenors.

7 CHAIRMAN CARPINKEL: Received into evidence.

8 MR. SILBERG: On Page 4-2 through 4-27, which is  
9 Section 4.4 of the Supplement to the Environmental Report.  
10 I'm sorry, strike that. That will come in later.

11 The next is Appendix 4-A, which is a --

12 CHAIRMAN CARPINKEL: 4-A or 4A?

13 MR. SILBERG: Ah. The description of the trans-  
14 mission lines for the Davis-Besse facility.

15 MR. KALUR: No objection.

16 MR. KARTALIA: No objection.

17 CHAIRMAN CARPINKEL: Received into evidence.

18 MR. SILBERG: Next is Appendix 4-B, a statement  
19 prepared by Dr. Pritchard dealing with thermo cluses in the  
20 lake. This is identical to Exhibit C in the testimony which  
21 was previously admitted.

22 MR. KARTALIA: We don't object to repetition.  
23 I don't understand why this --

24 CHAIRMAN CARPINKEL: This is a report that they  
25 prepared.

19vo7-2-5

1 MR. KARTALIA: I realize, but if it is already  
2 in evidence I don't see why a document should be in evidence  
3 twice, but I don't object.

4 MR. SILBERG: The reason -- just to clarify -- is  
5 that this particular statement is, of course, part of the  
6 larger document that was not presented in previous pieces,  
7 but was prepared under the direction of the Commission's  
8 Appendix B guidelines for environmental reports which re-  
9 quires this kind of testimony.

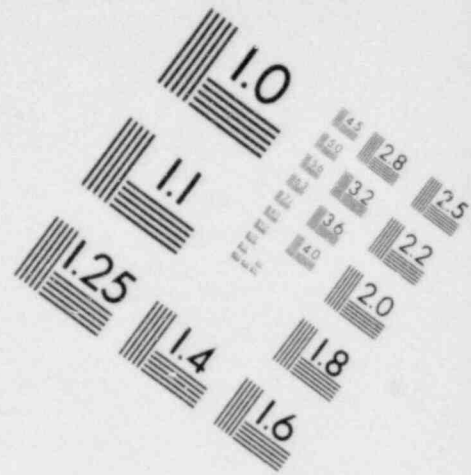
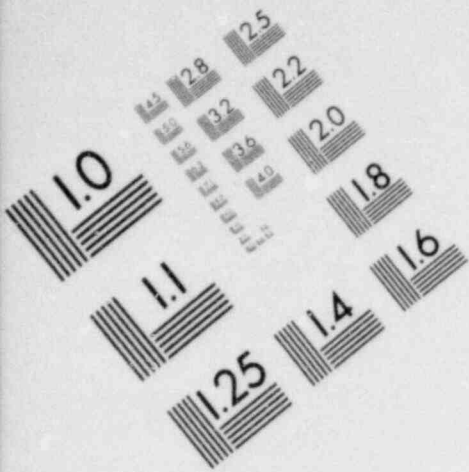
10 The fact that we also included similar or identical  
11 material in testimony prepared for this proceeding in no way  
12 invalidates the document.

13 CHAIRMAN CARTWRIGHT: Your statement is well taken,  
14 Mr. Silber. It will be received into evidence. Appendix  
15 4-B will be received in evidence.

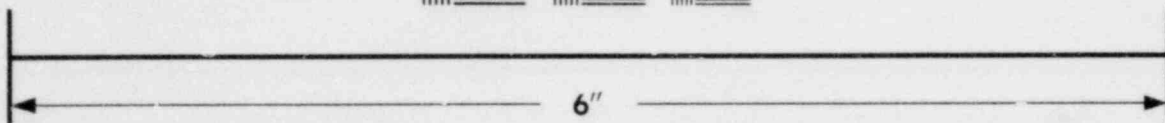
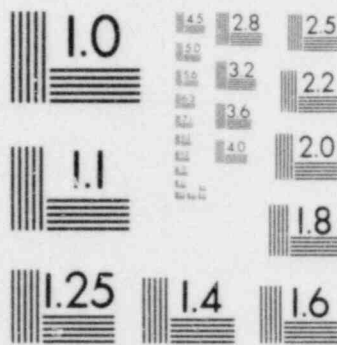
16 MR. SILBERG: Next is Section 6 of the Supplement  
17 to the Environmental Report. On transcript pages 118 and  
18 119 of the prior hearing, the chairman of the Licensing Board  
19 indicated that it took exception to those parts of this  
20 section which dealt with construction occurring after the  
21 NEPA review period.

22 At this time I would like to move into evidence  
23 those parts of Section 6 which deal with such construction.

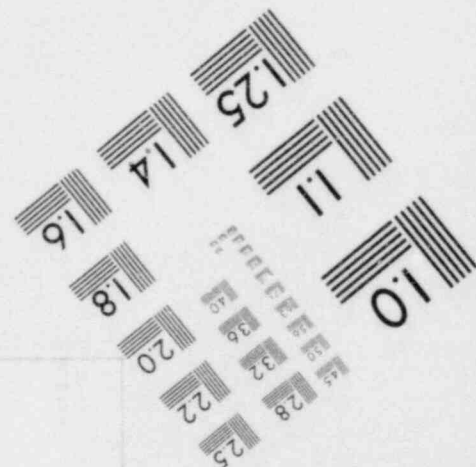
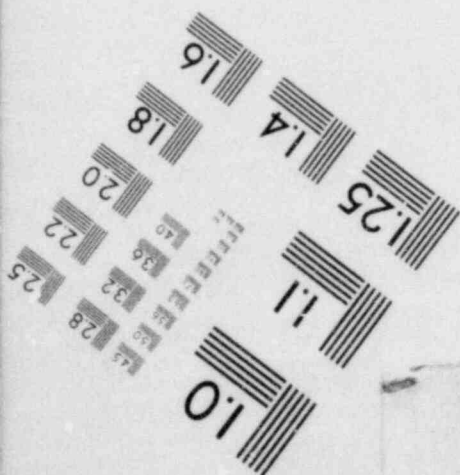
24 CHAIRMAN CARTWRIGHT: Just for the record, Mr.  
25 Kaluz, on Pages 118-119 of the transcript I am noting what I



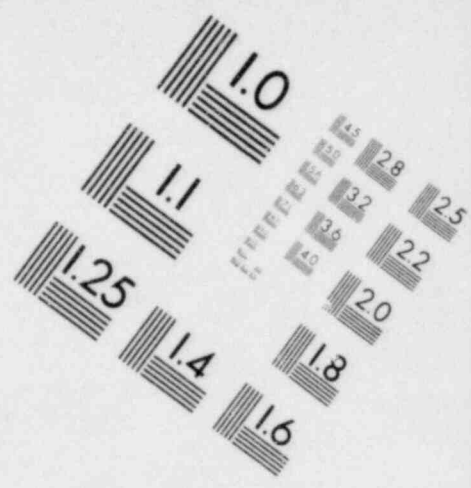
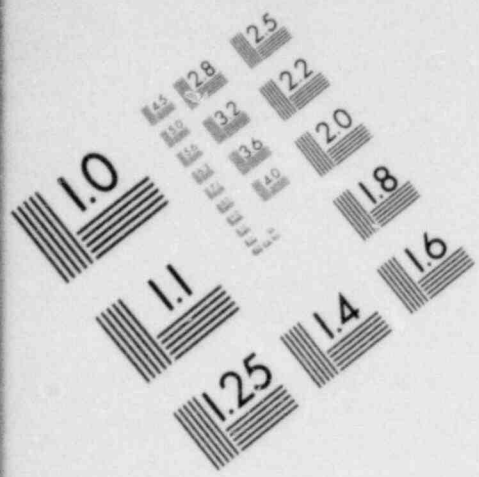
**IMAGE EVALUATION  
TEST TARGET (MT-3)**



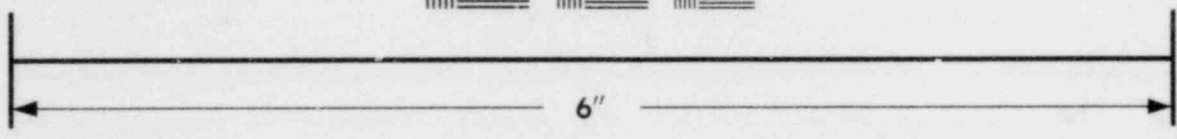
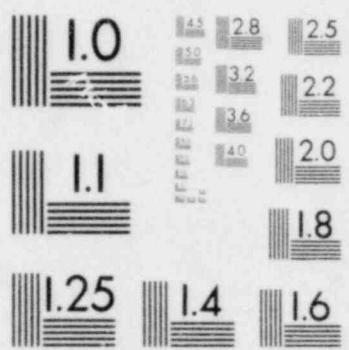
**MICROCOPY RESOLUTION TEST CHART**



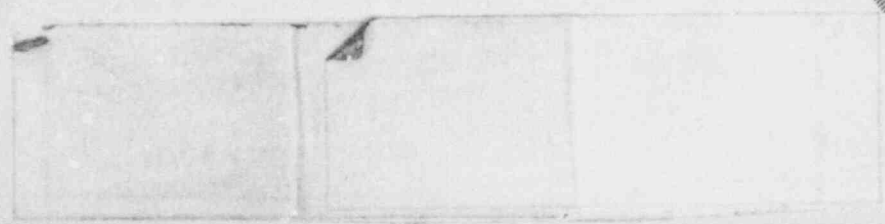
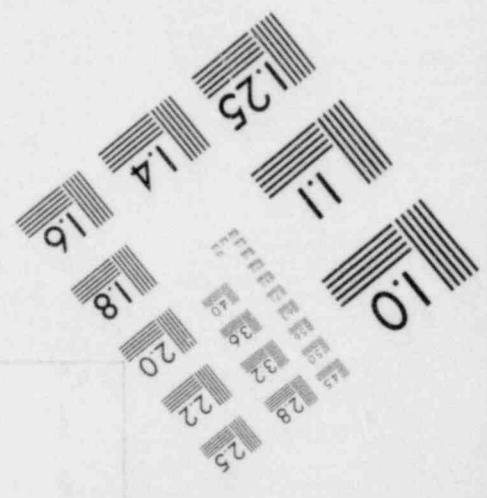
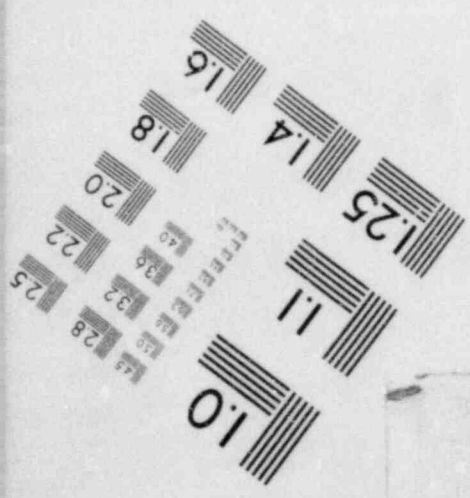




**IMAGE EVALUATION  
TEST TARGET (MT-3)**



**MICROCOPY RESOLUTION TEST CHART**



1 said about Section 6. It should be rewritten to reflect what  
2 will happen in the six-months period in issue. That was the  
3 basis of why we didn't particularly permit Section 6 into  
4 that record.

5 MR. KALUR: No objection.

6 CHAIRMAN GARFINKEL: Mr. Kartalia.

7 MR. KARTALIA: I have no objection.

8 CHAIRMAN GARFINKEL: Received into evidence.

9 MR. SILBERG: Section 7.1, which is an introductory  
10 section to Section 7 dealing with effects of operation.

11 7.1 on Page 7-1 of the Supplement to Environmental  
12 Report.

13 MR. KALUR: Mr. Chairman, we would object to  
14 Sentence 2, while in the context of introductory material,  
15 still presenting a conclusion which is in issue here.

16 CHAIRMAN GARFINKEL: Mr. Kartalia.

17 MR. KARTALIA: Could I have just a minute on that?

18 CHAIRMAN GARFINKEL: Yes.

19 MR. KARTALIA: Well, I have no objection to that.

20 I think it is a conclusion, yes, but I think it  
21 is a conclusion substantiated by the rest of Section 7.

22 CHAIRMAN GARFINKEL: All right. Section 7.1 will  
23 be accepted with the exception of that second sentence which  
24 is a legal conclusion.

25 MR. SILBERG: Mr. Chairman, I might comment that  
it is in the nature of a factual expert conclusion, and

1 certainly does not rise to a legal conclusion or one of the  
2 ultimate issues to be decided in this proceeding.

3 CHAIRMAN CARPINKEL: But it deals with radio-  
4 activity, and as a consequence this deals with the effects of  
5 a released radioactivity.

6 While adding a small burden I think I would rather  
7 have the testimony on this point. You are dealing with radio-  
8 activity anyway on this point.

9 MR. SILBERG: Mr. Chairman, when the witnesses  
10 come back on we will have one of our expert witnesses sponsor  
11 this sentence.

12 CHAIRMAN CARPINKEL: It may still be objectionable.

13 MR. KARVALIA: Mr. Chairman, the burden that is  
14 said to be small by this sentence is set forth in the text  
15 of this section.

16 CHAIRMAN CARPINKEL: It may be, but I think it is  
17 a legal conclusion and I am striking that sentence out.  
18 I agree with Mr. Kalur.

19 MR. SILBERG: Mr. Chairman, I again would argue  
20 that this is not a legal conclusion.

21 CHAIRMAN CARPINKEL: My ruling is made.

22 MR. SILBERG: Thank you.

23 The next section is section 7.3 which deals with  
24 the water use effects, thermal, chemical, sanitary and  
25 mechanical effects.

Evo7-2-8

1 CHAIRMAN GARFINKEL: What page is that on? 7-7?

2 MR. SILBERG: It starts on Page 7-7.

3 CHAIRMAN GARFINKEL: Mr. Reporter, would you  
4 read what Mr. Silberberg wants introduced into evidence?

5 (Record read.)

6 CHAIRMAN GARFINKEL: You want all of 7.3 received  
7 in evidence?

8 MR. SILBERG: That is correct, Mr. Chairman.

9 CHAIRMAN GARFINKEL: O. K.

10 MR. KILMER: I have no objection.

11 MR. KARPANER: No objection.

12 CHAIRMAN GARFINKEL: It will be received in  
13 evidence. 7.3.

14 MR. SILBERG: The next section we would like to  
15 have received in evidence is Section 7.4, which begins on  
16 Page 7-16 of the Supplement to Environmental Report, and  
17 this section deals with the operational effects of effluent  
18 from the cooling towers.

19

20

21

22

23

24

25

HP 9-1-1

1 MR. KALUR: No objection.

2 MR. PARTALIA: No objection.

3 CHAIRMAN GARFINKEL: 7.4 will be received in  
4 evidence in its entirety.

5 MR. SILBERG: Next which we would ask to be  
6 received in evidence are Appendices 7-C, 7-D and 7-E, all  
7 of which relate to the water quality standards adopted by  
8 the Water Pollution Control Board of the Ohio Department  
9 of Health.

10 CHAIRMAN GARFINKEL: Mr. Silberg, let me ask  
11 you something in these documents, C, D and E. As I recall  
12 reading this applicant's Exhibit C, there was no copy of  
13 the actual certificate, water quality certificate contained  
14 in this document. Am I correct? The actual water quality  
15 certificate of the state. It is my understanding you have  
16 received --

17 MR. CHARNOFF: The certification was appended  
18 to the testimony. It was not appended here because this  
19 was written several months prior to the receipt of this  
20 certification.

21 CHAIRMAN GARFINKEL: All right, that is what I  
22 wanted to be sure of.

23 MR. CHARNOFF: I think if you examine the text  
24 in connection with that, the text is a little bit out of  
25 date with fact because at that point we talked about the

HDps3-1-2

1 application.

2 CHAIRMAN GARFINKEL: That is correct. That is  
3 what I was a little concerned about. What is the materiality  
4 of this? I know it may be argued relevant but what is  
5 the materiality if the issue is the certificate?

6 MR. SILBERG: We have the certificate and that is  
7 included as Exhibit L in our prepared statement. This was  
8 not re-introduced. I will do that at the end of this.

9 But the standards themselves under which the Ohio  
10 Water Pollution Control Board are obviously not the same  
11 thing as a certificate saying we will comply with the  
12 standards. They are two different issues and there is  
13 certainly no duplication in putting the standards themselves  
14 into evidence.

15 CHAIRMAN GARFINKEL: But what I am concerned about  
16 is if the State says it meets the standards are we duty bound  
17 then to look to see whether those standards are valid standards?  
18 I am just arguing this now as a legal point.

19 MR. SILBERG: I don't believe you were advised  
20 to question the validity of those standards. I would probably  
21 suspect that you could not. But nonetheless, the existence  
22 of those standards and what they are is certainly relevant  
23 and material in this proceeding, particularly in light of the  
24 fact that the certification has been issued that we will comply  
25 with those standards.

p3-1-3

1 CHAIRMAN GARFINKEL: Mr. Kalur, do you have any  
2 objections to -- are they all relating to that C, D and E?

3 MR. SILBERG: Yes.

4 CHAIRMAN GARFINKEL: All right.

5 MR. KALUR: I have no objection to their admissions  
6 solely as to documents they purport to be.

7 MR. KARTALIA: I guess I have no objection,  
8 putting it on the same basis. I am not sure what their  
9 relevance is but I certainly have no objection to their  
10 going in.

11 CHAIRMAN GARFINKEL: They will be received with  
12 whatever weight we give to the documents.

13 MR. SILBERG: Mr. Chairman --

14 MR. CHARNOFF: Mr. Chairman --

15 CHAIRMAN GARFINKEL: Only one counsel.

16 MR. SILBERG: Mr. Chairman, I note that you have  
17 already received this in evidence. The point is that we have  
18 a document that was prepared pursuant to Commission regulations,  
19 some of which require that we talk about what the standards  
20 are. This is a single document. It is before the Commission.  
21 It is certainly relevant to this proceeding and it should be  
22 before the Board.

23 CHAIRMAN GARFINKEL: I received it for whatever  
24 weight we will give to it.

25 MR. SILBERG: Thank you.

HD 9-1-4  
1 Next will be Exhibit 7-F, which deals again with  
2 the effects of cooling tower operations.

3 MR. KALUR: We have no objection.

4 MR. KARTALIA: None by the staff.

5 CHAIRMAN GARFINKEL: Received in evidence.

6 MR. SILBERG: In Section 9, on Page 9-1, the first  
7 three paragraphs of this Section deal with non-radiological  
8 effects to the extent that they may be unavoidable.

9 CHAIRMAN GARFINKEL: What I am concerned about is  
10 starting with "some radioactivity will be released in liquid  
11 form."

12 MR. SILBERG: Yes, that is the fourth paragraph.  
13 I will object to that when I move into evidence those matters  
14 dealing with radiological effects.

15 CHAIRMAN GARFINKEL: So you were asking for  
16 the paragraphs prior to that?

17 MR. SILBERG: That is correct. There are three  
18 paragraphs. One begins "there are some effects." The  
19 second begins "the cooling tower system." The third begins  
20 "there will be a limited amount."

21 MR. KALUR: We have no objection.

22 MR. KARTALIA: No objection.

23 CHAIRMAN GARFINKEL: Those paragraphs will be  
24 received in evidence.

25 MR. SILBERG: The entire Section 12 deals with the



HDps81-5

1 relationship between local short-term uses and long-term  
2 productivity.

3 CHAIRMAN GARFINKEL: Can you give us a further  
4 explanation by what you mean by those terms?

5 MR. SILBERG: This is a section which is required  
6 by the Commission's guidance on how to prepare environmental  
7 reports and by NEPA and that may be the best explanation  
8 I can give as to its meaning.

9 CHAIRMAN GARFINKEL: Mr. Karsalia, do you know  
10 this phraseology?

11 MR. KARSALIA: I must confess that I have read  
12 that several times myself without fully appreciating what  
13 Congress intended.

14 MR. SILBERG: This language is a direct quote  
15 out of Section 102.2 C of NEPA.

16 MR. KARSALIA: It is one of the headings in our  
17 statements on environmental reports and it is taken directly  
18 out of NEPA.

19 MR. SILBERG: We would appreciate any guidance  
20 which the Board might have.

21 CHAIRMAN GARFINKEL: Mr. Kalur?

22 MR. KALUR: Do you want my comments on what it  
23 means?

24 CHAIRMAN GARFINKEL: No, I want your comments as  
25 to whether you really have any objections or not?

HP 88-1-6

1 MR. KALUR: I will object to the second sentence  
2 in Paragraph 1. I think that is irrelevant to the proceedings  
3 here and the conclusion.

4 MR. SILBERG: Mr. Chairman, again this is part of a  
5 document which is required to be produced. The document as a  
6 whole is certainly relevant. If we are talking about doing a  
7 preliminary cost benefit analysis and a preliminary NEPA review  
8 certainly all the issues which AEC talks about has some bearing.  
9 It is as relevant as anything else.

10 CHAIRMAN GARFINKEL: All right, I am waiting for  
11 Mr. Kartalia's statement.

12 MR. KARTALIA: I concur and have no objection.

13 CHAIRMAN GARFINKEL: To the receipt of the  
14 document?

15 MR. KARTALIA: To the sentence.

16 MR. KALUR: We have only reached the second  
17 sentence.

18 CHAIRMAN GARFINKEL: I am sorry, I thought you had  
19 finished.

20 MR. KALUR: I am still pondering the rest.

21 MR. SILBERG: Have you ruled on that sentence?

22 CHAIRMAN GARFINKEL: No, I am waiting -- do you  
23 want me to rule on that sentence? I will receive it in  
24 evidence for whatever weight I will give it.

25 MR. KALUR: I would object to Paragraph 4 as a

HDps3-1-7

1 conclusion.

2 CHAIRMAN GARFINKEL: Is that the one starting --

3 MR. KALUR: "The fact is."

4 CHAIRMAN GARFINKEL: Do you want the whole paragraph  
5 stricken?

6 MR. KALUR: Yes.

7 MR. SILBERG: These are facts discussed at great  
8 length in other places in this report. It is certainly not  
9 a legal conclusion. It is the kind of information which the  
10 Commission requires, as a matter of fact, and is certainly  
11 relevant to this proceeding.

12 MR. KARTALIA: Mr. Chairman, I have what I think  
13 may be an acceptable solution. They want this into evidence,  
14 I think at least to --

15 CHAIRMAN GARFINKEL: Show compliance --

16 MR. KARTALIA: -- to show compliance. It is  
17 saying what it purports to say. I hope they have a conclusion  
18 like that supported because I wouldn't be persuaded by the  
19 mere sentence and I don't think the Board would, either.  
20 So I just don't see why we need get bogged down in argument  
21 over that. I think it is entitled to as much weight as it  
22 intrinsically commands.

23 CHAIRMAN GARFINKEL: Mr. Kalur, do you agree with  
24 that statement of Mr. Kartalia?

25 MR. KALUR: No, I think I will control my own

HD-3-1-3 1 objections.

2 CHAIRMAN GARFINKEL: All right, I will overrule  
3 your objection and give it whatever weight it is worth.

4 MR. KALUR: We will object also to the last  
5 paragraph beginning on 12-2 for the same reason and on the  
6 same grounds.

7 MR. SILBERG: Our comments to that would be the  
8 same.

9 MR. KARTALIA: This is the final paragraph of  
10 this Section?

11 CHAIRMAN GARFINKEL: Yes.

12 MR. KARTALIA: I must confess my last comments  
13 were addressed to that paragraph. I thought that was what  
14 we were considering. I don't know how my comments are going  
15 to look in relation to what was actually under consideration.

16 CHAIRMAN GARFINKEL: Do you want to make comments?

17 MR. KARTALIA: I have no objection.

18 CHAIRMAN GARFINKEL: I am striking the last  
19 paragraph as being conclusionary and I am telling you now  
20 I would not give it any weight at all in my review of this  
21 case.

22 MR. KARTALIA: That is exactly what I was trying  
23 to say before the ruling.

24 MR. SILBERG: Mr. Chairman, these sentences are  
25 of course supported by the bulk of the rest of the report.

HDns3-1-9

1 The reason we would like to have this in here --

2 CHAIRMAN GARPINKEL: Mr. Silberg, if it is  
3 supported we will have to make that decision. This is  
4 a document of evidence, not of legal argument. So if  
5 you have it in there we will find it. If we don't find it,  
6 you have your exceptions, if the decision goes against you.  
7 So let's continue.

8 MR. SILBERG: Have you then admitted the remainder  
9 of Section 127

10 CHAIRMAN GARPINKEL: Yes, everything but that  
11 last paragraph starting with "additionally the station will  
12 provide long-term enhancement." I struck that whole  
13 paragraph.

14

15

16

17

18

19

20

21

22

23

24

25

EDvoS-2-1

1 MR. SILBERG: Section 13 starting with the second  
2 paragraph. The first paragraph was not deleted at the prior  
3 hearing.

4 CHAIRMAN GARFINKEL: Mr. Reporter, will you read  
5 back with Mr. Silberg stated?

6 (Mr. Silberg's preceding statement was read by the  
7 reporter.)

8 CHAIRMAN GARFINKEL: You are introducing into  
9 evidence all of section 13? Am I correct now?

10 MR. SILBERG: The first paragraph is already in  
11 evidence. It was not scissorsed.

12 CHAIRMAN GARFINKEL: So you want the remaining  
13 part of Section 13 in evidence?

14 MR. SILBERG: That is correct, Mr. Chairman.

15 MR. KALUR: No objection.

16 MR. KERTANNA: No objection.

17 CHAIRMAN GARFINKEL: All of Section 13 will be  
18 received in evidence.

19 MR. SILBERG: In Section 14, Pages 14-5 through  
20 14-9 as they relate to operation of this facility. These  
21 pages deal with supplemental cooling systems for the Davis-  
22 Besse facility.

23 At the prior hearing the Chairman indicated as  
24 these sections related to pre-NEPA review construction,  
25 construction prior to the end of the NEPA review, they were

1 not objectionable.

2 MR. KALUR: No objection.

3 MR. KANELLA: No objection.

4 CHAIRMAN GARFINKEL: It will be received in  
5 evidence.

6 MR. SELBERG: Next I would ask that both  
7 Appendices 14-A and 14-B be received into evidence. Both of  
8 these are reports prepared by Pritchard Carpenter Associates  
9 for the Toledo Edison Company and deal with thermal effects  
10 of discharges from the Davis-Besse facility.

11 MR. KALUR: No objection.

12 MR. KANELLA: No objection.

13 CHAIRMAN GARFINKEL: Appendix 14-A and Appendix  
14 14-B will both be received in evidence.

15 MR. SELBERG: Thank you.

16 One other item which I may have overlooked is  
17 Exhibit L to Applicant's prepared testimony. This is the  
18 Water Pollution Control Board, for the Department of Health,  
19 State of Ohio, Certification of Compliance with Water Safety  
20 Standards for the Davis-Besse facility.

21 CHAIRMAN GARFINKEL: You want to introduce that  
22 in evidence?

23 MR. SELBERG: Yes.

24 CHAIRMAN GARFINKEL: Mr. Kalur?

25 MR. KALUR: May I have a moment?

1 CHAIRMAN GARFINKEL: Surely.

2 MR. KALUB: I have no objection that the document  
3 is what it purports to be.

4 MR. KAPPELLA: I am not objecting at all.

5 CHAIRMAN GARFINKEL: All right, I am receiving it  
6 for whatever this document means legally as well as factually.

7 MR. MARTIN: As I made the same qualification  
8 before with respect to other documents before the Board, I  
9 would make it with this, too. I am not sure in my own mind  
10 just how it fits into this particular hearing.

11 CHAIRMAN GARFINKEL: It is received in evidence.

12 MR. SELBERG: Now I would like to ask that the  
13 Board receive into evidence those parts of applicant's  
14 prepared testimony and the Supplement to the Environmental  
15 Report which deals with radiological matters. Pursuant to  
16 the discussions in the conference call we do have witnesses  
17 here to sponsor these documents, although with respect to both  
18 the testimony and the Supplement to the Environmental Report  
19 they were both authenticated and sponsored into evidence at  
20 the prior hearing.

21 However, to make sure the record is proper I would  
22 ask that Mr. Roe and Dr. Martin Goldman sponsor these sections  
23 into evidence again.

24 Mr. Roe's qualifications were previously intro-  
25 duced in these hearings following Transcript Page 238 and he



HLY08-2-4

1 has been previously sworn.

2 CHAIRMAN GARFINKEL: I would like to swear him in  
3 since this is a hearing or demand. Do you want to swear Dr.  
4 Roe?

5 MR. SILBERG: Secondly, I would like to introduce  
6 Dr. Morton I. Goldman, the NUS Corporation. If both of these  
7 witnesses can be sworn in we will then present Dr. Goldman's  
8 qualifications.

9 (Whereupon:

10 DOWELL ROE  
11 MORTON I. GOLDMAN

12 were called as witnesses and, having been first duly sworn,  
13 were examined and testified as follows:

14 DIRECT EXAMINATION

15 MR. SILBERG: I would now like to ask Dr. Goldman  
16 to state for the record his qualifications.

17 Dr. Goldman, will you please tell us your  
18 professional and educational background?

19 My name is Morton I. Goldman. My address is 4  
20 Research Place, Rockville, Maryland 20850. I am Vice President  
21 and General Manager of the Environmental Safeguards Division  
22 of NUS Corporation and have served in this capacity since  
23 January 1966. I am responsible for all site evaluations,  
24 safety analyses, waste management system design and environ-  
25 mental programs conducted by this Division.

1 This has included the evaluation of site and  
2 environmental safety factors for a number of nuclear and fossil-  
3 fueled plants in this country and abroad including the following  
4 nuclear plants and sites:

5 Trino Vercellosa (ENEL, Italy), San Onofre (SCE),  
6 Malibu (LADWP), H. B. Robinson and Brunswick (CP&L), Point  
7 Beach, (Wisconsin-Michigan Power Company), Sunny and North  
8 Anna (VEPCo), Three Mile Island (Metropolitan Edison), Crystal  
9 River (Florida Power Corporation), Peachfinger, Monticello and  
10 Prairie Island (NIP), Burlington, Salem and Newbold Island  
11 (SAS&N.J.), Dresden, Quad Cities and Zion (Commonwealth  
12 Edison), Kewaunee (WPSCo), Calvert Cliffs (BGE), Diablo  
13 Canyon (PG&E, Beaver Valley (Duquesne Light Company),  
14 Rancho Seco (SMUD), Trojan (PGE), Duane Arnold Energy Center  
15 (Iowa Electric Light & Power Co.), and Davis-Besse (Toledo  
16 Edison Co.), Bell & Susquehanna (N.Y.S.E&G) Seabrook (PSNH),  
17 Greenwood Energy Center (ECO), and Perry (CEI).

18 I was graduated from the New York University in  
19 1948 with the degree of Bachelor of Science in Civil  
20 Engineering. In 1950, I received a Master of Science degree  
21 in Sanitary Engineering; in 1958, a Master of Science degree  
22 in Nuclear Engineering; and in 1960, a Doctor of Science  
23 degree, all from the Massachusetts Institute of Technology.

24 From 1948 to 1949, I was a Research and Teaching  
25 Assistant at the Sanitary Engineering Research Laboratory, New

Dvc8-2-6

1 York University, conducting research on water coagulation and  
2 assisting in teaching sanitary chemistry and sanitary biology  
3 laboratory courses.

4 From 1949 to 1950, I was a Research Assistant at  
5 the Radioactivity Research Laboratory, Sanitary Engineering  
6 Department at Massachusetts Institute of Technology, con-  
7 ducting original research on removal of radionuclides from  
8 water by standard water treatment techniques.

9 From 1950 to 1951, I was a Commissioned Officer  
10 with the United States Public Health Service, Division of  
11 Radiological Health. I was first assigned to the Radiological  
12 Health Training Section from 1950 to 1954 as the engineer  
13 staff member lecturing on appropriate aspects of radiological  
14 safety and waste disposal.

15 From 1954 to 1956, I was on loan to the Oak Ridge  
16 National Laboratory as Chief of Soils and Engineering Section,  
17 Waste Disposal Research Activities. In this position I  
18 conducted and supervised research on disposal of radioactive  
19 wastes at Oak Ridge National Laboratory.

20 From 1956 to 1959, I was assigned to Massachusetts  
21 Institute of Technology as Project Leader for the Radioactive  
22 Waste Disposal Project of the Sanitary Engineering Department  
23 and in training in the Nuclear Engineering Department.

24 In the former capacity, I initiated and super-  
25 vised research on novel methods of disposal of high activity

Dvo8-2-7

1 fission product waste materials. In addition, I served on the  
2 MIT Reactor Safeguards Committee as its secretary.

3 From 1959 to 1961, I was designated as Nuclear  
4 Installation Consultant with the DUS Division of Radiological  
5 Health in Washington, D. C. (Now EPA).

6 In this capacity I provided technical consultation  
7 and assistance to State Health Agencies and other Federal  
8 Agencies on health and safety problems associated with  
9 nuclear installations.

10 As part of my responsibility, I served as the PHS  
11 evaluation responsible for the following nuclear plants:

12 Yankee, Elk River, Indian Point, Carolina-Virginia,  
13 Kalam, Pathfinder, Peach Bottom and Humboldt Bay.

14 I served on the Working Group which prepared the  
15 radioactivity section of the current PHS DWS.

16 Since 1961, I have been with NUS Corporation and  
17 active in all of the environmental safety activities  
18 described earlier.

19 I am the author and co-author of a number of  
20 papers on radiation and public health, nuclear safety and  
21 radioactive waste management.

22 I am a member of the American Society of Civil  
23 Engineers, the American Association for the Advancement of  
24 Science, the American Nuclear Society and the Air Pollution  
25 Control Association. Former Chairman of ASCE Committee on

HD-08-2-3

1 Sanitary Engineering Aspects of Nuclear Energy.

2 I am also a Licensed Professional Engineer in the  
3 State of New York and the District of Columbia, and a  
4 Diplomate of the American Academy of Environmental Engineering  
5 in Radiation Hygiene and Hazard Control.

6 I am a member of Committee N18 "Nuclear  
7 Design Criteria" of the American National Standards Institute.

8 In 1968, I served as the U. S. representative to,  
9 and chairman of, an expert panel on waste management practice  
10 at nuclear power plants at the International Atomic Energy  
11 Agency in Vienna.

12

13

14

15

16

17

18

19

20

21

22

23

24

25

W 9-1-1  
1 CHAIRMAN GARFINKEL: Is that finishing the  
2 qualifications of Dr. Goldman as an expert?

3 MR. SILBERG: Yes, Mr. Chairman.

4 CHAIRMAN GARFINKEL: All right. I would like at  
5 this point, before we go into the merits of any evidence he  
6 gives, to ask if there is any voir dire examination concern-  
7 ing his qualifications. Mr. Kalur.

8 MR. KALUR: I am not sure I understand the scope  
9 of the inquiry you want me to pursue.

10 CHAIRMAN GARFINKEL: The question is, is he  
11 competent to testify as an expert based on what he stated  
12 his qualifications are?

13 MR. KALUR: I don't know what he is going to  
14 testify concerning right now. It's rather difficult to say.  
15 He is certainly qualified as an engineer. I haven't seen  
16 any testimony yet.

17 CHAIRMAN GARFINKEL: Okay. Let's continue.  
18 We will wait for the testimony to be introduced.

19 MR. SILBERG: Just to correct the record with  
20 respect to Mr. Roe this appears following transcript Page 53.

21 At this time I would like to go through those  
22 sections of the testimony and the environmental report  
23 supplement identifying which relate to radiological, and  
24 following that I would then ask Mr. Roe and Dr. Goldman to  
25 readopt those as their testimony in this proceeding and move

WS 9-1-2

1 them into evidence.

2 CHAIRMAN GARFINKEL: Very well.

3 MR. SILBERG: Starting again on the testimony  
4 on behalf of Toledo Edison Company and Cleveland Electrical  
5 Illuminating Company, on Page 11, starting on Page 11 to  
6 the second line of Page 13, the testimony deals with  
7 radiological effects of the operation of the Davis-Besse  
8 facility.

9 CHAIRMAN GARFINKEL: The top two sentences on  
10 Page 15?

11 MR. SILBERG: Yes. It deals with the radio-  
12 logical effects and the description of the radiological  
13 systems of the Davis-Besse facility.

14 CHAIRMAN GARFINKEL: The top two sentences on  
15 Page 15.

16 MR. SILBERG: Yes. It deals with the radiological  
17 effects and the description of the radiological systems of  
18 the Davis-Besse facility.

19 MR. BALUR: Mr. Chairman, we would object to the  
20 last sentence on Page 11 as being conclusory. No, I will  
21 withdraw that. I will withdraw the objection. I have no  
22 objection to it coming in as evidence.

23 CHAIRMAN GARFINKEL: Mr. Kartalia.

24 MR. KARTALIA: No objection.

25 CHAIRMAN GARFINKEL: Received in evidence.

WSps2-1-3

1 MR. SILBERG: Thank you, Mr. Chairman.

2 Next on Page 15, the last paragraph, which deals  
3 with radioactive waste treatment systems and their operation.

4 CHAIRMAN GARFINKEL: Just the last paragraph of 15?

5 MR. SILBERG: That is correct. The top two lines  
6 have already been readmitted.

7 MR. WALUR: No objection.

8 MR. KATHEIA: No objection.

9 CHAIRMAN GARFINKEL: It will be received in  
10 evidence.

11 MR. SILBERG: Thank you. Just for the record  
12 the middle two paragraphs on that page, the first two para-  
13 graphs of Section 4 were left in evidence at the preceding  
14 hearing.

15 On Page 16, the second paragraph with the  
16 exception of the second sentence and the last sentence.

17 CHAIRMAN GARFINKEL: When you say the second  
18 paragraph, which one are you referring to?

19 MR. SILBERG: The paragraph numbered 5, Environ-  
20 mental Consequences of Accidents.

21 CHAIRMAN GARFINKEL: Okay.

22 MR. SILBERG: I will strike that. Just the  
23 entire paragraph with the exception of the last sentence.

24 CHAIRMAN GARFINKEL: Excluding the last sentence?

25 MR. SILBERG: Yes, the last sentence is already



WA 9-1-4 1 in, having not been excluded last time.

2 CHAIRMAN GARFINKEL: Right.

3 MR. KAUR: I believe, Mr. Chairman, the second  
4 sentence to that paragraph was stricken at the last hearing  
5 as being conclusory and improper.

6 CHAIRMAN GARFINKEL: I don't remember that being  
7 stricken.

8 You have the page in the transcript at all on that  
9 point?

10 MR. DAVIS: Page 71.

11 MR. SILBERG: Page 72 is correct.

12 CHAIRMAN GARFINKEL: Yes, I think I struck that.  
13 If you will look, "Due to extreme conservatism stricken."  
14 So I think Mr. Kaur is correct. I struck that as being

15 --

16 MR. SILBERG: A conclusion.

17 CHAIRMAN GARFINKEL: -- a conclusion.

18 MR. SILBERG: Then we withdraw our offer to put  
19 the second sentence back into evidence.

20 CHAIRMAN GARFINKEL: You are striking that out.  
21 You are leaving that out?

22 MR. SILBERG: Yes, so we would put in the first  
23 sentence and the third sentence in that paragraph.

24 MR. KARTALIA: They don't say anything really.

25 CHAIRMAN GARFINKEL: Please. You will address

ISps9-1-5

1 any remarks as an objection to this Board in your turn.

2 I am now asking Mr. Kalur to make his objections.

3 MR. KALUR: No objection.

4 CHAIRMAN GARFINKEL: Except for that one --

5 MR. KALUR: As long as that sentence is stricken  
6 we have no objection to the entry of the rest.

7 MR. KARTALIA: I have no objection. I didn't mean  
8 to indicate one, and I apologize for speaking out of turn  
9 and not directing my remarks to the Board.

10 CHAIRMAN GARFINKEL: All right. Section 5 dealing  
11 with environmental consequences of accidents will be received  
12 subject to the striking of the second sentence.

13 MR. SILBERG: Thank you, Mr. Chairman.

14 On Page 24 of the second full paragraph which  
15 begins, "In some instances," which deals with alternatives in  
16 the radiological treatment systems and their cost as well as  
17 compliance with proposed Appendix I to the Commission's  
18 regulations 10-CFR Part 50.

19 MR. KALUR: Mr. Chairman, we would object to these  
20 paragraphs going into evidence for the reason that while  
21 conclusions are, of course, proper. I think experts may not  
22 properly give conclusions on the ultimate issue, and I think  
23 that is what we have here.

24 CHAIRMAN GARFINKEL: I will note your objection,  
25 and I am now waiting for Mr. Kartalia's objection, if there

WSps9-1-6

1 are any.

2 MR. KARTALIA: I have no objection to its going  
3 in for what it is worth.

4 MR. SILBERG: Mr. Chairman, I think Mr. Kalur  
5 is correct. However, this is clearly not one of the ultimate  
6 legal conclusions of this hearing.

7 CHAIRMAN GARFINKEL: The problem is on this one,  
8 Mr. Silberg. It is whether or not the witness himself can  
9 specifically testify that it is or is not in compliance.

10 He can say what the regulation provides and what  
11 the dose would be.

12 We would make the determination whether it complies  
13 so Part I.

14 But I don't think he can testify that it complies  
15 with Part I, because I think that is basically a legal  
16 conclusion.

17 MR. SILBERG: Mr. Chairman, the record already  
18 indicates and you've accepted testimony to the fact that  
19 the Davis-Besse facility will comply with the numerical dose  
20 limits of the proposed Appendix I.

21 MR. KALUR: There is testimony to that effect.  
22 I don't think the Board has accepted that as a fact.

23 CHAIRMAN GARFINKEL: That's right. I don't think  
24 the Board has accepted that, because we struck every part of  
25 the testimony dealing with operation, Mr. Silberg.

3ps9-1-7  
1 So on that grounds I am striking all of that  
2 paragraph.

3 You will have to be put to the burden.

4 MR. KAUFER: Both paragraphs on that page?

5 CHAIRMAN GARPINKEL: Well, no. I think in the  
6 case of cooling systems that is already in evidence.

7 MR. KAUFER: Okay.

8 MR. SILBERG: I was not asking that the first  
9 paragraph be put in.

10 MR. KAUFER: All right. I understand.

11 MR. SILBERG: The next is Appendix Exhibit K to  
12 your testimony which is a comparison of the liquid radwaste  
13 system of the Davis-Besse facility with the liquid radwaste  
14 system of the Palisades plant.

15 CHAIRMAN GARPINKEL: What is the relevancy of  
16 trying to compare your plant with the Palisades plant?

17 The reason I am bringing this up, I am quite  
18 concerned, if you start making comparisons that may open up  
19 a Pandora's Box with respect to examination and cross examina-  
20 tion, and is it necessary for the limited hearings we have.

21 MR. SILBERG: Mr. Chairman, we put this in  
22 specifically because this was the one item which had any  
23 specificity which the intervenors have raised in this case,  
24 both in their pleadings to the Court of Appeals and to their  
25 papers filed with the Commission which led to this hearing.

Sps 1-3

1 Certainly consideration of alternatives is  
2 relevant and material in this hearing, and certainly the  
3 facts of those alternatives is relevant and material in this  
4 hearing. That is what Exhibit K deals with.

5 CHAIRMAN GARFINKEL: Very well. Mr. Kalur, do  
6 you have any objections to Exhibit K?

7 MR. KALUR: We would object to its relevancy,  
8 because it has never been placed in issue in these proceedings,  
9 how it compares with the Palisades plant.

10 It solely was a matter of comment by the inter-  
11 veners in the original suspension proceedings before the  
12 Director of Regulation. It has never been placed in issue  
13 and intervenors have no intention of doing so.

14 CHAIRMAN GARFINKEL: It was not placed in issue  
15 before the Court now, Mr. Kalur. This is important to me.

16 Did you raise that in your argument to the Court,  
17 because Mr. Silberg seems to indicate that it was raised.

18 MR. SILBERG: It clearly appears in intervenors'  
19 papers filed with the Court.

20 CHAIRMAN GARFINKEL: Since the Court has jurisdiction  
21 in this case yet it would be incumbent upon me if you did raise  
22 it to receive it in evidence.

23 MR. KALUR: To my knowledge, Mr. Chairman, it was  
24 not raised before the Court.

25 MR. SILBERG: Mr. Chairman, it clearly appears in

MS 9-1-9

1 the brief on the merits which petitioners filed, I believe it  
2 was in January of 1972, in which they said the continued  
3 construction of the Davis-Besse facility would foreclose  
4 the adoption of all alternatives, particularly the "zero  
5 release" radwaste system adopted by Consumers Power Company  
6 in the Palisades plant.

7           Testimony in the preceding hearing, of course,  
8 indicated that zero releases technically are impossible.  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

WSvo9-2-1

1 MR. KALUR: Mr. Chairman, that brief was not filed  
2 in this case and the docket will so reflect.

3 MR. SILBERG: That brief was filed before the  
4 Court --

5 CHAIRMAN GARTENKEL: Please. No more argument  
6 on that point. I will rule. I am waiting for Mr. Kartalia.

7 MR. KARTALIA: I have no objection to it.

8 CHAIRMAN GARTENKEL: It will be received into  
9 evidence subject to the relevancy determined by the Board.

10 MR. SILBERG: Just for the record to indicate  
11 in a document entitled "Brief in Support of Motion for  
12 Hearing on Interlocutory Injunctions," submitted by Mr. Kalur  
13 in January of 1972, on Page 2 of that brief is a description  
14 of the Palisades facility.

15 CHAIRMAN GARTENKEL: Very well.

16 MR. SILBERG: I would next like to turn back to  
17 the supplement to the Environmental Report and indicate those  
18 sections dealing with radiological effects which we would  
19 like to move into evidence under the sponsorship of Mr. Fee  
20 and Dr. Goldman.

21 First Pages 4-2 --

22 CHAIRMAN GARTENKEL: Is that the first volume?

23 MR. SILBERG: Yes, Volume 1, Pages 4-1 through  
24 4-27. This is Section 4.4 of the Supplement to the Environmental  
25 Report and it is entitled "Rad Waste System."

13v9-2-2

1 It is a description of the rad waste system that  
2 has been selected for installation in the Davis-Besse  
3 Facility as of the date of this report.

4 MR. KALUR: No objection.

5 MR. KARTALIA: No objection.

6 CHAIRMAN GARFINKEL: Received in evidence.

7 MR. SILBERG: Thank you.

8 Next is Section 5, which is in Volume 2, the  
9 Environmental Report, deals with transportation of radio-  
10 active wastes from plant operation, and I believe also to  
11 transportation of new fuel assemblies to the reactor.

12 CHAIRMAN GARFINKEL: Please, what section was that?

13 MR. SILBERG: Section 5, Volume 2. It's the first  
14 section in Volume 2.

15 CHAIRMAN GARFINKEL: Does that deal with trans-  
16 portation of waste after use, too?

17 MR. SILBERG: Yes. This is from operation of the  
18 plants.

19 MR. KALUR: No objection.

20 MR. KARTALIA: I have no objection.

21 CHAIRMAN GARFINKEL: Received in evidence.

22 MR. SILBERG: Thank you.

23 MR. KARTALIA: Is the Board troubled on the  
24 transportation issue, the relevancy?

25 CHAIRMAN GARFINKEL: No. I am only concerned with



WSvo9-2-3

1 the question of relevancy ultimately after use, the trans-  
2 portation provided. It is going to an area outside of the  
3 immediate vicinity of the plant.

4 MR. KARTALIA: Correct me if I am wrong, Mr.  
5 Charnoff, hasn't that question been decided in the Vermont  
6 Yankee Appeal Board Certification?

7 CHAIRMAN GARFINKEL: This is what I am raising on  
8 this point, but I don't want to get into it.

9 I received it in evidence. I am raising the  
10 concern in my own mind of the relevancy of that case.

11 MR. KARTALIA: I think the Vermont Yankee  
12 certification has the answer to it.

13 CHAIRMAN GARFINKEL: That's right.

14 MR. SILBERG: Next is Section 7.2, which deals  
15 with the release of radioactive materials, and it discusses  
16 the effects of such releases on the environment.

17 This is from Pages 7-2 through 7-6.

18 MR. KALUR: No objection.

19 CHAIRMAN GARFINKEL: Any objection, Mr. Kartalia?

20 MR. KARTALIA: No.

21 CHAIRMAN GARFINKEL: Received in evidence.

22 MR. SILBERG: O. K. Appendices 7-A and 7-B deal  
23 with the computational methods for doses resulting from radio-  
24 active effluent releases from the plant.

25 CHAIRMAN GARFINKEL: May I ask who prepared those

18vo9-2-4

1 computations?

2 MR. SILBERG: These computations were prepared  
3 under the general direction of Mr. Roe and under the specific  
4 direction of Dr. Goldman.

5 CHAIRMAN GARFINKEL: Very well.

6 MR. SILBERG: Both witnesses will testify to this.

7 MR. KALSH: Mr. Chairman, am I to understand  
8 there will be no differentiation here in testimony, that both  
9 Mr. Goldman and Mr. Roe will stand behind all of this testi-  
10 mony or just this section?

11 CHAIRMAN GARFINKEL: No, no, no. You have free  
12 rein to ask the questions of both of them as if they put it  
13 in unless you want more specificity.

14 MR. SILBERG: We will identify those areas in  
15 which Dr. Goldman has specific particular responsibility, and  
16 in which Mr. Roe has general responsibility.

17 Obviously there are many questions of detail in  
18 which other expert witnesses may be more appropriately called  
19 to reply.

20 CHAIRMAN GARFINKEL: We will find out, based  
21 upon your cross-examination, but if you want, I am prepared  
22 to require Mr. Silberg to break down the two documents, who  
23 had the immediate concern, and I am sure if these people can't  
24 answer the particular question there will probably be someone  
25 in the room that can.

WSvo9-1-5

1 But overall I have an impression that Dr. Goldman  
2 will be able to answer many of the questions.

3 MR. STEINER: As I indicated, the overall  
4 managerial responsibility for preparing this testimony resides  
5 with Mr. Lee and the particular responsibility for several  
6 sections, including these two appendices resides with Dr.  
7 Goldman.

8 CHAIRMAN GARDNER: O. K. Can you tell me will  
9 continue your direct examination?

10 MR. STEINER: Are those two appendices now  
11 admitted?

12 CHAIRMAN GARDNER: They are Exhibit Appendix  
13 7-A.

14 MR. STEINER: Appendix 7-A and 7-B.

15 MR. HARRISON: I have no objection.

16 MR. KAMM: No objection.

17 CHAIRMAN GARDNER: Received in evidence.

18 MR. STEINER: Thank you, Section 9 deals with the  
19 effects of accidents. I would ask that that be admitted into  
20 evidence.

21 MR. KAMM: No objection.

22 MR. HARRISON: No objection.

23 CHAIRMAN GARDNER: Received in evidence.

24 MR. STEINER: And in Section 9, the fourth  
25 paragraph, the paragraph which begins, "Does defendant

vo9-2-5

1 will be released," I would ask that that be admitted into  
2 evidence at this time.

3 MR. KAMER: Mr. Chairman, we will object from the  
4 standpoint that this again raises legal conclusions proper  
5 only for the board.

6 CHAIRMAN GARFINKEL: Mr. Karamia.

7 MR. KARAMIA: I have no objection for what it's  
8 worth.

9 I think the Board can separate the wheat from the  
10 chaff here and draw its own conclusions.

11 CHAIRMAN GARFINKEL: This is more in the nature  
12 of opinion type of testimony, Mr. Katur, and I think that this  
13 is subject to cross-examination by you, and as a consequence  
14 I will receive it into evidence and experts can testify as  
15 to opinion.

16 MR. KATUR: I think the Board is correct. I will  
17 withdraw my objection.

18 CHAIRMAN GARFINKEL: Very well. Thank you.  
19 Off the record.

20 (Off the record discussion.)

21 CHAIRMAN GARFINKEL: He may be on the record now.

22 MR. SILBERG: Mr. Chairman, you have thus accepted  
23 into evidence that paragraph?

24 CHAIRMAN GARFINKEL: Yes.

25 MR. SILBERG: Thank you.

18vc9-2-7

18-1-1

1 CHAIRMAN GARTINKEL: There being no objection.

2 MR. SILBERG: At this time I would ask Mr. Roe  
3 and Dr. Goldman whether they accept these matters as their  
4 testimony in the proceeding and whether they would adopt it  
5 as their testimony.

6 MR. KALUR: Now, just a moment. I object to this.

7 I have got to know who is adopting what. Are  
8 they both adopting everything or is Mr. Roe going to adopt  
9 page such and such to page such and such, and Mr. Goldman  
10 do the same?

11 CHAIRMAN GARTINKEL: I think we will do it this  
12 way, Mr. Kalur: The overall responsibility is in Mr. Roe's  
13 hands. The immediate responsibility is in Dr. Goldman's  
14 hands.

15 On that basis I will accept the document one for  
16 the overall and one for the particular. On that basis I want  
17 to find out if there are any errors in this.

18 After that I am going to direct that Mr. Silberg  
19 advise you where the specific responsibility of preparing the  
20 document lies, the actual one who is more intimately knowledgeable  
21 in the various sections, so that you will know for your  
22 cross examination who most likely will be furnishing you  
23 with the answer.

24 I think that is the best procedure and that is the  
25 procedure I am adopting.

1 Go ahead, Mr. Silberg.

2 MR. SILBERG: I will ask if Mr. Roe and Dr.  
3 Goldman would answer whether they would accept this as their  
4 testimony and adopt it as their testimony in this proceeding.

5 MR. ROE: Yes, I do.

6 DR. GOLDMAN: Yes.

7 CHAIRMAN GARFINKEL: All right. Now, Mr. Silberg,  
8 I want you --

9 MR. KALUS: Mr. Chairman, let the record reflect  
10 that this procedure I believe is violating our rights to  
11 cross examination under the Sixth Amendment?

12 CHAIRMAN GARFINKEL: So noted.

13 MR. SILBERG: Mr. Chairman, may I likewise note  
14 that the witnesses are here and any questions which Mr.  
15 Kalus directs to us on cross examination will be answered,  
16 and he is not being deprived of any rights.

17 CHAIRMAN GARFINKEL: So noted.

18 Now, I am directing you, Mr. Silberg, to specifically  
19 point out in the parts dealing with radioactivity releases  
20 which we have already accepted in evidence, which individual  
21 between Dr. Goldman and Mr. Roe is primarily responsible  
22 for its preparation or would have the most intimate knowledge  
23 of that information.

24 MR. SILBERG: Rather than going through paragraph  
25 by paragraph parsing, what I would propose to do is indicate

WSos9-3-3

1 that Dr. Goldman would have the specific responsibility for  
2 any testimony which deals with the doses, the dose effects  
3 and the dose calculations, radiological releases from the  
4 plant.

5 MR. CHARNOFF: I might point out, Mr. Chairman,  
6 this issue was raised on the telephone on Monday at our  
7 conference call, and I did indicate that the line of demarcation  
8 would be along the line that Mr. Silberg has just echoed.

9 This is not a new point for Mr. Kalur.

10 The fact is that Dr. Goldman is responsible for  
11 the determination of the doses and the dose effects, whereas  
12 Mr. Roe is intimately familiar and responsible for the  
13 nature of the equipment and how it functions and what it does.

14 Along those lines it seems to me that Mr. Kalur  
15 could adequately handle this. Otherwise we have to get  
16 back perhaps to a sentence by sentence passing, although  
17 there are certain sections such as the Appendix dealing  
18 with those calculations that clearly are marked as the  
19 NUS calculations, and those are identifiable obviously on  
20 their face as being the product of Dr. Goldman's organization  
21 and his own personal work.

22 CHAIRMAN GARFINKEL: I think you are correct on this,  
23 Mr. Charnoff, and based on that I think, Mr. Kalur, you have  
24 an adequate basis for determining who is going to be  
25 responsible for specific testimony on cross-examination, and

MSps9-3-4

on that basis we will commence with cross examination.

No, I think I will do it in a different way.

I will have Mr. Kartalis cross examine, unless you decide first, and then allow you to cross examine afterwards. Which do you prefer?

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25



WS109-4-1

1 MR. KALUR: I prefer to go second. Mr. Chairman,  
2 just for the record, I don't want to argue with the Chairman.  
3 I just want my position to be clear in the record, that I  
4 feel that the delineation we have had as to testimony here  
5 places an intolerable burden on the intervenors to separate  
6 these two things.

7 CHAIRMAN CROFTWELL: I think with only two  
8 witnesses I can't see any intolerable burden.

9 To me I can't see any burden at all in terms of  
10 the questions, because there are witnesses here, and you  
11 know what the evidence is.

12 You have had these books for many months now. As  
13 a consequence, cross-examination, the questions are here.  
14 You have the two parties who are responsible. All you have  
15 to do is phrase the questions and see what the answers are,  
16 and you are dealing not with a group of 10, 20 or 30 people,  
17 you are dealing with a group of just two, and basically the  
18 delineation of their responsibility was brought out by Mr.  
19 Silberg.

20 So I can't buy your argument on that point,  
21 Mr. Kalur.

22 MR. SILBERG: Mr. Chairman, may I make one  
23 further remark? I think you are perfectly correct. The  
24 purpose of the hearing is to get information into the record.  
25 It is not a game as to say that gentleman in the third row

WG109-4-2

1 from the back seat has the answer and he passed it up by note  
2 and, therefore, we were denied rights.

3 The function of the hearing is to get answers  
4 to questions. If we get the questions, we will get the  
5 answers, and labeling X as the person who first invented the  
6 wheel, I don't think helps the development of the factual  
7 record that this hearing should be based on.

8 Anyway, I have made my ruling that the approach  
9 I have adopted will be the approach used here, and with that,  
10 although I said I would break at 1:00 o'clock, I think I  
11 would rather break now and reconvene at 2:00 o'clock, giving  
12 you the extra --

13 MR. CHERNOFF: Mr. Chairman, we haven't finished  
14 putting in all of this material. Wouldn't it be well to do  
15 that?

16 CHAIRMAN GARTHEISE: I am sorry. I thought you  
17 had finished.

18 MR. SILBERG: We have additional direct case.

19 At this time I would ask the Board's indulgence.  
20 Dr. Martin of the Environmental Protection Agency, I believe  
21 is here.

22 One of the exhibits in our testimony dated April  
23 27 is a statement by Dr. Martin, the acting Deputy Director,  
24 Division of Technology Assessment, Office of Radiation Programs  
25 for the Environmental Protection Agency, and because he is here

87-1-3

from Washington he is not an employe of any of the applicants, and he is a government employe, and for his convenience and at the overall budgetary considerations of the government, if we could have his statement made, introduced into evidence at this time, perhaps any cross-examination of that statement, he would be able to return to Washington.

CHAIRMAN CARPENTER: That is correct. This is an epidemiological matter, is that right?

MR. SILBERG: That is correct.

CHAIRMAN CARPENTER: And you want cross-examination in evidence immediately after lunch?

MR. SILBERG: After lunch is fine.

CHAIRMAN CARPENTER: Do you have any objection? Has the parties seen this document?

MR. SILBERG: This is Appendix F to our testimony of April 27. All parties have had it for almost two and a half months.

CHAIRMAN CARPENTER: You have Appendix F. Has that been received in evidence?

MR. SILBERG: No, this is the purpose of my --

CHAIRMAN CARPENTER: Do you have any objection to the receipt of Appendix F into evidence at this time?

MR. SILBERG: No.

MR. SILBERG: Since this is an epidemiological matter pursuant to our stipulation it should be sponsored by Dr.

WSv09-4-4

1 Martin.

2 CHAIRMAN GARFINKEL: But they have already said  
3 they have no objection. So it is received in evidence.  
4 So being sponsored, it doesn't make any difference if it  
5 is received.

6 MR. SILBERG: Fine.

7 CHAIRMAN GARFINKEL: Subject to the right of cross-  
8 examination. I don't want to start any cross-examination  
9 until after noon, after lunch.

10 MR. CHARNOFF: The only question I think, Mr.  
11 Chairman, though, would be helpful is, during the lunch break  
12 when Mr. Kalur organizes his cross to the extent it is not  
13 already organized, if he has any questions of Dr. Martin, if  
14 he could put those ahead of questions of Mr. Roe and Dr.  
15 Goldman, then we could excuse Dr. Martin unless the staff  
16 has some questions.

17 CHAIRMAN GARFINKEL: I leave that to a decision  
18 of Mr. Kalur, whether he wants to accommodate Dr. Martin.

19 MR. KALUR: We don't want to increase the budget  
20 deficit.

21 CHAIRMAN GARFINKEL: So you have no objection?

22 MR. KALUR: No.

23 CHAIRMAN GARFINKEL: Mr. Kartalia?

24 MR. KARTALIA: I have no objection, and I would  
25 like to point out for your information and for Mr. Kalur's

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

Benefit, that I don't intend to have much if any cross-  
examination of the applicant on these radiological matters.  
What is the existing testimony, what is in the record now.

CHAIRMAN GARDINER: Very well. We will recess  
until 2:00 o'clock.

(Thereupon, at 12:57 a luncheon recess was had  
until 2:00 o'clock.)

---

AFTERNOON SESSION

2:00 p.m.

1  
2  
3 CHAIRMAN GARFINKEL: Will the hearing come to  
4 order.

5 I assume counsel for the parties have had some  
6 type of conference as to how we should proceed. Do we  
7 proceed with cross-examination of the individuals from the  
8 Environmental Protection Agency or do we continue with  
9 getting certain other data in?

10 MR. SILBERG: The agreement, Mr. Chairman, was  
11 that Mr. Martin would be sworn in to sponsor his testimony  
12 and would then be available for cross-examination. We do  
13 have a very few oral questions on direct, two to be exact,  
14 that we would like to ask him prior to cross-examination.

15 CHAIRMAN GARFINKEL: I don't remember this. Do  
16 you have the page where his testimony is located?

17 MR. SILBERG: It is Exhibit F in the applicant's  
18 prepared testimony, Pages F-1 through F-5.

19 CHAIRMAN GARFINKEL: Does this have a background  
20 of his qualifications?

21 MR. SILBERG: No, it does not.

22 CHAIRMAN GARFINKEL: Are you going to go into  
23 that first?

24 MR. SILBERG: I believe the parties had stipulated  
25 as to his qualifications but we would be happy to put them on.

Wos10-1-2

1 CHAIRMAN GARFINKEL. I would put his qualifications  
2 on, even though they are stipulated for the testimony here.  
3 I would want it in the record. It would be helpful to us  
4 and it would also be helpful to a final review.

5 MR. SILBERG: Thank you. First I would like  
6 Mr. Martin to be sworn.

7 JAMES EDWARD MARTIN

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

10 DIRECT EXAMINATION

11 BY MR. SILBERG:

12 Q Mr. Martin, would you state for the Board briefly  
13 your professional and educational background?

14 A First I am currently employed by the U. S.  
15 Environmental Protection Agency. My residence is 531  
16 Goldsborough Drive, Rockville, Maryland. I am the Deputy  
17 Director of the Division Of Technology Assessment of the  
18 Office of Radiation Programs in the Environmental Protection  
19 Agency.

20 MR. KAMER: Would you mind repeating that?  
21 Will the court reporter read it back?

22 (The previous testimony was read by the reporter.)

23 THE WITNESS: The function of this office is,  
24 in essence, to make complete reviews of all proposed projects  
25 involving radioactivity or radiation in the environment.

psi 0-1-3  
1 I have been in this position for approximately five and a  
2 half years.

3 This position preceded the creation of the  
4 Environmental Protection Agency in the U. S. Public Health  
5 Service. I have been in that type of work for approximately  
6 15 years.

7 I have a Doctorate's Degree in Physics, a Master's  
8 Degree in Public Health and a Ph.D. Degree in Environmental  
9 Health, the Graduate Degrees being from the University of  
10 Michigan.

11 CHAIRMAN GARFINKEL: Mr. Martin, have you written  
12 any articles in your field?

13 THE WITNESS: Yes, I have published a number of  
14 articles pertaining to nuclear power plants and their  
15 effects on the environment. I have either authored or  
16 co-authored a few reports stating technical positions of  
17 the Agency on various aspects of nuclear power plants and  
18 their effects on the environment.

19 BY MR. SILBERG:

20 Q Will you give us some of the professional  
21 societies which you are affiliated with?

22 A Yes. I am a member of the Health Physics  
23 Society and a member of the Commissioned Officers Association  
24 of the Public Health Service.

25 Q Thank you, Dr. Martin. At a hearing before the



H09310-1-4

1 Ohio Water Pollution Control Board on July 28, 1971, did  
2 you present a statement entitled "Environmental Considerations  
3 of Liquid Radioactive Waste from the Davis-Besse Nuclear  
4 Power Station"?

5 A I did, yes.

6 Q I now show you Exhibit F, prepared testimony  
7 submitted by the Toledo Edison Company and the Cleveland  
8 Electric Illuminating Company on April 27, and ask you if  
9 that is a statement which you presented?

10 A Yes, it is.

11 Q Thank you. Do you adopt that statement as your  
12 own testimony in this proceeding?

13 A Yes, insofar as it is introduced as statements  
14 that the Agency made at a previous hearing.

15 MR. SILBERG: I move that this statement be  
16 introduced in evidence.

17 CHAIRMAN GARFINKEL: Wait a minute. I am having  
18 difficulty understanding that last condition. I am not  
19 interested in how it was adopted in another hearing or whether  
20 it was or not. I am interested in is this his statement at  
21 this hearing. Does he adopt it as if he were testifying  
22 in this proceeding?

23 THE WITNESS: Mr. Chairman, may I clarify a  
24 couple of points as to why I am here?

25 MR. KAMUR: I will object to narrative now.

HD0310-1-5

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

CHAIRMAN GARFINKEL: Let's hear the witness on this point.

MR. KAUR: Can we have an answer to your questions?

CHAIRMAN GARFINKEL: No, he is explaining it in a certain way. Let's see what he has to say and then I will rule. I am concerned about it.

HDw10-2-1

1           A.       At the request of the Ohio Water Pollution Control  
2 Board concerning the Davis-Besse plant sometime last summer ---  
3 I don't remember the exact date -- they asked us to appear  
4 before the Board and give an independent position on the effects  
5 of radioactive waste into receiving waters from that facility,  
6 and we did so.

7                   The reason I am appearing here today is because  
8 I was asked by the Toledo Edison Company if I would authenticate  
9 testimony that we had given before that Board, presumably be-  
10 cause they wished to respond to it in the course of this  
11 hearing.

12                   My purpose here, then, is to authenticate that that  
13 is the testimony that we gave. It is not for the purpose of  
14 being an active party in this hearing.

15                   CHAIRMAN GARFINKEL: I agree with you that you are  
16 here now as a witness. As a witness I am asking you, do you  
17 adopt that testimony as your testimony for this proceeding as  
18 if you were called as a witness, not a party?

19                   THE WITNESS: Yes.

20                   CHAIRMAN GARFINKEL: That is what I wanted to be  
21 sure of for the record.

22                   MR. SILBERG: Mr. Chairman, there are, of course,  
23 with the passage of time, changes in the situation and I will  
24 ask various questions which will identify those changes and  
25 update the report, so to that extent that report may be by the

HDvol10-2-2

1 words written on it somewhat out of date. We will update  
2 that.

3 CHAIRMAN CARPENTER: I want you to do that now.

4 MR. SILBERG: That is what I will proceed to do.  
5 Did the Chairman rule that this document is therefore admit ed?

6 CHAIRMAN CARPENTER: No, I want the changes and  
7 everything else before I rule.

8 BY MR. SILBERG:

9 Q Dr. Martin, in your letter on pages 3 and 4,  
10 which are pages P-4 and P-5 in applicant's prepared testi-  
11 mony, you stated:

12 "There are two areas which we commented on that  
13 are not resolved to our complete satisfaction at this time.  
14 First we recommended that a population dose assessment be  
15 made in order to determine the total impact of the liquid  
16 radwaste discharges from the plant on population exposure  
17 and to assist in environmental surveillance planning."

18 Dr. Martin, let me now show you Section 7.2 of  
19 applican't supplement to Environmental Report, particularly  
20 Tables 7-1, 7-2 and 7-3 of that section, and ask you whether  
21 those tables form the population dose assessment which you  
22 were requesting the applicants to perform.

23 CHAIRMAN CARPENTER: What pages are those in the  
24 Environmental Report?

25 MR. SILBERG: Pages 7-5 and 7-5.

HDvol0-2-3

1 THE WITNESS: Yes, that is exactly what we were  
2 asking for.

3 BY MR. SILBERG:

4 Q Is this the first time you have seen those  
5 population dose calculations?

6 A It is not, no. We have the Environmental Report  
7 in our offices, and we have reviewed those.

8 Q Thank you, Dr. Martin.

9 The second concern which you identified you  
10 referenced on Page 4 of your statement, which is Page E-4 of  
11 applicant's prepared testimony -- I am sorry, E-5 -- in which  
12 you stated:

13 "Although the applicant has indicated his intent  
14 to use such systems" -- that is, the liquid radwaste systems  
15 -- "fully, we are hopeful that in his work with the Ohio  
16 Water Pollution Control Board and other regulatory agencies  
17 he will specify criteria for processing liquid wastes through  
18 the various systems components so that environmental defects  
19 will be maintained at minimum levels commensurate with the  
20 capability of the design."

21 Dr. Martin, in today's hearing there was intro-  
22 duced into evidence testimony which is found on Page 12 of  
23 applicant's prepared testimony which reads as follows:

24 "Criteria and operating procedures governing the  
25 operation of these systems" -- That is, the radioactive waste

HDvol10-2-4

1 treatment systems -- "will be formulated prior to station  
2 operation and will be such that the radioactive discharges  
3 will be maintained at minimal levels commensurate with the  
4 capability of the system design."

5 I ask you, Dr. Martin, does this statement, this  
6 commitment on the part of the applicants, take care of the  
7 concern which you expressed on Page 4, Page 5 of your  
8 statement?

9 A. It does.

10 MR. SILBERG: Thank you very much.

11 CHAIRMAN GARFINKEL: Are you finished with your  
12 direct examination?

13 MR. SILBERG: That is all the direct questions  
14 I have.

15 CHAIRMAN GARFINKEL: Mr. Kartalia, I will let  
16 you cross-examine first.

17 MR. SILBERG: Mr. Chairman, have you ruled the  
18 statement into evidence at this point?

19 CHAIRMAN GARFINKEL: That is a good point. Let  
20 me ask you, do you have any objections to the statement?

21 MR. KALUR: No.

22 MR. KARTALIA: I don't, either.

23 CHAIRMAN GARFINKEL: Exhibit J to the direct  
24 testimony of the applicant dated 4-27-72 will be received in  
25 evidence.

HDvol10-2-5

1 Mr. Kartalia, with that statement you may cross-  
2 examine.

3 MR. KARTALIA: I have just a single short line  
4 of inquiry and nothing further.

## CROSS-EXAMINATION

BY MR. KARTALIA:

5  
6  
7 Q Dr. Martin, I think you have already made this  
8 clear. Are you testifying here today on behalf of the  
9 Environmental Protection Agency?

10 A Of course, yes.

11 WSVoll-1-1 CHAIRMAN GARFINKEL: He so testified, only as a  
12 witness and not as a party.

13 MR. KARTALIA: Well, I won't try to explain why  
14 my confusion. That is the point I wanted to establish.

15 CHAIRMAN GARFINKEL: O. K.

16 MR. KARTALIA: Thank you. No further cross-  
17 examination.

18 CHAIRMAN GARFINKEL: Mr. Kalur, it's your turn  
19 to cross-examine.

## CROSS-EXAMINATION

BY MR. KALUR:

20  
21  
22 Q Mr. Martin, does everything in this report  
23 correspond to your views? Is this your testimony?

24 A Yes, it is.

25 Q With the additions that Mr. Silberg has made?

W3voll-1-2

1 A Right. Developed and presented by myself at the  
2 Pollution Control Board Hearing.

3 Q You subscribe to every view in it, every sentence  
4 in it?

5 A That's correct, on the basis of the information  
6 and on the day that it was given. I might add another  
7 clarifying point.

8 Q You have answered my question. You do or you  
9 don't. That's what I would like to know.

10 A I would like to add the clarifying point.

11 Q Well, let me ask the questions.

12 When you got out of the University of Michigan  
13 did you go to work then or were you working on your degrees  
14 and working at the same time in your field?

15 A I had the good fortune to be sent back to school  
16 by the Federal Government, so I was employed by the Federal  
17 Government while I was getting my training.

18 Q Would you tell me what the first job you held  
19 with the Federal Government was?

20 A Yes, with the U. S. Public Health Service, 1957.

21 Q Did you have any graduate degrees at that time?

22 A No. I had just completed a special Fellowship  
23 at Vanderbilt University and Oak Ridge National Laboratory  
24 on radiological physics, which is radiation safety and health  
25 physics.



NSv011-1-3

- 1 Q I take it you had your B.S. degree then?
- 2 A I had the B.S. I did not have a Master's degree.
- 3 I had gone into graduate training for that purpose.
- 4 Q Have you ever been an Atomic Commission employee?
- 5 A No, I have not.
- 6 Q You tell me you went to work at the Oak Ridge
- 7 for a while?
- 8 A Yes.
- 9 Q That is an AEC facility, isn't it?
- 10 A It's a laboratory that is operated by Union
- 11 Carbide Company under contract with the Atomic Energy
- 12 Commission.
- 13 Q What did you do there?
- 14 A I did field training on the basic principles of
- 15 occupational radiation safety.
- 16 Q Was this in 1957?
- 17 A I should add this was a part of the degree program
- 18 or the training program of Vanderbilt University, and I will
- 19 say that that program was also sponsored by Stipend, by the
- 20 Atomic Energy Commission.
- 21 Q Was this in 1957?
- 22 A This was in '57.
- 23 Q How long did that last?
- 24 A Twelve-month period, starting in mid-'56 and went
- 25 to mid-'57.

WSvoll-1-4

1 Q Did you stay in the Public Health Service until  
2 it merged with the Environmental Protection Agency?

3 A Yes, in fact, I am still an officer of that  
4 organization.

5 Q When did you get your Ph.D from Michigan?

6 A In 1965.

7 Q Would you repeat for me again what that degree is?

8 A It's an environmental health with the radio-  
9 logical health option.

10 Q Were you always employed by the Public Health  
11 Service while you were pursuing your graduate degrees?

12 A Yes.

13 Q And you participated in the drafting of this  
14 report that was delivered to the Ohio Water Pollution Control  
15 Board, is that correct?

16 A I wrote it myself.

17 Q You wrote it yourself?

18 A Yes.

19 Q Did you have help on it?

20 A Yes.

21 Q How many other people were on the staff?

22 A At that time probably about 15 professionals, of  
23 which two helped me.

24 Q Two of which helped you?

25 A Yes.

1 Q Would you give me their names?

2 A A Mr. John L. Russell and Mr. Ted W. Fowler.

3 Q They were also Public Health Service employees?

4 A Yes.

5 Q I think in your opening testimony on direct you

6 stated that you have studied a number of other nuclear plants

7 and their effect on the environment.

8 Q Would you tell me some of the names of the other

9 plants?

10 A The Doonee Station in South Carolina.

11 Q When was that?

12 A When?

13 Q Yes.

14 A Oh, '67.

15 Q Any others?

16 A The Monticello plant, the Maine Yankee plant.

17 These are ones I have had a lot of direct involvement in.

18 Q Were you a part of any of the final recommendations

19 made on any of those three plants?

20 A Yes.

21 Q Have there been others?

22 A Yes.

23 Q Or is there just this three --

24 CHAIRMAN GARFINKEL: Mr. Kalur, when you say

25 "final recommendations," from whom, so we understand?

WSvoll-1-6

1 MR. KALUR: From the Public Health Service:

2 CHAIRMAN GARPINKEL: That is what I wanted to  
3 know.4 A. Yes. I might clarify a little bit of the type of  
5 work we do.6 Being the Deputy Director and the simple fact  
7 that we review every proposed nuclear power plant and have been  
8 doing so for the last 12 years or so, the simple fact is that  
9 since I have been in the position that I have been in, for the  
10 last five and a half years, that every facility that is re-  
11 viewed in our office, and all of them are, I input, participate  
12 in the overall policy of developing the review and taking the  
13 positions the agency takes on these things.14 So you could say I have something to do with all  
15 power plants that are reviewed under the National Environmental  
16 Policy Act now.17 Specific ones that I work -- I don't work on  
18 specific ones so much any more, where I dig through the reports  
19 and prepare the technical review, but I participate in all  
20 the reviews.

21

22

23

24

25

WSPs11-2-1

1 Q And this has been going on for a period of  
2 five and a half years?

3 A Yes.

4 Q On your part?

5 A Yes.

6 Q Can you give me an estimate on that five and a  
7 half years in how many plants you have participated in  
8 their review and in the opinion of your Agency?

9 A Oh, I would say it's close to 70, 80.

10 Q In that time can you tell me the name of any  
11 plants which have not received the approval of your Agency?

12 A None. We have given some pretty hard times, but  
13 none we have in essence disapproved.

14 Q But ultimately they have all been approved,  
15 isn't that right?

16 A Well, let me clarify a little bit of it.

17 Q Can you answer that with a yes or no?

18 A Ultimately they have been approved, but I should  
19 add that the Environmental Protection Agency does not by  
20 the nature of its responsibility have approval authority of  
21 nuclear power plants.

22 Q But you do make recommendations, don't you?  
23 Will you answer my question, please?

24 Let your counsel worry about further statements  
25 later.

WSps11-2-2 1

MR. SILBERG: Mr. Chairman --

2 CHAIRMAN GARFINKEL: I think Mr. Kaluz is  
 3 correct on this point, Mr. Silberg. The answer should be  
 4 given in a yes or no manner where practical, and I think  
 5 this one calls for a yes or no answer.

6 Q What I am saying your Agency now -- I am going to  
 7 refer to EPA, I know there was a changeover and Public Health  
 8 Service and everything --

9 A Let's assume it is the same, because it is  
 10 basically the same.

11 Q Now, the EPA has responsibilities, as you indicate,  
 12 in the first sentence of your prepared testimony with respect  
 13 to NEPA reviews, does it not?

14 A That's right.

15 Q And it makes recommendations to the Atomic Energy  
 16 Commission under the principles and rules of that Act,  
 17 doesn't it?

18 A That's right.

19 Q Now, it either approves or it doesn't approve.  
 20 Whether that approval or disapproval can be carried into  
 21 effect, let's leave that aside, but it either approves or  
 22 doesn't approve?

23 A No, it does not.

24 Q Does it make the recommendation?

25 A It makes recommendations on various aspects of the

WSp511-2-3

1 projects and various comments. It does not have approval  
2 authority.

3 Q It has never ultimately not recommended that a  
4 plant be built, has it?

5 A It has never done that.

6 Q When you said someone asked you to come here from  
7 the Toledo Edison Company to testify today, will you  
8 tell me who asked you?

9 A Mr. Lowell Roe.

10 Q Have you talked with anyone from the Toledo  
11 Edison Company or their attorneys regarding your testimony  
12 today?

13 A Yes, in regards to the nature of why they wanted  
14 me here, and the sponsorship of the statement, and what was  
15 intended to introduce.

16 Q Now, in the first sentence of your testimony  
17 you used the word "our group." Am I correct in assuming  
18 that is yourself, Russell and Fowler?

19 A It's at least us. It is at least those three  
20 people.

21 Q Who else could it be?

22 A Mr. Kalur, you know when you have a professional  
23 organization everybody contributes to the development of  
24 overall policy and comments.

25 Q Who, everybody in the United States? Who?

WSps11-2-4 1 Tell me who in your department?

2 A Do you want a list of my entire staff?

3 Q Well, if they participated I would like you to  
4 tell me that.

5 If someone else besides you, Russell and Fowler  
6 participate in the formulation of this report?

7 A I don't know where you are going, but let's say  
8 no.

9 Q All right. Tell me when this study was completed,  
10 if you could.

11 A You mean the study that relates to this?

12 Q The study that you made in order to formulate this  
13 report.

14 CHAIRMAN GARDINER: To the best of your knowledge,  
15 Dr. Martin.

16 A July 27, 1971, which was the day I caught the  
17 plane for Ohio to give the testimony.

18 Q Now, your testimony says that you began, or that  
19 in response to requirements placed upon Federal agencies that  
20 your group formed a preview of the potential environmental  
21 effects of the Davis-Besse nuclear power station in September,  
22 1970.

23 Are you telling me that study continued up until  
24 the time you gave your testimony?

25 A That's right, and it's continuous until today, and



1 it will continue until the plant goes in operation, if it  
2 does.

3 Q Can you tell me when the report itself was  
4 finished that we are looking at today?

5 A I just told you, July 27, 1971.

6 Q Was it typed up just before you left?

7 A That's right.

8 Q Did you dictate that report?

9 A I wrote it with my hands.

10 Q Where did you get the information to write the  
11 report?

12 A From the preliminary safety analysis report,  
13 the environmental report, the previous evaluation that we  
14 had done while in the Public Health Service, prior to the  
15 construction permit hearing on the facility from our  
16 updated files of all amendments, and, coming on the license  
17 application. We took all of that into account.

18 Q Did you have certain notes from the other people  
19 in your department that were helping you that correlated  
20 into this report?

21 A I am sure there are notes in the filings, yes.

22 Q So after reading all these documents and making  
23 these studies, then you sat down and wrote a report, is  
24 that right?

25 A Right. We went through about three or four

WSps11-2-6 1

drafts and hacked her out and put her together.

2 Q When you completed this report you looked at  
3 the applicant's PASR and his original environmental report, is  
4 correct?

5 A That's right.

6 Q What about his supplemental environmental report?

7 A We have looked at that since it came out and  
8 I don't recall the date that it did come out but I looked  
9 at it.

10 Q Your report here would not reflect that review,  
11 would it?

12 A No, not totally. Only on the two points.

13 Q Did you personally appear on the site?  
14 It says there was a site visit. Did you go there yourself?

15 A I did not, Mr. Russell did.

16 Q Have you ever seen the site of this plant?

17 A I have not.

18 Q As part of your functions with the EPA in  
19 reviewing these plants, do you ever go personally and look  
20 at the sites?

21 A Yes, I do.

22 Q Have you ever had occasion to see a nuclear  
23 power plant built into a national wildlife refuge?

24 A How close?

25 Q Adjacent to. I mean touching it, bordering,

ps11-2-7

1 physically bordering it.

2 A No, but I have seen both and I can imagine how  
3 they would look next to each other.

4 Q Now, you said that you had consultations with  
5 the Ohio Department of Health?

6 A Yes.

7 Q Did you talk to anybody with the --

8 CHAIRMAN GARTINKER: Dr. Martin, I want to  
9 admonish you, it's a yes or no answer. I wouldn't volunteer  
10 anything. I would just answer yes or no to the questions.  
11 Go ahead, Mr. Kalur.

12 BY MR. KALUR:

13 Q It says here you had consultations with the Ohio  
14 Department of Health, is that you personally?

15 A Yes.

16 Q Can you tell me who you talked to?

17 A Mr. James Grant.

18 Q Do you know what his position is?

19 A I don't know his exact position, but he is  
20 State Radiological Health Officer of the State of Ohio.

21 Q Did he express any views to you on this plant?

22 A Yes, informally.

23 I also consulted with Dr. Gardner, who is  
24 Chairman of the Water Pollution Control Board.

25 Q Can you tell me approximately when these conversa-

1 tions took place?

2 A The day of the hearing, which was July 23, 1971.

3 Q Any other times?

4 A Not personally, just over the phone.

5 Q When you arrived at the hearing, you had this  
6 report in your hand, didn't you, the original of it?

7 A That's right.

8 Q So when you stated in this report that you  
9 consulted with the Ohio Department of Health people that  
10 wasn't true, was it; you personally?

11 A That's not. I did not stand face to face, but  
12 I talked to Mr. Wyatt over the telephone. I sure did.

13 Q And that was prior to the September hearing, is  
14 that correct? The July '71 hearing?

15 A Yes.

16 Q But you didn't see Mr. Gardner until the date  
17 of the hearing, right?

18 A No, I didn't.

19 Q Do you remember whether the Ohio Department of  
20 Health made any particular suggestions with respect to the  
21 siting or the operation of the Davis-Besse plants?

22 A None that I can authenticate with --

23 Q I am not interested in authentication. Do you  
24 remember any?

25 A Yes.

WSP11-2-91

1 Q Can you tell me what any of those were and  
2 describe them to a particular individual?

3 A Yes. Mr. Wyant and I discussed the adequacy  
4 of the surveillance program that was being discussed between  
5 his office and the Toledo Edison Company for the particular  
6 facility. We indicated --

7 Q Did Mr. Wyant advise you why he thought a  
8 surveillance program was necessary?

9 A Yes.

10 Q Why was that?

11 A To document for the public record the radiation  
12 levels in the general environment around that facility from  
13 which not only his agency but agencies like ours could  
14 determine whether the effects of that plant were either  
15 acceptable or unacceptable.

16

17

18

19

20

21

22

23

24

25

HDvol2-1-1

Q And this surveillance program, was that to be begun after the plant went into operation?

A No, they were discussing a pre-operational program of -- I have forgotten how long, but I think it was two years -- on the order of two years prior to the operation of the plant, which would then continue with whatever modifications appeared necessary after the operation of the plant.

Q Did Mr. WOOD indicate to you who was going to carry out this surveillance program?

A He did not indicate the specific details. The State of Ohio wanted very much to continue detailed measurements themselves. Part of the discussions were to ask us some of the direct assistance we could give them relative to setting up a radiological laboratory and of course to discuss some of the various fractions of the surveillance program that they might conduct versus -- or in addition to whatever the applicants themselves would conduct.

The whole thrust of the discussion on this program was to be sure that enough information was generated on the radiological effects of the plant.

Q Tell me what type of information you -- I take it you were concerned with this surveillance program also, or was that just a State of Ohio concern?

A No, it is a concern of ours.

Q Tell me what particular interest you had in the

HDvol2-1-2 : surveillance program. What did you want to find out?

1           A       The main thing that we want to find out in a  
2 surveillance program is the ability to determine the radiation  
3 dose to the population, both to individuals and to the  
4 general population.  
5

6                    To do this, we use a mixture, usually, of environ-  
7 mental measurements and discharge measurements.

8           Q       Are you concerned at all with dose rates to  
9 migratory birds, water fowl, fish and other animal life?

10          A       From the Davis-Besse facility or in general?

11          Q       Let's restrict it to the Davis-Besse facility.

12          A       Whatever you want.

13          Q       I want an answer.

14          A       I am not concerned with the dose to migratory fowl  
15 around the Davis-Besse facility because the doses that they  
16 will get, it appears to me, will be so much smaller than  
17 controlled doses to human beings which we have established  
18 as a matter of scientific record for our own information that  
19 as long as the ecology exists or as long the type of ecology  
20 that is in existence around this type of facility -- and a  
21 human being is part of that ecology. A human being is the  
22 most sensitive receptor in that ecological chain.

23                    Therefore, the effects on birds will always be  
24 less than the effects on humans and as long as those effects  
25 are controlled within guides there is no reason to worry about

HDV012-1-3

1 the birds.

2 Q So the only thing you personally and the Department  
3 are interested in is the effect of the radiation dose on  
4 man, is that correct?

5 A That is not true.

6 CHAIRMAN GARFINKEL: That is not what he testified  
7 to, Mr. Kalur.

8 MR. KALUR: He just indicated that.

9 CHAIRMAN GARFINKEL: He just said that he is more  
10 concerned with the effect on man because they are more  
11 sensitive. He didn't state that he has no concerns about  
12 birds.

13 BY MR. KALUR:

14 Q In your other work on plants prior to this was  
15 it your feeling that you had not acquired enough information  
16 so that a surveillance program was not necessary on the  
17 Davis-Besse plant?

18 A Could you repeat that? I am sorry I missed it.

19 MR. KALUR: Will you read that back?

20 (The preceding question was read by the reporter.)

21 THE WITNESS: I am sorry, I don't understand it.

22 CHAIRMAN GARFINKEL: Will you please rephrase  
23 the question, Mr. Kalur?

24 BY MR. KALUR:

25 Q Am I correct in saying that you felt a surveillance



HDvol2-1-4 1 program was necessary for the Davis-Besse Plant?

2 A That is true.

3 Q Because your prior experience was insufficient to  
4 determine the consequences to the local population of Davis-  
5 Besse's operation?

6 A Not for that reason.

7 Q Tell me why you wanted a surveillance program on  
8 Davis-Besse?

9 A Because we believe it is a matter of public  
10 responsibility for a health agency or the Environmental  
11 Protection Agency to know what doses are being delivered to  
12 the individuals around that facility and the population, in-  
13 sofar as they can determine.

14 It is not that we want a surveillance program  
15 because we believe the plant is going to do ultimate damage.  
16 It is an expression not of a concern for damage and risk to  
17 the public inasmuch as it is an exercise of routine public  
18 responsibility to provide that information.

19 That is why we believe --

20 Q Do you do this with every plant?

21 Do you have a surveillance program with every  
22 plant?

23 A We recommend and have almost come to the point of  
24 insisting that surveillance programs exist at all nuclear  
25 power facilities. We do this through our work with State

HDvol12-1-3

1 Health Agencies and as far as I know there is not a State  
2 Health Agency that has not conducted such a program.

3 Q Do you know what the surveillance program for  
4 Davis-Besse is, what constitutes that program?

5 A Not in full detail, no.

6 Q Do you know the rough outlines of it?

7 A Yes.

8 Q Will you tell us what they are?

9 A Basically there is extensive something of the  
10 liquid discharges. There is something of drinking water  
11 intakes that are near these discharges. There is some  
12 sampling -- and I don't know exactly how much -- of fish, so-  
13 called wildlife sampling in the vicinity of the facility.

14 There is, I believe, particularly air monitoring  
15 in the vicinity of the facility. Other details I could not  
16 quote to you but, as I say, in our daily programs of working  
17 with the State of Ohio and the developing of surveillance-  
18 type information we will comment, perhaps in the final NEPA  
19 statement submitted by the Atomic Energy Commission, that the  
20 outlines of the surveillance program are satisfactory to us.

21 Q Who is going to conduct the surveillance program?

22 A I don't know specifically, but I do know that the  
23 State of Ohio will do some something of the facility and the  
24 applicant will do, either through itself or its contractors --  
25 has made a commitment, I believe, to extensive environmental

HDvol2-1-6

1 surveillance.

2 Q Will the applicant turn over reports to your  
3 Department?

4 A I would hate to see them refuse to do so. I am  
5 being bad there. Let me say something now.

6 The Atomic Energy Commission has reporting re-  
7 quirements that all applicants must meet and we have working  
8 arrangements with the Atomic Energy Commission staff whereby  
9 all such reports are given to us.

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

HGps12-2-4

1 Q You don't carry on your own surveillance program,  
2 though, on these plants, is that correct?

3 A We do not carry on daily detailed surveillance.  
4 We rely on --

5 Q What plant have you carried on any surveillance?

6 MR. CHARNOFF: Mr. Chairman, I think the witness  
7 is entitled to answer a question --

8 CHAIRMAN GARDINER: Mr. Charnoff, I don't want  
9 you to come into this. Mr. Silberg was on direct on this.

10 MR. CHARNOFF: That was on direct.

11 CHAIRMAN GARDINER: No, this is the same witness,  
12 Mr. Silberg's witness.

13 THE WITNESS: Mr. Kalur, there are lots of fine  
14 points in the daily work we do. We don't believe that it is  
15 our responsibility to run a detective type program around  
16 every operating plant. We believe it is our responsibility  
17 to get information --

18 BY MR. KALUR:

19 Q Mr. Martin, we will finish a lot sooner if you will  
20 answer my questions. I am asking you if your department  
21 carries on any surveillance on the plants in operation.

22 A We carry on the most detailed studies of nuclear  
23 power plants in existence in the country today. We studied  
24 the Dresden nuclear power station --

25 MR. KALUR: Mr. Chairman, can I have a direction

HD0512-2-2

1 to answer my question?

2 CHAIRMAN GARFINKEL: Dr. Martin, let me ask  
3 a few questions here. Does the EPA directly, with their  
4 own personnel, actually conduct surveillances with their  
5 own personnel and not reviewing studies? I mean actually--

6 THE WITNESS: Yes.

7 CHAIRMAN GARFINKEL: Have you ever been involved?

8 THE WITNESS: Yes, I have designed four such  
9 studies, or five.

10 CHAIRMAN GARFINKEL: And you were there personally  
11 making these surveillances?

12 THE WITNESS: I did not make the measurements,  
13 but I certainly instituted the programs and our staff carried  
14 them out.

15 CHAIRMAN GARFINKEL: And they made the measurements?

16 THE WITNESS: Yes.

17 CHAIRMAN GARFINKEL: All right, I think that  
18 answers some of it. Except maybe you want to indicate --

19 MR. KALUR: That answers my question.

20 CHAIRMAN GARFINKEL: Unless you want him to  
21 indicate which plants.

22 MR. KALUR: No, the question is answered.

23 CHAIRMAN GARFINKEL: All right.

24 BY MR. KALUR:

25 Q Do you have any idea who is funding the surveillance

psl2-2-3

1 study of the Davis-Besse plant?

2 A No, I don't know that. I am not sure that it is  
3 settled.

4 Q Do you know if the surveillance program has  
5 already begun in actual physical activity outside of  
6 planning?

7 A Not for a certain. I believe that it has but  
8 I don't know for sure.

9 Q In the second paragraph of your report you state  
10 "evaluations were made of the site suitability, radioactive  
11 waste disposal, potential radiation doses to the public,  
12 environmental surveillance and emergency planning. It is  
13 our understanding that the purpose of this hearing is to  
14 explore water quality aspects only. Therefore, even though  
15 we have reviewed other aspects of the facility we will limit  
16 our remarks to liquid radioactive wastes only."

17 Can you tell me if any of those other evaluations  
18 that you didn't present were committed to writing?

19 A Yes, they were committed to writing in our  
20 Public Health evaluation done while in the Public Health  
21 Service in September of 1970.

22 Q Did you bring any of those with you, any of the  
23 other evaluations?

24 A I did not because, as I said, I understood my  
25 purpose was to authenticate what I had said at the Ohio

HDps12-2-41

Water Pollution Control Board.

2 Q Do you know if these documents are still available?

3 A They are.

4 Q On Page 2 of your report you note that the second  
5 potentially -- I am quoting -- "The second potentially  
6 significant exposure pathway that was recommended for monitoring  
7 was tritium in drinking water from Lake Erie."

8 Did you, yourself, look into the possible accident  
9 dumping that may occur from the operation of the Davis-Besse  
10 plant?

11 A Yes, they will discharge tritium.

12 Q Do you know the approximate amount?

13 A I didn't guess any of us will know until  
14 they begin to operate but the estimates usually of  
15 pressurized water reactor designs are on the order of two  
16 to three thousand curies per year.

17 Q Is that in the liquid effluent discharge?  
18 Is that what you are restricting your remarks to? I want  
19 to be sure I am correct.

20 A The liquid effluent discharge, yes.

21 Q Do you know what type of reactor Davis-Besse  
22 is scheduled to be?

23 A A pressurized water reactor.

24 Q Are there other types of reactors that put out  
25 significantly less tritium?

HPos12-2-5

1 MR. SILBERG: Mr. Chairman, I wonder if we are  
2 not going a little far afield.

3 CHAIRMAN GARFINKEL: I am having a difficulty  
4 of relevancy on that question, Mr. Kauer, with other plants.  
5 The question comes out with respect to this plant, Davis-  
6 Besse, and he has given you a basic figure of what a pressurized  
7 vessel would give.

8 MR. KAUER: I am not talking about other plants  
9 in operation, Mr. Chairman. I am talking about a type of  
10 design with respect to the alternative of abandonment of the  
11 project.

12 CHAIRMAN GARFINKEL: You may continue.

13 THE WITNESS: Boiling water reactors discharge  
14 less.

15 BY MR. KAUER:

16 Q Can you give me an average figure?

17 A Gas reactors discharge less.

18 Q Can you give me an average curie discharge rate  
19 for boiling water reactors in a yearly period?

20 A I would say it is probably about a factor of five  
21 lower.

22 Q So if it were 5000 curies for pressurized it would  
23 be 1000 for boiling water, is that right?

24 A Right.

25 CHAIRMAN GARFINKEL: I want to ask you a question,



HDps12-2-81

1 Mr. Kalur, so that this Board is fully apprised of where  
2 you are going. Are you challenging the testimony here on  
3 the case of the licensee as to whether they are complying  
4 with respect to this plant with Part 16 of the Regulations?

5 MR. KALUR: No, we are not.

6 CHAIRMAN GARFINKEL: You are not challenging --  
7 you are agreeing that the figures that have been presented  
8 by Dr. Martin are in compliance with the Regulations, are  
9 you not? Do you agree with that?

10 MR. KALUR: I am making no assertion but they  
11 are not.

12 CHAIRMAN GARFINKEL: Then we can assume that they  
13 are if you are not making the assertion that they are not?

14 MR. KALUR: That is your pleasure, sir.

15 CHAIRMAN GARFINKEL: All right, that is the  
16 assumption we are making.

17 BY MR. KAISER.

18 Q Mr. Martin, are you familiar with a report  
19 done by the Water Quality Engineer Section of the Radio-  
20 chemistry Unit of the Federal Water Quality Administration  
21 on Radioactivity levels in Lake Erie in 1969?

22 A No.

23 MR. STUBBERG: Will you identify that report  
24 in more detail? Is there a date on it?

25 MR. KALUR: I am going to hand it to him.

H20s12-2-7

1 BY MR. KALUR.

2 Q I am handing you a report and I ask you to take  
3 a look at it and tell me if you have ever seen that report?

4 A No, I have never seen it before.

5 Q Have you done any work with the department that  
6 is listed on the front of that document? You have not done  
7 any work with that group?

8 A I work with them now but I don't know whether we  
9 work with that specific office or not.

10 Q Are you in the radiochemistry unit of the  
11 Federal Water Quality Administration, which is now in  
12 EPA?

13 A Is that Dr. Samorene's work?

14 CHAIRMAN GARPINKEL: Mr. Kalur, since the witness  
15 is not familiar with that document I think we should move  
16 along. He is not familiar with the document.

17 MR. KALUR: I think I have a right to have it  
18 marked for identification purposes.

19 CHAIRMAN GARPINKEL: Surely, fine.

20 MR. KALUR: And to show it to counsel, I suppose.

21 CHAIRMAN GARPINKEL: Correct.

22 (Intervenor's Exhibit No. 1  
23 marked for identification.)

24 MR. KARTALIA: I would like to ask on the record  
25 whether this is published, to your knowledge, in any  
journal or government publication?

psi2-2-8

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

MR. KAUR: I don't know.

(Discussion off the record.)

WS13-1-1vo

1 BY MR. KALUR:

2 Q Mr. Martin, as a part of your studies for making  
3 up this report did you have an opportunity to inquire into  
4 any of the flow characteristics of the western Lake Erie  
5 basin?

6 A I don't know what they are personally.

7 Q Are you aware of any unique characteristic of the  
8 flow pattern in the western Lake Erie basin? Has that been  
9 brought to your attention?

10 A I have to say I don't know.

11 Q Let me ask you this: Has your Department con-  
12 ducted any tests of the tritium levels in the Western Lake  
13 Erie Basin since this report was published?

14 CHAIRMAN GARPINKEL: What is the date that you  
15 are talking about? When you are referring to this report:  
16 you are referring to ---

17 MR. KALUR: This one was, I assume, published the  
18 day it was presented in 1971.

19 CHAIRMAN GARPINKEL: Referring?

20 MR. KALUR: The testimony.

21 CHAIRMAN GARPINKEL: Referring to Dr. Martin's  
22 study?

23 THE WITNESS: I thought he was talking about the  
24 other paper.

25 CHAIRMAN GARPINKEL: That is what I was concerned

WSvol13-1-2

1

about.

2

Which paper are you talking about?

3

THE WITNESS: You better ask me again.

4

MR. KALUR: Would you repeat the question.

5

(Question read.)

6

A I don't know of any, but we do a lot.

7

Q Do you know of any other sources on the Western Lake Erie Basin of liquid radiation discharge?

8

A Enrico Fermi plant is on Lake Erie.

9

Q What about Plum Creek NASA Reactor, do you know if that discharges any liquid radiation waste into the lake?

10

A I don't know.

11

Q Do you know of any other planned facilities by any utilities on the Western Basin of Lake Erie?

12

A Detroit Edison has proposed a couple of plants at the Enrico Fermi site.

13

Q When you compiled your report would it be a fair statement to say that you were concerned with the presently existing radiation levels on the Western Basin of Lake Erie?

14

A We were interested in them. I wouldn't say we were concerned about them.

15

Q Did you make any studies while preparing your report and testimony here today with respect to levels of radioactivity in Western Lake Erie?

16

17

NSvol13-1-3

1 A We have a National Tritium Monitoring Network.  
2 Whether it gets samples from Western Lake Erie, I don't know.  
3 I would be happy to provide information that we have on  
4 that, but I don't know the answer.

5 Q Have you seen any figures on tritium levels in  
6 Western Lake Erie of recent vintage?

7 A No.

8 Q Do you know what the Public Health Service  
9 recommends as a pico curie per liter level for tritium in  
10 waters of this country?

11 A I think it's 100 pico curies per liter,  
12 100 or 300.

13 Q Would a thousand be correct?

14 A No, it would not. I am remembering the wrong  
15 reference.

16 Q Would a thousand be correct?

17 CHAIRMAN GARDINER: Would you let the record show  
18 the witness nodded yes?

19 THE WITNESS: Excuse me.

20 Q That is a Public Health Service figure, is it not,  
21 the 1,000 pico curies per liter of tritium?

22 A I was just sitting here thinking. I am not sure  
23 that it specifically singles out this in the Public Health  
24 Service drinking water standards. It has basic recommendations  
25 that you could I think arrive at 1,000 pico curies per liter.

3v013-1-4 1 Q There is something magic about that figure that  
2 you know about from your experience in this area? Is it above  
3 that figure or not harmful below that, or can you answer that  
4 for me?

5 A The number wasn't really set on the basis of  
6 being harmful, I think.

7 Q Would you say it is beneficial to human health to  
8 have a thousand pico curies per liter?

9 A I wouldn't say that it was; I wouldn't say that  
10 it was not.

11 Q Would it be a fair statement to say that you are  
12 not familiar with the basis for the 1,000 pico curies per  
13 liter figure as set by the Public Health Service?

14 A Not in the detail that I think that you want to  
15 get into it.

16 MR. SILBERS: Mr. Chairman, I just know that that  
17 point there is no affirmative testimony that that is the  
18 Public Health Service figure.

19 MR. KALUR: I think there is testimony to that  
20 effect. I think the witness' memory was refreshed and he  
21 indicated it was a figure.

22 CHAIRMAN CARTINKEL: I will let the testimony in  
23 at this stage.

24 Are we nearly finished with this part of the  
25 cross-examination?

WSvol3-1-5 1 MR. KALUR: Nearly.

2 CHAIRMAN GARFINKEL: O. K. Let me ask you this:  
3 From your own knowledge do you know -- and I am not asking for  
4 a guess -- as to whether there is a level that the Public  
5 Health Service or the Environmental Protection Agency con-  
6 sidered harmful to the public.

7 MR. SILBERT: Level of --

8 CHAIRMAN GARFINKEL: For trichin.

9 THE WITNESS: Neither agency has ever stated a  
10 level that was harmful.

11 CHAIRMAN GARFINKEL: Has never stated a level?

12 THE WITNESS: That was harmful to the public.

13 CHAIRMAN GARFINKEL: They have never stated that?

14 THE WITNESS: No. They have stated standards and  
15 guidelines that should not be exceeded, but never the state-  
16 ment that they are harmful to.

17 CHAIRMAN GARFINKEL: Let me follow with the  
18 next question. They set standards and guidelines which should  
19 not be exceeded. Why would they say should not be exceeded if  
20 it wasn't going to be harmful?

21 Then my next question would be, the specific  
22 figures, and you can't answer the one for the Western Lake  
23 Erie anyway.

24 THE WITNESS: I don't know what it is.

25 CHAIRMAN GARFINKEL: O. K. But I have raised this



WSvol3-1-6

1 one question to you because it is a concern of mine as a  
2 lawyer. It may not be a concern to my other members of the  
3 panel, but it is a concern of mine as a lawyer, this type of  
4 question.

5 THE WITNESS: I think, Mr. Chairman, the impasse  
6 we always get to, and that is the prudence of radiation  
7 control versus the degree of harm, and when you say "harmful,"  
8 it means one thing to me and it means something else to  
9 someone else.

10 CHAIRMAN GARFINKEL: What does it mean to you?  
11 Let's define it that way.

12 THE WITNESS: It means an overt threat to health  
13 or life, when you say harmful to me, and 1,000 pico curies  
14 per liter of uranium in drinking water does not represent an  
15 overt hazard to health or life, but it is a standard that is  
16 arrived at on a prudent basis in terms of control of levels  
17 in drinking water.

18 I don't want to say that that is exactly the  
19 number, but if you will give me five minutes and access to  
20 the drinking water standards I will dig it out. I don't  
21 like to remember numbers like that.

22 CHAIRMAN GARFINKEL: I don't blame you. I don't  
23 want you to remember numbers. We want facts here, and the  
24 concern I have -- and this is only my concern. I am not  
25 saying this is the Board's concern -- when you say this is a

NSvol13-1-7 1 prudent figure, there has to be a reason for it.

2 THE WITNESS: Yes.

3 CHAIRMAN GARDINER: And I don't think that reason  
4 has come across in this hearing room satisfactory to me.

5 THE WITNESS: And I wouldn't like to think that I  
6 am the individual who has got to say what that is.

7 CHAIRMAN GARDINER: I agree. I am not holding  
8 you to that. I am just raising it as an open discussion.

9 Mr. Kalur, you may continue.

10 BY MR. KALUR:

11 Q Mr. Martin, when you conducted for your  
12 Department the researches on these various plants to compile  
13 your NEPA report, is it a regular practice of your agency  
14 to examine the discharge body for its current radioactive  
15 level?

16 A Yes, it is. As a matter of fact ---

17 Q But your group didn't do it in this case, is that  
18 correct?

19 A I myself did not do it to the extent that I know  
20 what the levels are, and I know what the increments are going  
21 to be, that I can recall.

22 Q To your personal knowledge, was such a study  
23 conducted with respect to the compiling of your testimony  
24 here?

25 A The examination was made in terms of our general

WSvol13-1-8

1 conclusion that we saw no -- that we had no major concern with  
2 the liquid radioactive waste discharges from this facility.

3 Q But your answer to no is no, is that correct,  
4 your group did not make a physical study of the radiation  
5 levels of the Western Basin of Lake Erie in compiling this  
6 report; yes or no?

7 A I can't say that we did not.

8 CHAIRMAN CAMPBELL: He doesn't know the answer,  
9 Mr. Kalur. I think that is what you are getting at.

10 Q You don't know if one was compiled or not, right?

11 A In the detail that you are talking about for the  
12 purpose of making the conclusion of the review, it was not.

13 Q O. K.

14 A But the agency compiles information on tritium  
15 levels of every body of water.

16 Q You would consider that was important, wouldn't  
17 you, in considering a plant in a particular level, you want  
18 to know what the level of radiation was in the receiving  
19 water body?

20 A That's usually not a major concern of ours. The  
21 major concern is what increment of change the particular  
22 facility is going to bring about, because the tritium levels  
23 in waters are not from power plants, they are from nuclear  
24 weapons testing.

25 Q If I told you that the report I have referred to

W8vol13-1-9'

1 as intervenor's Exhibit and been marked Intervenor's Exhibit 1  
2 showed an average level in Western Lake Erie of 931 pico  
3 curies per liter in 1959, would that have influence your  
4 research on this plant in any way?

5 A I don't think so.

6 Q So without any detailed specific analysis of  
7 what radiation was and is in Lake Erie you are able to reach  
8 an opinion that the Davis-Besse plant would have a minimal  
9 effect on that water body, is that correct?

10 A That's right, on the basis of the knowledge of the  
11 discharge from types of plants like this.

12 Q All you want to know about is what is going on,  
13 you don't care what is there ahead of time, is that correct?

14 A I don't think that is 100 percent correct, but  
15 for the purposes of this examination of this facility on  
16 this body of water the levels that we expect to be added to  
17 the lake are not enough concern to us to rise in strong  
18 opposition to the facility.

19 Now, we could hash around whether or not the  
20 country should have done what it did in nuclear weapons  
21 testing and added tritium to the environment that it has.  
22 But it somehow seems a little bit unfair.

23 It would be more in the interest of concerning  
24 public water supplies or types of public water supplies if  
25 that kind of concern gets to us, which we have not chosen to do.

WSvol3-1-10

Q You were concerned about nearby intake areas on the Lake where drinking water is taken, weren't you, when you made this report?

A In a surveillance context, but when we initially looked at them they were not pegged as surveillance points and we felt they should be as a precautionary measure, not because we were worried about the exposures to them --

Q On Page 2 of your report I notice that you talk about the valleys in the Lake that adjoin the Locus Point location of the plant.

You state that it was recommended that this pathway should receive pre-operational study and should be monitored routinely after the facility begins operation.

Are you aware of any studies that have been made by applicant, the State or yourself with regard to these valleys?

A I think we state in the following paragraph that the applicant has responded to these recommendations. They will cooperate closely with the Ohio Department of Health and that was a quote from the U.S. IBC's --

Q You don't know if this study on the valleys that you have recommended has actually been implemented, do you, of your own personal knowledge?

A I don't know for a fact that it has, but I believe that it has.

WSvol3-1-11

1 Q Now, let me --

2 A Where again that was --

3 Q I haven't asked a question. Let me ask a  
4 question, please.5 In your report you were concerned with walleyes  
6 and you referred to them as a pathway. Can you tell us what  
7 you mean by the word "pathway"? What type of pathway is  
8 that?  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

WFOsl3-3-1

1 A People go out in a boat and they catch a fish  
2 and they eat it. They are exposed by whatever radioactivity  
3 is in that fish.

4 If the fish is living in a water that has radio-  
5 activity in it it becomes an exposure pathway.

6 Q All right.

7 A That is the context.

8 Q What fish that you catch, does it generally have  
9 a higher radiation level than the water it is swimming in?

10 A It could. It is quite common that fish concentrate  
11 radioactivity, yes.

12 Q Is the walleye any worse than other species of fish?

13 A It beats me. I don't know.

14 Q Do you have any training in biology and radiation  
15 effects?

16 A You asked me do I have any? Yes.

17 Q But you don't have sufficient to answer my last  
18 question, is that correct?

19 A You didn't ask me if I was a world renown  
20 biologist.

21 I know enough to know the type of exposure pathway  
22 that a fish represents. I know enough to go to appropriate  
23 technical reports and find the concentration factors for the  
24 nuclides and I can calculate the dose to human beings that  
25 occurs.

WSP10-3-2

1 Q It is true, isn't it, a fish swimming in radio-  
2 active effluent of a plant can concentrate that radioactive  
3 effluent several thousand times the level of what is in the  
4 water? Isn't that true?

5 A That is true, depending on the radio nuclei.

6 Q Did you take any fish sampling while conducting  
7 your study to learn their present radiation level before  
8 Davis-Besse began?

9 A I did not.

10 Q Did you conduct any -- I notice in Paragraph 1  
11 on Page 2, numbered paragraph, sentence 3 there that it  
12 says it is also recommended that routine surveillance should  
13 include monitoring of drinking water from Lake Erie, fish,  
14 milk, external gamma radiation and commercial food products.

15 Did you obtain any types of food grown in the  
16 local area to determine their present radiation level?

17 A No.

18 The recommendation is all those recommendations  
19 pertaining to the development of a program to provide this  
20 basic information. We could not do the information.

21 Q You told me much earlier in the cross-examination  
22 that you were chiefly concerned with man and his whole body  
23 dose of radiation, I assume, as compared to migratory birds  
24 or wildlife, and you gave me your reasons for that.

25 A No, I didn't say that.



1 I said that in an eco system typical of power  
2 plants, where man is part of that eco system, he is the  
3 most sensitive receptor in it and as long as you control  
4 his exposure the risk to fowl and fish is controlled.  
5 I didn't say if you come along and gave five rads or 5000  
6 rads to a bird and it kills it I think that is wrong, but  
7 that doesn't happen around a nuclear power plant.

8 Q Have you made any studies of wildlife areas  
9 to determine the effect on the migratory birds and water  
10 fowl from radiation exposure of a nuclear plant?

11 A We have not made studies of wildlife areas.  
12 We have made studies of wildlife and fish and some of our  
13 very detailed studies of the environmental impact of nuclear  
14 power plants such as the Dresden station, the Connecticut  
15 Yankee station, the Yankee Rowe Plant, the H. B. Robinson  
16 Plant, the Oyster Creek Facility, the Nuclear Field Services  
17 Reprocessing Facility, all of which are similar or have  
18 environmental factors that are in common and handle radio-  
19 nuclides in common. We have never found an overt dose  
20 or risk to fowl or fish or man in those environments from  
21 the routine operation of those facilities.

22 But that still does not preclude us from making  
23 recommendations like we have made, that surveillance programs  
24 should emphasize critical exposure pathways and should deduct  
25 levels in them for public agencies and the public itself to

s13-3-4

1 make decisions with, and that is what those three recommendations  
2 are.

3 They do not in any way suggest that I am concerned  
4 or worried about public exposure through drinking water or  
5 that fowl or that birds are going to change their migratory  
6 habits or they are going to die from radioactivity. They do  
7 not suggest that at all.

8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

HDvol14-1

Q Can you tell me the name of any of those reports?

A I just told them to you.

Q You just told me the plants. I want to know the names of any of the reports your Department has made on the effects of radiation on water fowl.

MR. CHARNOFF: Excuse me, Mr. Chairman, in the record of the construction permit hearing in this case, Mr. Kalur was there for a portion of the time. Documents such as those mentioned by Dr. Martin --

MR. KALUR: If Mr. Charnoff wants to be sworn I am perfectly willing to have him sworn.

CHAIRMAN CARTWRIGHT: Let's clear this point because we are not familiar with what happened under the construction permit.

MR. CHARNOFF: Those documents were in the record in that case and were referenced and used by witnesses in that case.

Mr. Kalur and the Coalition was a party in that case, particularly their studies of Dresden and Yankee Rowe.

MR. KALUR: Mr. Chairman, may I have an answer to my question?

CHAIRMAN CARTWRIGHT: Rephrase the question, please, instead of going back.

BY MR. KALUR:

Q Would you tell me the name of any of the reports

HDV014-2

1 that your Department has made concerning radioactivity effect  
2 on water fowl from nuclear plant operations?

3 CHAIRMAN GARDINER: If you know, Dr. Martin,  
4 Only if you know the names.

5 THE WITNESS: We have not made studies of the  
6 effect on them. We have made studies of the levels in them,  
7 from which anyone with access to the scientific literature  
8 can conclude that there are no effects on them.

9 BY MR. KAUFER:

10 Q Have you participated in these reports?

11 A Not in the actual writing of them but as I said  
12 before, earlier, in the design of the studies to gain the  
13 information.

14 CHAIRMAN GARDINER: Are you responsible -- do  
15 you have overall responsibility for those reports in your  
16 capacity as acting supervisor, or director, rather?

17 THE WITNESS: Yes, I would say so.

18 CHAIRMAN GARDINER: All right, that is good  
19 enough.

20 BY MR. KAUFER:

21 Q Mr. Martin, on Page 2 of your report you spoke of  
22 a "total dose impact." Can you differentiate for me what  
23 the difference between total dose impact and whole body  
24 dose -- between those terms?

25 A I don't think I used the term "whole body dose."

HDvol4-3

1 Q I am asking you as an expert if you can help us  
2 with these terms.

3 CHAIRMAN GARFINKEL: I am raising -- let me set  
4 up another -- it is not a new ground rule, Mr. Kalur, but in  
5 order for this hearing -- especially for these hearings to  
6 be expedited, I would hope that your cross-examination is  
7 limited to the direct examination because that is the way --  
8 it has to be relevant to the direct examination.

9 That is Federal Court procedure. I just wanted to  
10 bring it up at this point. It is no challenge but I just  
11 want to bring that up because of the time factor.

12 MR. KALUR: I will make sure I observe that, if  
13 I can.

14 CHAIRMAN GARFINKEL: All right.

15 BY MR. KALUR:

16 Q Can you give us a distinction between these two  
17 terms?

18 A When we speak of total dose from the operation  
19 of, say, a nuclear power plant or another facility, what we  
20 are concerned with is the total number of people who get  
21 exposed and to what level so that we get a total dose on the  
22 population.

23 That is usually expressed as man rems. For  
24 example, if 1,000 people get one rem of dose each, that is  
25 1,000 man rems of dose.

HDvol14-4

1 Davis-Besse is in an area that is fairly well  
2 populated within 50 miles. When we asked for that particular  
3 piece of information we wanted to know how people within that  
4 50-mile radius -- what total dose they would get, even though  
5 any individual may get only a millirem or two.

6 It is the concept of the total effect of operating  
7 the plant on the population. It is separate and distinct  
8 from the effects on any given individual.

9 Q In order to determine the total dose impact it is  
10 essential for you to know what radioactive materials will be  
11 discharged from the proposed plant, is it not?

12 A That is right and what the --

13 Q In this particular case in formulating your report  
14 where did you get the figures as to the amount of radiation  
15 that would be released by the Davis-Besse plant?

16 A We got the figures from the safety analysis  
17 report. I think the same figures are in the Environmental  
18 Report.

19 In other words, it is applicant's data that is  
20 provided in the regulatory process which has been debated  
21 many times between the AEC and the various --

22 Q You don't have any of your own figures on these  
23 power plants, do you?

24 A I was going to add, then, that we basically confirm  
25 the estimates that they make on projected discharges with

HDvol14-5

1 assumed conditions with actual observations of operating power  
2 plants, some of which we have made ourselves.

3 For example, the Yankee Rowe plant, the Connecticut-  
4 Yankee plant are typical pressurized water reactors that we  
5 have confirmed.

6 There are extensive operating reports filed on  
7 all these facilities and all of them have discharge infor-  
8 mation and the conditions under which they were assured --

9 Q Does the propose --

10 A So we have gone to great lengths to verify or at  
11 least accept as reasonably accurate the projected discharges  
12 for the assumed conditions.

13 Q Does the proposed megawatt capacity of a nuclear  
14 plant influence the amount of radioactive discharge that it  
15 will give off?

16 A It is a factor.

17 Q Can you tell me if there are any other 870-megawatt  
18 plants currently in operation, to your knowledge?

19 A I don't know exactly the answer to that question.  
20 There are some fairly close to that size. The H. B. Robinson  
21 facility has been in operation about a year and it is about  
22 800 megawatts, I believe.

23 Q Did you have that information available to you  
24 at that time regarding its radioactive discharges during  
25 operation when you prepared this report?

HDvol4-6

1           1       In that specific facility, no, because it had  
2 not begun to operate.

3           Q       Outside of experimental and theoretical concepts  
4 of radioactive discharge you have no knowledge as to what a  
5 plant of this size actually delivers, at least at the time  
6 you wrote this report, isn't that true?

7           A       I don't know exactly what Davis-Besse will dis-  
8 charge but I think -- I am assured as a professional from  
9 the data that we have that the projections are reasonable.

10          Q       And on the last page of your report you stated  
11 that this plant can be operated with minimal public risk.  
12 Can you define your term "minimal" for me?

13           CHAIRMAN GARFINKEL: Wait a minute. Is that in  
14 evidence, that part?

15           Yes? O. K.

16           THE WITNESS: The way we use the term minimal,  
17 or used it in this case, is that in our judgment the facility  
18 as it is designed with the waste treatment capabilities that  
19 it has will operate within all known recommendations and  
20 standards and that it will not only be within those standards  
21 but that it will, if it uses this equipment, continue levels  
22 below those standards insofar as it is practicable and  
23 reasonable consistent with technology that is available for  
24 the industry to put in the facility.

25          Q       What standards are you talking about?



HDvol14-7

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

A. At the particular time that was written, the 10  
CFR 20 standards were the standards in the books. The facility  
will operate well within those exposures, we believe.

If you are ---

Q. Do you ---

MR. SILBERG: Mr. Chairman, will you let the  
witness answer the question?

MR. KALUR: He has answered it.

CHAIRMAN GARPENNET: He has answered it. Go ahead,  
Mr. Kalur.

1 BY MR. KALUR:

2 Q Do you consider the standards set forth in  
3 10 CFR 20 to be standards to guide your division when  
4 considering environmental harm?

5 A No, that is why I put the extra situation in  
6 that within the standards and consistent with the state  
7 of the art, and we can delete 10 CFR 20 until next Wednesday,  
8 but the facility can operate at very small fractions of  
9 10 CFR 20. So far that reason I put the extra provision  
10 that minimum means to us below the standards on the books  
11 and consistent with the state of the art of technology.

12 Q Did your report, when you were compiling it,  
13 consider the possible effects to the environment surrounding  
14 the plant if there were to be an accidental discharge  
15 of quantities of radioactive material?

16 A This report did not.

17 Q Did you consider it at all in your studies  
18 connected with this report?

19 A We did to a degree but the degree was limited to  
20 the fact that our review was being done at conception permit  
21 time.

22 As you know, there will be another impact state-  
23 ment followed on this facility at which point the whole  
24 question of discharges during accidental situations will  
25 be addressed and we will give a thorough review of it at that

1 Dps14-2-1 time. I would not draw any conclusion on that point except  
2 to say that we still have it under review.

3 Q When you talk about total dose, what period of  
4 time are you talking about to create a total dose measure?

5 A We wanted the dose expressed in terms of per  
6 year.

7 Q If it is more than one year that you are talking  
8 about, wouldn't the total dose rate -- isn't that cumulative?  
9 Doesn't it rise over the years?

10 A The dose commitment would go up, yes.

11 Q Have you asked for anything on more than a one-  
12 year basis from the Davis-Besse designers and planners?

13 A No, we didn't ask for that because we can  
14 project that pretty much ourselves. The critical part of  
15 doing this particular estimate is knowing the calculation  
16 distribution and the average dose rate that will be given  
17 to the various pathways. Once you have got that then you  
18 can project it or anybody can project it over the life time  
19 of the facility.

20 MR. RAJUR: Those are all the questions I have.

21 CHAIRMAN GARPINKEL: Mr. Silberg, counsel for the  
22 applicant has the right of rebuttal.

23 MR. SILBERG: I believe we should first see  
24 whether there are any questions from the Staff.

25 CHAIRMAN GARPINKEL: The Staff has already had

HDps14-2-3  
1 no cross-examination except for one question.

2 MR. SILBERG: We have no redirect.

3 CHAIRMAN GARFINKEL: Do you have further  
4 questions?

5 MR. KARTALIA: I do in one small area.

6 CHAIRMAN GARFINKEL: Go ahead.

7 MR. KAUFER: May I know the nature of this? There  
8 has been no redirect. I don't see an opportunity for  
9 recross.

10 CHAIRMAN GARFINKEL: I would let you have another  
11 opportunity to question or if he has a number of questions  
12 I will cut it off. You are right technically, but we might  
13 as well get this point --

14 MR. KAUFER: Since there is a public interest --

15 MR. KARTALIA: Well, since the Board is willing  
16 to go along with it I am not going to make any argument  
17 of it but I think I am in a special situation, representing  
18 the Staff.

19 CHAIRMAN GARFINKEL: I am not going to treat you  
20 as a special situation in this case.

21 MR. KARTALIA: Ad hoc, for this case only.

22 BY MR. KARTALIA:

23 Q Dr. Marxin, what does one have to do to determine  
24 how many curies per year a reactor will release?

25

HDps14-2-4 1

2 A You mean a proposed facility or one that is  
in operation?

3 Q What would one have to do with Davis-Besse?

4 A To estimate?

5 Q Yes.

6 A Well, it is a tricky business, no matter how  
7 you go at it. In essence you would project the number of --  
8 you take the power level and you say it will run for --  
9 the fuel elements in that reactor will run for, say, a  
10 three-year period during which time so many fissions will  
11 occur and you will get so many radionuclides of the  
12 various spectrum.

13 Then you say to yourself, what do we know about  
14 the performance of fuel in terms of how many pinholes or  
15 cuts or well failures might occur in that particular period  
16 of time. There had been several tests done by the fuel  
17 suppliers and the reactor suppliers to come up with the  
18 amount of leakage that would occur from fuel inter-coolant.  
19 Then you follow the coolant through the places where it comes  
20 in contact with systems that would transfer any radionuclides  
21 in the coolant into secondary systems or other systems that  
22 could then be vented to the environment.

23 From that whole process, as I say, which gets a  
24 little tricky, you come up with an estimate of the amount  
25 of radionuclides that would be available for release and the

sl4-2-3

1 quantities involved.

2 Q Could I interrupt to ask if that would include  
3 tritium, by this process?

4 A Yes. Of course one of the things we do, we  
5 go in and we make measurements. We have done a number of  
6 these ourselves. You make measurements in the coolants and  
7 in the waste creating systems and on the other side of  
8 the waste treatment systems for varying power levels,  
9 varying power densities, etc. So you project and you estimate  
10 and you go back and you check and you confirm.

11 Every estimate, of course, is subject to some  
12 variability in the assumptions that have been made.

13 But by and large we have evolved through a state of technology  
14 where the fuel is becoming fairly standard and the measure-  
15 ments have been made in fairly good detail and there have been  
16 enough -- there has been enough operating experience to  
17 where you can be reasonably certain that certain conditions  
18 are going to apply and you were going to have certain coolant  
19 levels and you were going to have certain discharge levels.

20 Those usually form the basis of any estimates  
21 you make or, in our case, any confirmations or judgements  
22 on the reasonableness of estimates of discharge.

23 Q Have you made, yourself, an independent estimate  
24 of the levels of radioactivity that are likely to be dis-  
25 charged from the proposed Davis-Besse plant in the way that

WDps14-2-6<sup>1</sup>

1 you have just described?

2 A We haven't --

3 CHAIRMAN GARFINKEL: We have to get moving on  
4 this. The answer has got to be yes or no. Did you make  
5 any studies, on the basis of these questions?

6 BY MR. KARTALEA:

7 Q Let me put it this way. Maybe I can get over  
8 this. Do you believe these figures, so to speak, to establish  
9 that they were within a zone of reasonableness or did you --

10 A Let me answer it this way. We have looked at  
11 the discharges and on the basis of these kinds of operations  
12 at all other types of facilities. We are reasonably sure  
13 that they are okay, that they are reasonable estimates.

14 Q And you have not made an independent estimate  
15 for Davis-Besse? I think that is what you are saying.

16 A No, not --

17 Q All right.

18 A But we have done enough work independently to  
19 know whether we are being snookered or not on the estimates.

20 CHAIRMAN GARFINKEL: I think that is the end of  
21 the examination.

22 MR. KARTALEA: That was the end of it.

23 CHAIRMAN GARFINKEL: That is the end of examination.

24 MR. KARTALEA: I have nothing further. I would  
25 like to say, though, that I intended no hostility here.

Hans14-2-7 1

2 We make estimates of this kind ourselves and I am merely  
3 trying to establish what was done by your agency in this  
4 particular case.

5 CHAIRMAN GARFINKEL: I was delighted to have  
6 that response of Dr. Martin. I think you are basically  
7 finished with the examination of Dr. Martin. You can go  
8 home.

9 MR. CHARNOFF: May he be excused?

10 CHAIRMAN GARFINKEL: Yes, he is free to be  
11 excused unless any parties want him around. Mr. Kalur?

12 MR. KALUR: I hope he hurries right back so  
13 the government does not waste any more money.

14 CHAIRMAN GARFINKEL: Thank you very much for  
15 your time.

16 THE WITNESS: It is the longest sponsoring  
17 testimony I ever got into.

18 (Witness excused.)

19 CHAIRMAN GARFINKEL: Will counsel come to the  
20 bench, please?

21 (Discussion off the record.)

22 CHAIRMAN GARFINKEL: We will have a 10-minute  
23 recess.

24 (Recess taken.)

25



WSvol5-1-1

1 CHAIRMAN GARPINKEL: May we be on the record, Mr.  
2 Reporter?

3 I understand that counsel for the applicant wants  
4 to introduce at this time a document dated July, 1972, that  
5 was offered by Charles E. Hurdendorf, and the title of this  
6 document is Anticipated Environmental Effects of Constructing  
7 Water Intake and Discharge Pipelines in Lake Erie at the  
8 Davis-Besse Nuclear Power Station.

9  
10 Am I correct in assuming that all counsel have  
11 received copies of this document?

12 Mr. Kalur?

13 MR. KALUR: That is correct.

14 CHAIRMAN GARPINKEL: Mr. Kartalia?

15 MR. KARTALIA: I just received it, I believe, for  
16 the first time a few minutes ago, isn't that correct?

17 CHAIRMAN GARPINKEL: That is correct, this  
18 afternoon.

19 MR. KARTALIA: I just wanted to establish that.

20 CHAIRMAN GARPINKEL: Now, Mr. Kalur, do you have  
21 any objection to it being received into evidence?

22 MR. KALUR: No.

23 CHAIRMAN GARPINKEL: Mr. Kartalia?

24 MR. KARTALIA: Before I comment on it I would like  
25 to ask when Mr. Hurdendorf is planning to leave?

MR. CHARNOFF: He is here today and he has an  
obligation tomorrow, so we would like to --

NSvol15-1-21

1 MR. KARTALIA: Fine. He will be here through the  
2 rest of today until 5:00 o'clock?

3 MR. CHARNOFF: Yes.

4 MR. KARTALIA: Could I reserve until then? I have  
5 no basic judgment of what is going into evidence, but I want  
6 to take a little more time to look at it. It has just come  
7 to us.

8 It's not one of the documents that we have had for  
9 a long time and it can be charged with our --

10 CHAIRMAN GARFINKEL: We will defer decision on  
11 the receipt of this into evidence until --

12 MR. CHARNOFF: The only thing I would like to  
13 point out, I have no objection to that, Mr. Kartalia, but we  
14 did discuss this very question on the phone with Mr. Walsh  
15 with regard to other witnesses, but I have no objection to  
16 waiving.

17 CHAIRMAN GARFINKEL: A problem with this --

18 MR. CHARNOFF: I have no objection.

19 CHAIRMAN GARFINKEL: On the relevancy and  
20 materiality there is no objection to it. The question comes  
21 up, maybe there is some concern about how it was prepared  
22 or what have you that Mr. Kartalia may want to go into.

23 MR. KARTALIA: I think we can commit to say one  
24 way or the other in a half hour or something.

25 MR. CHARNOFF: That's fine.

WSvol15-1-3

1 CHAIRMAN GARFINKEL: So by 4:30 we would like to  
2 have a statement on the record concerning whether you have  
3 any objections.

4 Is that --

5 MR. SILBERG: No, we are not through with our  
6 directives at this time.

7 CHAIRMAN GARFINKEL: This will all relate to the  
8 prepared testimony, on I right, Mr. Silberg, that is, it is  
9 not a question of whether you finish your direct case, it is  
10 a question of Mr. Kalur wants to cross-examine with respect  
11 to the evidence?

12 MR. SILBERG: This is more documentary testimony.

13 MR. CHARNOFF: We agreed before lunch with the  
14 Board and Mr. Kalur that we would continue with our direct  
15 case at which point he then wanted to conduct his cross, so long  
16 as the direct case is limited to Mr. Roe and Dr. Goldman.

17 Mr. Kalur's preference was to get it all on, as  
18 I recall, is that right?

19 MR. KALUR: Let it all in.

20 MR. CHARNOFF: That's right.

21 CHAIRMAN GARFINKEL: Very well. You may continue  
22 with your direct case.

23 MR. SILBERG: At this time I am distributing to  
24 counsel for all parties and to the Board the document entitled  
25 Davis-Besse Nuclear Power Station, Cost and Benefit Analysis

WSvo15-1-4

1 Supplement to Environmental Report. I would like to ask Mr.  
2 Roe to take the stand. Mr. Roe is under oath.

3 LOWELL ROE

4 being recalled by the applicant, testified further as follows:

5 CHAIRMAN GARDINER: Mr. Roe, you understand you  
6 are under oath?

7 THE WITNESS: Yes.

8 DIRECT EXAMINATION

9 BY MR. SHEDDEN:

10 Q Mr. Roe, I show you this document.

11 CHAIRMAN GARDINER: I think we should have Mr.  
12 Roe stand up so that we can all see him separate from over  
13 there.

14 Q Mr. Roe, I have handed you a copy of the document  
15 entitled Davis-Besse Nuclear Power Station Cost and Benefit  
16 Analysis Supplement to Environmental Report.

17 Was this document prepared under your general  
18 supervision and direction?

19 A Yes, it was.

20 Q Could you tell us whether this document has been  
21 prepared to a response from an agency and whether this  
22 document has been filed?

23 A Yes. Under date of May 13th we received a  
24 letter from the Directorate of Licensing of the Atomic Energy  
25 Commission enclosing a cost benefit analysis guide and

WSvol5-1-5

1 stating that a cost benefit analysis in accordance with this  
2 guide should be submitted to the Atomic Energy Commission.

3 Q When was this guide in fact submitted to the  
4 Atomic Energy Commission?

5 A This was submitted to the Atomic Energy Commission  
6 under date of July 5th.

7 Q Do you adopt this document as your testimony in  
8 this proceeding?

9 A Yes.

10 CHAIRMAN GARFINKEL: Let me ask you. I have  
11 some questions.

12 No. 1, you said under date of July 5th, and if  
13 you read it it says July 5, as far as the date is concerned  
14 in the body.

15 No. 2, my concern about the document is that it  
16 is signed by Glenn J. Sampson, Vice President of Power.

17 One substantial question I have, do you have  
18 responsibility higher than Mr. Sampson?

19 THE WITNESS: Mr. Sampson is my direct superior  
20 and officer of the company.

21 CHAIRMAN GARFINKEL: Well, the point is, this  
22 document in effect is a document that was signed by him.

23 MR. CHARNOFF: Mr. Chairman, I can explain that.  
24 The Atomic Energy Act requires that all submittals and  
25 amendments and applications to the AEC be signed by an officer

WSvol5-1-6 1 of the corporation.

2 CHAIRMAN GARFINKEL: Well, isn't Mr. Roe an  
3 officer of the corporation?

4 MR. CHARNOFF: Mr. Roe is not an officer of the  
5 corporation.

6 CHAIRMAN GARFINKEL: I see.

7 MR. CHARNOFF: So this document is exactly identical  
8 to the JASF and to the Environmental Report. As I recall it,  
9 they were all signed by Mr. Sampson, although they were all  
10 prepared under the direct supervision of Mr. Roe.

11 CHAIRMAN GARFINKEL: Very well. Let me ask you,  
12 this date, you said I think July 6th, is it still July 6?

13 THE WITNESS: The cover sheet which is the notarial  
14 or the confirmed notarized transmittal sheet is dated July 5.  
15 It takes one day to print the 300 copies and it was finished  
16 yesterday.

17 These were printed starting July 5 and the letter  
18 of transmittal forwarding these was dated July 6th.

19 CHAIRMAN GARFINKEL: Thank you.

20 MR. SILBERG: Mr. Chairman, I would move that this  
21 document be incorporated in the transcript as it read. We  
22 will provide a suitable number of copies.

23 CHAIRMAN GARFINKEL: I would rather treat this  
24 document as an exhibit like we have done in the other hearing,  
25 Mr. Silberg, because it is too thick to merely incorporate in

WSvol5-1-7

1 as if read, even though it is testimony. Do you recall what  
2 the last applicants exhibit was?

3 MR. SILBERG: I believe, Mr. Chairman, that we  
4 were up to Exhibit No. 4. I believe the next one would be  
5 No. 5.

6 CHAIRMAN GARFINKEL: Very well.

7 MR. SILBERG: I will check on that.

8 CHAIRMAN GARFINKEL: I will treat this cost  
9 benefit analysis supplement as Applicant's Exhibit 5 for  
10 identification.

11 (Applicant's Exhibit No. 5 was marked  
for identification.)

12 CHAIRMAN GARFINKEL: I ask Mr. Kalur whether he  
13 has any objections to this document.

14 MR. KALUR: I have to ask the Chair for the  
15 evening to look over the document and come in with my  
16 objections in the morning.

17 CHAIRMAN GARFINKEL: I think that is quite  
18 appropriate.

19 MR. KARFALYA: I might say that I make the same  
20 request on my own behalf.

21 CHAIRMAN GARFINKEL: I think we will rule on  
22 this document based on whatever objections, if any, we  
23 receive the first thing tomorrow morning. This will be the  
24 first order of business.

25 MR. Silberg, do you still have any more questions

WSvol15-1-8

in view of the fact that it hasn't been received in evidence?

MR. SILBERG: Well, we will wait until tomorrow morning.

CHAIRMAN GARPINKEL: Very well.

Now, we might as well continue.

MR. SILBERG: We have additional direct.

CHAIRMAN GARPINKEL: That is what I mean. Fine. All right. Go ahead.

MR. SILBERG: First I take it the staff is not yet ready on Dr. Harfender?

CHAIRMAN GARPINKEL: At 3:30 we gave the staff on that document.

MR. KATZMAN: We will be ready. Sooner if possible.

CHAIRMAN GARPINKEL: I would appreciate it if it would be sooner.

MR. SILBERG: I would like to address some direct oral testimony to Mr. Roe who is on the stand.

BY MR. SILBERG:

Q Mr. Roe, will you please describe the additional construction with respect to the Davis-Lesse facility which will take place after the end of the NEPA review period, that is, after December 31, 1972?

A The only construction that will take place after this date other than within the confines of the existing



MSV-15-1-9 1 buildings, the cooling tower area, and other areas of the site  
2 which are now existing, cleared and graded will be, first of  
3 all, the installation of the intake and discharge pipes in  
4 the submerged intake structure.

5 This work will have more temporary environmental  
6 effects than the work involved in judging for the temporary  
7 barge channel, but it will be minimal as discussed in Dr.  
8 Burdendorf's testimony.

9 The second item would be finish grading, road  
10 surfacing, clean-up and landscaping, principally in areas that  
11 have been previously disturbed.

12 This will only result in environmental enhance-  
13 ment of the site areas.

14 Thirdly is the clearing of right-of-way, in-  
15 stallation of towers and installation of conductors on the  
16 Davis-Sesse to Ohio transmission line which will be done.

17 This will involve clearing of second growth  
18 routed areas for a total distance of three miles which are  
19 scattered along the total length of 13 miles in 21 separate  
20 sections.

21 This clearing involves 54 acres within the 150-  
22 foot right-of-way width along the full length.

23 The remainder of the right-of-way for this line  
24 involves principally agricultural land. Where this land  
25 crosses the portage and Sandusky Rivers, selected clearing will

WSvols-1-10 :

1 be utilized to provide screening of the line and minimizes  
2 visibility.

3 Q Mr. Roe, the transmission line construction which  
4 you just described, is that construction for the line to the  
5 Beaver Substation?

6 A This is the so-called Davis-Carse Beaver Line,  
7 yes.

8 Q Thank you. And with respect to the so-called  
9 Bay Shore Transmission Line, will you describe the status of  
10 construction on that line as of the end of the NEPA review  
11 period or December 31, 1972?

12 A By the end of the NEPA review period, that line  
13 will be only 100 percent completed.

14 Q And with respect to the Roisman Transmission  
15 Lines, would you describe the status of construction on that  
16 line as of the end of the NEPA review period?

17 A The foundations and tower erections will be  
18 completed except for a very short length by the end of the  
19 NEPA review period.

20 The remaining installation will be the cable or  
21 conductor installations.

22 Q Will there be any clearing that remains to be  
23 done on the Roisman Line at the end of the NEPA review period,  
24 sir?

25 A None at all.

Q Thank you.

WSvol5-2-11

1 With regards to the alternatives to the Davis-  
 2 Besse cooling system, Mr. Ros, during the hearing on May  
 3 3rd, 1972, there was testimony which appears on Transcript  
 4 Page 151 on the possible alternatives to the condenser  
 5 cooling water system.

6 Would you please review the alternatives for us  
 7 now that are discussed there and relate those alternatives  
 8 to the ones discussed in the Supplement to the Environmental  
 9 Report?

10 A. Well, these alternatives involve both major  
 11 changes to the present design system and ones which would be  
 12 augmentations or add-ons to the present systems.

13 The alternatives discussed were involving --

14 MR. KAMUR: Excuse me. I'm not clear. We are  
 15 talking about Supplement to the Environmental Report, is that  
 16 the new document that has been offered in evidence?

17 MR. SILBERG: No, the new document is cost  
 18 benefit analysis. The Supplement to the Environmental Report  
 19 is Applicant's Exhibit No. 1, the admission of the deleted  
 20 parts which was handled this morning.

21 CHAIRMAN GARFINKEL: Go ahead. You may continue  
 22 your examination.

23 A (Continued.) These alternatives were as follows:  
 24 Those involving basic change in arrangements, and the first  
 25 one was an open lake once-through system, and the second one

WSvol15-1-12;

1 would be an open lake once-through with supplemental cooling  
2 of the condenser discharge water, and thirdly, a closed  
3 system utilizing a cooling pond.

4 In regards to augmenta to the present system,  
5 would be passing the blowdown through a forced draft cooling  
6 tower prior to discharge.

7 Secondly, would be passing the blowdown through  
8 a cooling pond prior to discharge.

9 The third alternative would be passing the blow-  
10 down through a cooling pond equipped with spray nozzles  
11 prior to discharge.

12 All these possible alternatives are discussed  
13 in some detail in Section 14.7 of the Environmental Report  
14 Supplement as well as additional ones which were considered  
15 in the early stages of design.

16 The cost of the alternatives are also set forth  
17 in Section 14.7 of the Environmental Report Supplement as  
18 well as benefits expressed in terms of Lake area influenced  
19 by a temperature of five degrees or higher.

20 The cost benefit relation curve is included in  
21 the Environmental Report Supplement at Figure 14.5.

22 MR. SILBERG: Thank you, Mr. Roe.

23 I would now like to ask Dr. Goldman to take the  
24 stand along with Mr. Roe.

25 We have a series of questions which relates to the

NSV015-1-13

design of radwaste system and the dosage from the roadway  
system.

I think it would be easier and most clear for the  
most clear record if we could present the two questions  
simultaneously rather than to present all the design infor-  
mation and then go back and review that design information  
for Mr. Goldman so he can present the dosage.

CHAIRMAN CARPENTER: Go ahead.

DR. MONTY GOLDMAN

resumed the witness stand and testified further as follows:

DIRECT EXAMINATION

WDps16-1-11

1 MR. SILBERG: During the hearing on May 3  
2 testimony was presented -- and that testimony appears as  
3 transcript Page 152 -- on possible alternatives to the  
4 radioactive waste treatment systems now designed for the  
5 Davis-Besse station. Mr. Roe, will you please describe  
6 those alternate systems?

7 MR. ROE: Alternate systems in the liquid radwaste  
8 areas were first of all additional demineralizers and secondly  
9 additional evaporators.

10 MR. SILBERG: Mr. Roe, were these in the nature  
11 of replacements for the system or augments to the present  
12 system?

13 MR. ROE: These were augments to the existing  
14 system.

15 In regard to the gaseous radwaste systems augments  
16 to this were additional polyp time. Another alternative  
17 would be cryogenic or absorption systems. The third one  
18 mentioned was additional charcoal filters. These add-on  
19 alternatives together with costs and benefits are discussed  
20 in Section 14.4 of the Environmental Policy Supplement.

21 The Section also discusses and enumerates the  
22 alternatives of lesser effectiveness than the presently  
23 designed systems in order to present a setup cost benefit  
24 curves to show the relative effectiveness of the alternatives.  
25 These curves on Figures 14-1, 14-2, 14-3 and 14-4 of the

W0516-1-2

1 environmental report supplement show that the extensive  
2 systems that is now designed will limit the releases of  
3 radioactivity to an extremely low level and additional  
4 equipment and systems would not result in any significant  
5 reductions.

6 MR. SILBERG: Dr. Goldman, in your expert  
7 opinion what would be the effect of these releases on the  
8 environment?

9 DR. GOLDMAN: In my opinion the releases of  
10 radioactivity resulting from station operation with the  
11 radwaste treatment system as now designed will be so low  
12 that the radiation exposure levels resulting would not be  
13 detectable and they will certainly be of a small magnitude  
14 than the changes in individual and population exposure  
15 resulting from normal changes in the radiation background  
16 or from work or living habits.

17 MR. SILBERG: Thank you.

18 Mr. Roe, will you describe --

19 CHAIRMAN CARFINKEL: Let me ask one question.  
20 What is based on the information already of record?

21 DR. GOLDMAN: That is based on the information  
22 contained in Table 14-1 and on Page 14-13 of the environmental  
23 report supplement.

24 CHAIRMAN CARFINKEL: Thank you, sir.

25 MR. SILBERG: Mr. Roe, will you describe the

HD0016-1-3 1

2 nature and cost of additional demineralizers which might  
3 be used as an alternative in the liquid radwaste system?  
4 These would be augments.

5 MR. ROE: In regard to additional demineralizers,  
6 there is a practical limit on the removal capability of a  
7 demineralizer in processing water with a very high degree  
8 of purity which we are concerned with here. For this reason  
9 additional demineralizers were not considered in the  
10 environmental report supplement as an alternative because  
11 those existing in the present design would be normally  
12 processing liquid waste to this lower limit.

13 An additional demineralizer in series with the  
14 present processing stream in the clean liquid radioactive  
15 process system, one to process both duplicate systems,  
16 would cost an estimated \$78,000 and would produce no further  
17 reduction of the radioactivity in the effluent stream.

18 Similarly an additional demineralizer in the  
19 miscellaneous liquid radioactive waste treatment system  
20 would also cost an estimated \$78,000 and would produce no  
21 benefit in reduction of radioactivity in the effluent  
22 stream.

23 MR. SILBERG: Mr. Roe, would you now describe  
24 the nature and cost additional evaporators as augments,  
25 alternatives in the liquid radwaste system?

26 MR. ROE: An additional evaporator in each duplicate



HDps16-1-41

1 stream of the clean radioactive waste treatment system --  
2 and this alternative is designated alternative system 10  
3 in the environmental report supplement -- with cost an  
4 estimated additional one million 81 thousand 500 dollars.

5 MR. SILBERS: Mr. Roe, would you describe whether  
6 there are any additional evaporators in the miscellaneous  
7 waste treatment system that would be added as augment?

8 MR. ROE: Yes, there is the possibility of adding  
9 an additional evaporator in the miscellaneous radiowaste  
10 treatment system. This is designated alternative system 5  
11 in the environmental report supplement. This would cost an  
12 estimated additional 410,700 dollars.

13 MR. SILBERS: Dr. Goldman, would you tell us  
14 the effect on radioactive releases of adding these  
15 evaporators?

16 DR. GOLDMAN: Yes. Since the carry-over from  
17 the existing evaporator in the system would consist of  
18 very largely volatile materials, the second one would permit  
19 only a slight additional reduction of radioactivity dis-  
20 charge. This we have calculated would result in a decrease  
21 in the exposure of an individual who drinks the undiluted  
22 discharge water of one-hundredth of one millirem per  
23 year, reducing it from approximately 1.1 millirem per year  
24 without that evaporator. That would be for the clean  
25 waste system addition.

WDps16-1-5 1

2 The miscellaneous waste evaporator addition would  
3 also, for the same reason, only permit a slight reduction of  
4 radioactivity in the discharge and that would result in a  
5 released exposure again to the individual drinking undiluted  
6 discharge water of three-thousandths of one millirem per  
7 year against the case case of the existing system of  
8 1.1 millirem per year.

9 MR. SILBER: Mr. Roe, you listed earlier as  
10 additions in the nature of augment to the gaseous radwaste  
11 system additional hold-up time periods. Will you describe  
12 such additional hold-up times. And whether alternatives  
13 are available and what they would cost?

14 MR. KALUR: Mr. Chairman, I am going to object  
15 to this whole line of alternative considerations. I don't  
16 see that it is within the scope of the memorandum and order  
17 of the Commission on record or on this Board's own notice  
18 and order of evidentiary hearing.

19 CHAIRMAN GARDINKEL: No, I think your objection is  
20 going to be overruled, Mr. Kalur, because this goes to  
21 weighing the balances as to what the additional costs,  
22 should we have to determine alternatives, would be and how  
23 those additional costs may influence the final NEPA review.  
24 All these cost factors would relate to the final NEPA review.

25 The question then arises, if we allow continued  
construction the cost of continued construction would influence

HDps16-1-61

1 the decision of the Agency with respect to what would occur  
2 should the final NEPA review require the so-called alternative.  
3 So there is a measuring factor.

4 Now, they are introducing this evidence,  
5 obviously, as I see it, to show that these additional costs,  
6 increment costs, 1, are insignificant in terms of the overall  
7 expenditures already - and 2, for the likelihood of showing  
8 that there won't be any need for these modifications based  
9 on the ultimate NEPA review based on the effects on the  
10 environment.

11 I think those two factors alone are relevant to  
12 this proceeding.

13 Go ahead. Continue with your examination.

14 MR. SILBERT: Would you like the question  
15 repeated, Mr. Roe?

16 MR. ROE: I believe is concerned a discussion of  
17 the gaseous radwaste treatment system and the hold-up time  
18 that is available. The present gaseous radwaste system provides  
19 three hold-up tanks to permit decay of short-lived radioactive  
20 isotopes and then release under controlled conditions.

21 For more periods of operation the hold-up time  
22 is for 60 days, which permits almost complete decay of the  
23 short-lived isotopes, leaving only the long-lived isotopes,  
24 Krypton 85.

25 To estimate the releases of radioactivity from

H00sl6-1-71

1 station operation it was assumed that four tank volumes of  
2 gases would be released in a year's time after 60 days decay  
3 time and one tank volume would be released after only a 30  
4 day decay time. Installation of an additional decay time  
5 to permit hold up of all gases from this system for 60 days  
6 designated as alternative system C in the environmental  
7 report supplement, would cost an additional 134,700 dollars.

8 It should be noted that the gas in these decay  
9 tanks is principally nitrogen, with traces of hydrogen.  
10 Nitrogen is used as a cover gas in the tanks containing  
11 radioactive liquid. A very small volume of this gas is  
12 made up of hydrogen and gaseous radionuclides which are  
13 released from the liquids in the degasser and storage  
14 tanks.

15

16

17

18

19

20

21

22

23

24

25

HDvol6-2-1

1 MR. SILBERG: Will you tell us what the effect of  
2 adding an additional holdup tank would be?

3 DR. GOLDMAN: The addition of an additional decay  
4 tank to permit the holdup of all gases for 60 days would  
5 provide a slight reduction of radioactivity discharged from  
6 this source. This would result in a decrease in exposure  
7 to an individual on the down-wind site boundary of 3,800 hrs  
8 of one millirem per year.

9 I should note, however, that the site boundary  
10 dose from the present system, together with releases from  
11 other gaseous sources within the plant, amounts to an ex-  
12 posure of 9.646 millirems per year.

13 MR. SILBERG: Mr. Bob, are there any other  
14 alternatives which could be added to provide additional hold-  
15 up time at the Davis-Besse facility?

16 MR. BOB: Yes. One other alternative to provide  
17 additional holdup time would be to provide a recombiner to  
18 eliminate the hydrogen from this cover gas and then store the  
19 gas in high-pressure tanks for five years prior to release to  
20 the environment.

21 This was studied and is designated alternative  
22 System D in the Environmental Report Supplement. This  
23 alternative would cost an additional \$373,300.

24 MR. SILBERG: I will just note for the record  
25 that the alternatives identified as being in the Environmental

HDV016-2-2

1 Report Supplement appear in Section 14 of the Supplement.

2 Dr. Goldman, will you comment on the effect of  
3 this modification?

4 DR. GOLDMAN: The effect of this modification  
5 would be to reduce the radioactivity discharged somewhat and  
6 result in a reduction of the annual site doses, that is,  
7 the site boundary doses, from the .016 millirem that I  
8 mentioned in the previous answer to 0.036 millirem, or  
9 8,000ths of one millirem per year reduction.

10 MR. SILBERG: Dr. Roe, another alternative form  
11 of augment to the gaseous radwaste system was a cryogenic  
12 system. Would you describe such a system and give its  
13 cost?

14 MR. ROE: An alternative to holding and release  
15 of this cover gas would be, as you mentioned, a cryogenically  
16 cooled absorption unit to remove the small volume of Xenon  
17 and Krypton from the cover gas.

18 These gases could then be collected and stored  
19 and ultimately disposed of in off-site storage.

20 An installation of this type of system, alternative  
21 C in the Environmental Report Supplement, would cost an  
22 estimated additional \$604,300 and would result in complete  
23 elimination of radioactivity from this source.

24 MR. SILBERG: Dr. Goldman, will you tell us what  
25 the effect of such a condition would be?

HDvol6-2-3

1 DR. GOLDMAN: The elimination of the release of  
2 radioactivity from this source would reduce the site boundary  
3 exposure to an individual from the normal gaseous releases  
4 from 0.046 millirems per year to a value of 0.028 millirem  
5 per year.

6 But I think I should note in this, however, that  
7 the cryogenic system would only be used to remove the Xenon  
8 and Krypton from the cover gas and could not be used to  
9 remove any gases -- radioactive gases from other sources of  
10 gas release areas such as the containment building purge and  
11 the auxiliary building ventilation system which account for  
12 the remaining exposure of 0.028 millirem per year.

13 MR. SILBERG: Mr. Roe, the third alternative  
14 augment in the gaseous radwaste system which you mentioned  
15 earlier was the addition of filters that could be added.

16 Would you tell us what the nature of those  
17 filters is and what their cost would be?

18 MR. ROE: Charcoal filters in a gas stream would  
19 remove the radioisotopes of iodine to permit time for decay  
20 to a stable unradioactive isotope.

21 These filters will not, however, remove Xenon  
22 or Krypton. Various air streams or vents which discharge to  
23 the atmosphere such as the containment building purge and  
24 portions of the auxiliary building ventilation fan and will  
25 be passed through these charcoal filters if necessary.

HDvol5-2-4

1 The miscellaneous waste evaporator is also vented  
2 directly through a charcoal filter.

3 The system used to treat the containment purge  
4 and auxiliary building ventilation air already has two charcoal  
5 filters in series and addition of another filter would give  
6 no measurable benefit.

7 An added filter could be included on the evaporator  
8 vent at an additional estimated cost of \$1,000. If there is a  
9 leak between the primary and secondary systems in the steam  
10 generator there will be some radioactive primary system liquid  
11 enter the secondary system.

12 Any dissolved radioactive gases would be removed  
13 into the condenser and discharged through the condenser air  
14 ejector to the atmosphere.

15 Iodine would also be partitioned between the  
16 condensed steam and the gas phase and discharged through this  
17 air ejector.

18 A charcoal filter could be added to this system  
19 for an estimated cost of \$26,000.

20 MR. SKLBERG: If these additional charcoal  
21 filters were added what would their effect be?

22 DR. COLEMAN: With respect to the evaporator  
23 vent, the effect of adding the charcoal filter would reduce  
24 the annual dose from 46 millionths of one millirem per year  
25 by about a factor of 2, since there is already a charcoal



HDvol16-2-5 1 filter in that system.

2 With respect to the primary to secondary system  
3 the hitch in the steam generator, the effectiveness would  
4 depend on the plant conditions at the time. Using as a  
5 typical condition a combination of one-tenth percent failed  
6 fuel and a leak of 100 gallons per day from the primary to  
7 the secondary system would result in an annual inhalation  
8 dose at the site boundary of .0017 millirem.

9 If one were to add the charcoal filter, then  
10 this would reduce this dose by about a factor of 100, to  
11 about 17 millionths of one millirem per year.

12 MR. SILBERG: Dr. Goldman and Mr. Roe, I show you  
13 a table entitled "Davis-Besse Project, Radwaste System  
14 Alternatives, Summary Table."

15 The two columns respectively represent a summary  
16 of the testimony you have just given, Mr. Roe, do they not,  
17 with regard to the cost and description of the alternatives,  
18 and Dr. Goldman with respect to the annual site boundary  
19 dose reduction?

20 MR. ROE: Yes, it does.

21 MR. GOLDMAN: Yes, it does.

22 MR. SILBERG: Mr. Chairman, I would ask that this  
23 table be incorporated in the record at this point as it  
24 read.

25 CHAIRMAN GARFINKEL: I will treat this as an

HDvol13-2-8

1 exhibit, Mr. Silberg. I would rather have this as an exhibit  
2 to the record, not as if read, but as an exhibit.

3 Will you make this Applicant's Exhibit No. 6.

4 MR. CHARNOFF: May it be incorporated into the  
5 transcript so that it doesn't get lost? Single pages are  
6 best taken care of by including them directly within the  
7 transcript.

8 We don't have any objection to having it labeled  
9 as an exhibit if you wish but single pages have a habit of  
10 getting lost.

11 CHAIRMAN GARFINKEL: Is there any objection to  
12 having it received as if read?

13 MR. KALUR: No.

14 MR. KAPRALA: No.

15 CHAIRMAN GARFINKEL: All right, we will have it  
16 as if read.

17 (SUMMARY TABLE FOLLOWS)

18  
19  
20  
21  
22  
23  
24  
25

DAVIS-BESSE PROJECT  
RADWASTE SYSTEM ALTERNATIVES

SUMMARY TABLE

<u>Alternative</u>	<u>Cost</u>	<u>Annual Site Boundary Dose Reduction</u>
<u>Liquid Radwaste Systems</u>		
1. Add Two Demineralizers	\$ 156,000	None
2. Add Two Evaporators in Clean Radwaste System	1,081,500	0.010 mr <sup>(1)</sup>
3. Add Evaporator in Miscellaneous System	410,700	0.003 mr <sup>(1)</sup>
<u>Gaseous Radwaste System</u>		
1. Added Storage for 60 Days	\$ 104,700	0.003 mr
2. Storage for 5 Years	370,300	0.008 mr
3. Cryogenic System	684,300	0.018 mr
4. Added Charcoal Filter on Evaporator Vent	1,000	Negligible (0.000023 mr)
5. Charcoal Filter on Condenser Air Ejector Vent	26,000	0.0017 mr

(1) Assumes drinking water from station discharge with no lake dilution.

HDV016-2-7 1

2 MR. SILBERG: I would like now to return to Mr.  
3 Roe for some additional questions on the alternative cooling  
4 systems.

5 Mr. Roe, with respect to the cost benefit analysis  
6 supplement which we discussed earlier, did you in your  
7 capacity as having overall direction over the preparation of  
8 this document examine a number of alternatives to the condenser  
9 cooling system and could you tell us -- could you describe  
10 those alternatives briefly?

11 MR. ROE: Yes. In the analysis which was reported  
12 in this cost benefit analysis a number of alternatives con-  
13 cerning the condenser cooling system were studied, together  
14 with the costs and benefits of each.

15 These alternatives were as follows: Under  
16 basic system changes, Alternative A considered natural  
17 draft cooling tower or the present system.

18 Alternative B concerned a once-through open  
19 lake system.

20 Alternative C covered a mechanical draft  
21 cooling tower.

22 Alternative D covered a closed system with spray  
23 modules in a canal.

24 Alternative E covered a closed system with a  
25 cooling lake.

Under augments through the present system an  
Alternative F considered mechanical draft towers to cool the

1.D. 16-2-2  
1 blowdown water.

2                   Alternative G, a spray module basin to cool the  
3 blowdown.

4                   Alternative H, ponds to cool the blowdown.

5                   In addition to these cooling system alternatives,  
6 alternatives were studied involving the intake system from  
7 the lake into the open intake canal and these were as  
8 follows:

9                   A was the present design intake structure, that is,  
10 the design that shows in the Environmental Report Supplement.

11                   Alternative B was a vertical downflow, submerged  
12 crib with a half-foot per second intake velocity.

13                   Alternative C was the submerged crib with a  
14 half a foot per second intake velocity with an air bubbler  
15 screen around the intake structure.

16                   From the review required by this analysis and  
17 from the information gained by previous studies which had  
18 been under way prior to this time the system for which  
19 approval is being sought and which is being requested does  
20 include alternatives which are not now currently included  
21 in the design shown in the Environmental Report Supplement.

22                   These are Alternatives B and C covered in the  
23 intake system which includes a lower velocity at the intake  
24 crib and an air bubbler system around the intake crib.

25                   The cost of these alternatives are given in a

HDW016-2-9

1 table which is entitled the Davis-Besse Project, Cost and  
2 Benefit Supplement, Cost of Cooling System Alternatives.

3 MR. SILBERG: Mr. Roe, I now show you a table  
4 entitled Davis-Besse Project, Cost and Benefit Supplement,  
5 Cost of Cooling System Alternatives. Is that the table to  
6 which you have just referred?

7 MR. ROE: Yes, it is.

8 MR. SILBERG: Do you adopt that as a summary of  
9 the testimony which you gave in this proceeding?

10 MR. ROE: Yes.

11 MR. SILBERG: Mr. Chairman, I would ask that this  
12 single page also be incorporated in the transcript at this  
13 point as if read.

14 CHAIRMAN GARTENKEL: Are there any objections to  
15 this?

16 MR. SALUR: No.

17 MR. KARTALIA: No.

18 CHAIRMAN GARTENKEL: It will be received in  
19 evidence as if read.

20 (COST OF COOLING SYSTEM  
21 ALTERNATIVES FOLLOWS:)

22  
23  
24  
25

DAVIS-BESSE PROJECTCost and Benefit SupplementCost of Cooling System Alternatives

<u>Alternative</u>	<u>Additional Cost</u>	<u>Delay In Completion</u>
<u>Basic Systems</u>		
B. Once-through - Open Lake	\$10,856,000	12 Months
C. Closed system - Mechanical Draft	8,232,000	12 Months
D. Closed system - Spray Canal	7,635,000	12 Months
E. Closed system - Cooling Lake	15,777,000	18 Months
<u>Augments to Present System</u>		
F. Mechanical Draft to Cool Blowdown	752,000	None
G. Spray Module Basin to Cool Blowdown	700,000	None
H. Ponds to Cool Blowdown	630,000	None
<u>Different Intake Structure</u>		
B. Vertical Downflow - 0.50 Feet Per Second Velocity	180,000	None
C. Air Bubbler Screen	225,000	None

HEX016-3-10 1

2 MR. SILBERG: At this point I would ask Mr. Roe  
3 to step down and I would have a few additional questions for  
4 Dr. Goldman.

5 (Witness Roe excused.)

6 BY MR. SILBERG:

7 Q Dr. Goldman, this morning there was a discussion  
8 as to whether the Davis-Besse facility complied or satisfied  
9 the requirements of proposed Appendix E to the Commission's  
10 Regulations 10 CFR Part 50.

11 In this context have you calculated the doses  
12 which would be received off-site from the operation of the  
13 Davis-Besse facility?

14 A Yes, I have.

15 Q And how do such doses compare with the requirements  
16 in the proposed Appendix E?

17 CHAIRMAN GARDINER: Let's have what the cal-  
18 culations are and then we can follow through with your  
19 statement.

20 I would like to know what those dosages are, if  
21 he has those figures.

22 BY MR. SILBERG:

23 Q Dr. Goldman, do you have the dose figures which  
24 you have calculated?

25 A Yes, they are contained in Table 14-1 of the  
Supplement to the Environmental Report. The dose value for



HDV 14-2-11 1 the system presently proposed to be installed in the Davis-  
2 Basse plant is that represented by the fourth row of dose  
3 numbers, the system combination designated for 93 with a  
4 Note 1 attached to it as the present system.

5 CHAIRMAN GRAPINKEE: Can you tell us what page  
6 that is?

7 THE WITNESS: That is 14-18.

8 MR. SZLBERG: Dr. Goldmann, how did the doses which  
9 you have just identified compare with the requirements in  
10 proposed Appendix I of the Commission's 10 CFR Part 50 and  
11 particularly Section II-C 1 and 2 which provides the dose  
12 limits to be held to 3 millirem?

13 A. Examination of Table 14-1 for the present system  
14 indicates that the net contribution of the plant to the  
15 total exposure level of the maximum individual would be 1.18  
16 millirem per year.

17 That is the difference between the value of  
18 125.186 shown and the natural background level of approximately  
19 125 which is indicated in the last line of that table.  
20  
21  
22  
23  
24  
25

WSps17-1

1 The difference then of approximately 1.1 or 1.2  
2 million per year is substantially below the 3 million  
3 per year indicated in the proposed Appendix I sections to  
4 which he referred.

5 Q Thank you, Dr. Goldman.

6 Earlier this afternoon there was testimony with  
7 respect to the Public Health Service standards for radioactive  
8 nuclides in drinking water. In this context, Dr. Goldman,  
9 in recalling your curriculum vitae in which you had a  
10 function and have served in standard setting bodies, would  
11 you state the rationale for such standards?

12 MR. KALUR: Objection.

13 CHAIRMAN CAPPENHILL: I think this is a strong  
14 objection. In the first place, you have to raise whatever  
15 the issue prior and indicate as a preliminary statement what  
16 was the testimony prior. Then you may ask him a question,  
17 but you haven't gotten any preliminary statements from him.

18 MR. SELBERG. In this context, Mr. Chairman, let  
19 me first ask Dr. Goldman.

20 Q While you were at the Public Health Service did  
21 you have anything to do with the establishment of radio-  
22 nuclide levels in drinking water?

23 A Not with the establishment of the levels but with  
24 the establishment of the standards for the levels, yes.

25 Q And would you tell us what that rule was?

MSps17-2-2

1 A Well, as I indicated in my curriculum vitae  
2 during the time that I was designated nuclear installations  
3 consultant with the PHS in Washington I was assigned to serve  
4 on the working group that prepared the radioactivity standards  
5 section of the PHS drinking water standards.

6 We did then the analysis and the evaluations that  
7 led the publication of those in 1962.

8 Q Thank you.

9 Would you tell us what the PHS standards specify  
10 with regard to tritium level in drinking water, if anything?

11 A Nothing. The tritium was specifically not  
12 considered as significant or appropriate for incorporation  
13 in the drinking water standards at that time.

14 There are no PHS drinking water standards that  
15 referred directly or indirectly to tritium.

16 CHAIRMAN GARFINKEL: As a lawyer I would like to  
17 ask the reason for that.

18 THE WITNESS: The reason, the technical reason  
19 for that?

20 CHAIRMAN GARFINKEL: Yes.

21 THE WITNESS: Is the recognition at that time  
22 and certainly confirmed since that time that tritium is  
23 among the least significant of all radionuclides which are  
24 produced artificially.

25 CHAIRMAN GARFINKEL: Thank you.

NSas17-2-3

1 MR. KILUR. I didn't hear the last part of that.

2 THE WITNESS: Which are produced artificially.

3 BY MR. SILBERT:

4 Q Dr. Goldman, could you derive a limit for tritium  
5 in drinking water from other PMS standards which have been  
6 established?

7 A No. The level that was referred to I think by  
8 Mr. Kilur and by Dr. Martin referred to the gross beta  
9 activity level in drinking water which was the one-thousand  
10 pico curie per litre value that we established at that time.

11 However, we designated that as a gross beta  
12 activity measurement and also designated a method by which  
13 the analysis should be made, and that analytical method  
14 calls for the evaporation of the water sample which would  
15 deliberately and with our knowledge we knew it would drive  
16 off any tritium that was in the sample of water being so  
17 analyzed.

18 Therefore, the gross beta activity of one-thousand  
19 pico curie per litre was not intended to apply to tritium as  
20 such, and there would be no way that one could derive a  
21 specific concentration limit for tritium based on the  
22 PMS drinking water standards.

23 Q Are there any order of magnitude standards  
24 generally established for what is safe or prudent for drinking  
25 water?

CS17-1-4

1 A Yes.

2 I think the judgement that we made at the time  
3 with respect to the drinking water standards reflected that  
4 kind of judgement and recognition of the exposures to which  
5 the public both individually and collectively were and are  
6 and always have been exposed from natural sources, and the  
7 recognition that the contribution of water containing the  
8 standard level would not constitute a significant addition  
9 to the radiological risks.

10 I point out, for example, in this context that we  
11 established somewhat more relaxed standards for Strontium 90  
12 in drinking water, since that was not a primary route of  
13 exposure.

14 As a result of its incorporation in milk and other  
15 foods, these provide a much more significant source of  
16 exposure, and the Strontium standard was set with that  
17 kind of recognition indicating the level of risk that we  
18 felt should be attached to Strontium being taken in through  
19 water.

20 There is no absolute safety either with respect  
21 to radioactivity or with respect to anything else.

22 On any standard setting activity it recognizes  
23 implicitly some degree of risk.

24 It is a matter that in the past anyway has been  
25 exercised by the Agency establishing standards as to what

MSpal7-1-5

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

constitutes that degree of acceptable risk both with respect to radioactivity and with other toxic substances.

WSvol7-2-1

Q Thank you, Dr. Goldman.

With respect to the levels of tritium discharge from the Davis-Besse facility, are you familiar with the amount which will be discharged from the facility?

A I am familiar with the most recent estimate that has been made for this. My recollection if it is not faulty is approximately 340 curies per year.

Q And what would be your expert opinion on the effect of such discharges of tritium on the environment, both the people drinking the water and the wildlife that might be exposed to it?

A Essentially none.

The basis for this rests with the fact that tritium has existed in the environment along with many other natural radioactive materials ever since there was life on earth and probably prior to that time.

The additional increment of dose both to individuals, human individuals and to individuals of other species would be so small in comparison to these natural radiation levels that I would expect to see no effect on either humans or wild life as a result of the tritium release.

This is, of course, borne out by a fair amount of field experience and observation, particularly at the Savannah River Laboratory where substantially larger quantities of tritium are and have been released to the

WSvol17-2-2

1 natural environment for perhaps 30 or more years.

2 With a considerable amount of investigation by  
3 laboratory personnel and other researchers as to the effect  
4 of these releases on the wildlife as well as on the humans  
5 downstream there have been none observed.

6 Q Thank you, Dr. Goldman.

7 At the previous phase of this hearing Mr. Joseph  
8 DeMadda testified, and this is the reference in the transcript,  
9 Page 442, that man was the most radio-sensitive species.

10 Would you agree with that statement and could  
11 you give us the basis from which that statement may be founded?

12 A Yes, I certainly would agree with that state-  
13 ment.

14 I think most competent radiobiologists do agree  
15 with that statement. In fact, they have formulated it. It  
16 is a fact which has gone back to the beginning of the century  
17 when the first investigations were made of the effects of  
18 radiation using the early X-ray machines.

19 Most of the comparative studies of radio-  
20 resistance or radio-sensitivity are based on the response of  
21 organisms to substantial doses. Those which are high enough  
22 to cause a prompt response and a response frequently examined  
23 is death.

24 This value, that is, the lethal or median lethal  
25 dose for man is lower than for species of lower life forms.



WSvol17-2-3

1 If I might give some examples. We know that it  
2 takes hundreds of thousands to millions of rads to kill  
3 bacteria. That IGR killed by doses in the ranges of 10,000  
4 to 50,000 rads for green algae particularly.

5 Several thousand rads are required as median  
6 lethal doses for crustaceans, and in the range of one to  
7 7,000 rads for adult fish and amphibians, in the range of  
8 500 to 1,000 R for most bird species and approximately 400  
9 R for man.

10 So man is much more sensitive to radiation, he is  
11 killed off easier.

12 Generally this is thought to result from the more  
13 complex human structure and systems in comparison to the  
14 simpler systems of the lower life forms.

15 I think Dr. Martin had indicated this was the view,  
16 or at least his view, and whether he was speaking for EPA  
17 or not, I don't know, but it is a fairly well documented  
18 axiom that if you protect man as the most sensitive element  
19 in the eco system you have automatically provided adequate  
20 protection for other species.

21 Q Thank you, Dr. Goldman.

22 Based on your knowledge of the Davis-Besse plant  
23 and its site, what effects do you expect to see in the marsh  
24 area as a result of the projected releases both of the  
25 gaseous and liquid radioactive wastes?

WSps17-3-1

1           A     Well, if by effects you mean biological effects  
2 or impacts on the local marsh biota, I would expect to see  
3 none. This is based on several factors, the first of which  
4 that with respect to liquid waste they are not discharged  
5 to the marsh, but as shown in the environmental report  
6 supplement I think 4-1 and maybe another one, there will be  
7 discharged through a submerged pipe that ends some 200 feet  
8 offshore, and the quantity and concentrations of this  
9 material which, as I indicated would provide a dose of  
10 something on the order of 1 millirem per year to an individual  
11 who consumed it without any dilution this would have to under-  
12 go some dilution on those occasions when the currents might  
13 carry some of the discharged material toward the shoreline  
14 where the marsh begins.

15                 However, even considering the potential reconcentra-  
16 tion of some radionuclides that we know occurs in marsh  
17 biota, the doses that are projected to result would be  
18 orders of magnitude below those at which any effects at all  
19 would be expected.

20                 Second, with respect to gaseous wastes discharged  
21 from the plant, of course, these will be released from a  
22 tail vent on top of the containment building and will consist  
23 almost entirely of noble gases, which will not be absorbed  
24 or concentrated in the marsh area.

25                 Now, there are projected releases, very small

WSps17-3-2 1

2 quantities of radioiodine. These might on occasion be  
3 deposited on marsh vegetation and grasses, but at concentra-  
4 tions which are much too low to have any effect at all on the  
5 vegetation or any species using them for food.

6 A third factor which enters into my assessment  
7 is again a combination of theoretical calculations of dose  
8 to various life forms which, although I have not made them  
9 for Davis-Besse, I have for several other applications.  
10 They indicate that the doses are quite low, generally on  
11 the order of a few to a few tens of millirems per year.

12 I think the most convincing evidence is not  
13 necessarily the theoretical calculations of dose, but the  
14 experience at Oak Ridge National Laboratory, at Sanford,  
15 and at Savannah River, where concentrations and quantities  
16 thousands of times greater than those concentrated at  
17 Davis-Besse have been discharged for periods of upwards of  
18 20 years.

19 All of these areas, these laboratories include  
20 expensive wildlife areas or areas to which wildlife have  
21 access and these areas have been the subject of fairly  
22 intensive ecological study during the period of operation of  
23 these nuclear facilities. There have been no adverse effects  
24 noted in something approaching a quarter of a century to  
25 either migratory or nesting birds, to fish, to deer or to  
any other flora or fauna, all of which have been exposed to

WSps17-3-3

1 significantly greater doses and concentrations of radioactivity,  
2 both in the air and in the water.

3 Q Dr. Goldman, you indicated that on occasion some  
4 minute quantities of iodine might be deposited on marsh  
5 vegetation. You then stated there would be no effects from  
6 such deposition.

7 Does that conclusion consider the reconcentration  
8 or possible reconcentration of radioiodine in the ecological  
9 system?

10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

WSvol7-2-1

1           A.     Yes, it does, but this is not a significant factor  
2 in the marsh ecology.

3                     The reconcentration of iodine is, of course,  
4 quite important insofar as the dairy cow-milk-child path,  
5 since that is a fairly prompt kind of thing, and consistent  
6 with the half life of Iodine 131, which is about eight days.

7                     However, the same kind of rapid turnover of  
8 marsh vegetation into food items does not occur and the half  
9 life of iodine being eight days provides a substantial degree  
10 of protection both for the wild life and for people.

11           Q.     Thank you.

12                     Also based on your knowledge of the plant and  
13 its environs, would you give us your opinion as to the  
14 effect of the gaseous and liquid radioactive wastes on the  
15 biota of Lake Erie and particularly with respect to the tritium  
16 releases which would be part of the liquid radwaste discharge?

17           A.     I think my answer would be essentially the same  
18 as one or two answers I gave before.

19                     Certainly as far as the Lake is concerned, the  
20 dilution available to the liquid released from the plant  
21 would result in essentially insignificant changes in the  
22 exposure presently experienced by flora and fauna in the  
23 lakes.

24                     That area of the Lake does have some circulating  
25 currents, but the concentrations of material because of the

WSvol17-4-2 1 low quantities discharged are so small that even if there were  
2 to be significant recirculation of lake waters I would expect  
3 to see no effect at all on the biota or on people using the  
4 water or the fish of that area.

5 With respect to tritium, as I indicated pre-  
6 viously, tritium is almost insignificant insofar as its  
7 degree of radiation hazard is concerned, particularly in the  
8 water environment for several reasons.

9 First, since it is an isotope of hydrogen there  
10 is quite a bit of substantial hydrogen available for biological  
11 dilution when it is in the water environment.

12 The second factor is that since the tritium is  
13 discharged in the form of tritiated water it is not re-  
14 concentrated by organisms in the Lake as are many of the other  
15 radio nuclei that are discharged and which are incorporated  
16 preferentially in structures or organs of aquatic biota.

17 Since tritium is not reconcentrated, the dose  
18 one gets is essentially a function of the water content of  
19 the particular species and the turnover rate of that water  
20 in the species.

21 This is not greatly different between organisms  
22 and as a result the dose to fish would be essentially the  
23 same to people using the water.

24 This is as is indicated in the Environmental  
25 Report extremely small and well below the levels at which any

1 effects at all would be anticipated?

2 Q Dr. Goldman, with regard to radio nuclei other  
3 than tritium, which as you testified does not reconcentrate,  
4 has your conclusion that there would be no effect, no biological  
5 effects on the radioactive discharges in the Lake taken into  
6 account the reconcentration of these other radio nuclei in  
7 the food chain?

8 A Yes. That is the basis for the comment I made  
9 earlier, that estimates of the dose to fish and wildlife  
10 have generally been in the range of a few to a few tens of  
11 MR. This is greater than the dose that we estimate to  
12 people.

13 This difference is due to the reconcentration  
14 that takes place of those nuclei in the fish.

15 MR. SILBERG: Thank you very much, Dr. Goldman.  
16 That's all.

17 CHAIRMAN GARFINKEL: That's all the direct  
18 examination?

19 MR. SILBERG: Yes.

20 CHAIRMAN GARFINKEL: O. K. We are going to  
21 postpone cross-examination until tomorrow morning.

22 I want to know about the documents, Mr. Kartalia.

23 MR. KARTALIA: I have no objection to its  
24 submission. I have reviewed it and this is the Hurdendorff  
25 document we are referring to just for the record.

WSvol17-4-4

1 CHAIRMAN GARFINKEL: That's correct. This document  
2 wasn't marked as an exhibit, was it?

3 MR. SILBERG: No. We had moved that it be  
4 incorporated in the transcript as if read with adequate  
5 copies for the reporter.

6 CHAIRMAN GARFINKEL: O. K. It will be treated  
7 as if read. It will be received in evidence as if read.

8 MR. CERNOFF: May Dr. Hurdendorf per our  
9 stipulation be excused from returning?

10 CHAIRMAN GARFINKEL: Any objections to that,  
11 Mr. Kalur?

12 MR. KALUR: No.

13 MR. KAPLAN: That is the reason I asked for the  
14 postponement, so I have no objection at all.

15 CHAIRMAN GARFINKEL: Therefore he may be excused.  
16 With respect to cross-examination of Dr. Goldman  
17 and Mr. Roe, in view of the lateness of the hour I believe  
18 we should suspend until tomorrow morning, and I would like  
19 to commence at 9:30.

20 This hearing is recessed and continued until  
21 tomorrow morning at 9:30.

22 (Thereupon, at 4:55 the hearing was adjourned  
23 until tomorrow, July 6, 1972 at 9:30 a.m.)

24 - - -  
25



ANTICIPATED ENVIRONMENTAL EFFECTS  
OF CONSTRUCTING WATER INTAKE AND DISCHARGE  
PIPELINES IN LAKE ERIE AT THE  
DAVIS-BESSE NUCLEAR POWER STATION

by  
Charles E. Herdendorf  
Center for Lake Erie Area Research  
The Ohio State University

July 1972

Prepared for  
The Toledo Edison Company  
Toledo, Ohio

## TABLE OF CONTENTS

	Page
Introduction.....	1
Monitoring Study.....	1
Nature of Material to be Dredged.....	2
Anticipated Effects.....	2
Conclusions.....	5

## LIST OF FIGURES

Figure 1. Davis-Besse Nuclear Power Station Site Plan....	6
Figure 2. Davis-Besse Nuclear Power Station Submerged intake and discharge arrangements.....	7

## LIST OF TABLES

Table 1. Field descriptions of Lake Erie sediment samples along centerline of proposed intake pipeline.....	8
Table 2. Field descriptions of Lake Erie sediment samples along centerline of proposed discharge pipeline.....	9

## INTRODUCTION

The Toledo Edison Company proposes to construct water intake and discharge pipelines in the bed of Lake Erie at the Davis-Besse Nuclear Power Station. The construction is scheduled for 1973 and will consist of an 8-foot diameter intake pipeline extending N 51° E for a distance of approximately 3,100 feet offshore and a 6-foot diameter discharge pipeline bearing N 90° E for about 1,400 feet from the shore (Figure 1). This work will require the dredging of a channel, within which to lay the pipe, to a depth of approximately 22 feet below Low Water Datum (11 feet below the lake bed) at the intake structure. The discharge pipeline will require the excavation of a channel 14 feet below Low Water Datum (8 feet below the lake bed) at the discharge structure (Figure 2).

Later this year, the Toledo Edison Company plans to excavate a temporary barge channel in Lake Erie along the same centerline that the intake pipeline will occupy. The barge channel will be approximately 650 feet long, 50 feet wide, and 3.6 feet deep below Low Water Datum for Lake Erie (568.6 feet above IGLD, 1955). This channel will be temporary and used only for delivery of the plant's reactor vessel. The material to be excavated will be stockpiled alongside the channel and after vessel delivery it will be replaced so the bottom contour of the lake is restored. The channel will be backfilled within 100 days of the initial excavation work.

## MONITORING STUDY

The Ohio State University, Center for Lake Erie Area Research is engaged in a project to monitor the effects of this construction. The contour of the lake bottom has been mapped using 12 profile lines in the vicinity of the proposed intake and discharge pipelines to a distance of 4000 feet offshore. Sediment, water, and biota samples have been taken on several of these profile lines to determine the character of the environment prior to excavation. The samples will be analyzed for sediment type, turbidity, water quality, and populations of fish, benthos and plankton. Measurements of currents and wave characteristics are also being made. The sampling program, which was initiated in June, will continue on a monthly basis until after the channel has been backfilled. The study will begin again in the spring of 1973, in order to assess any

effects of this work to the surrounding lake.

Based on the analysis of the channel construction it will be possible to predict more accurately the effects of excavation for the intake and discharge pipelines and structures.

#### NATURE OF MATERIAL TO BE DREDGED

The nature of the lake bottom material to be excavated for the pipelines is similar to that of the barge channel except that it will require the removal of not only sand and glaciolacustrine clay but an even harder clay (glacial till) which was deposited by the glaciers and contains some sand and gravel. Field descriptions of surface sediment samples collected in June 1972, along the intake and discharge lines are given in Table 1. The shore sand pinches out at approximately 800 feet offshore. The clay bottom continues from this point lakeward to about 1500-2000 feet where the sand again dominates the surface and continues lakeward to at least 4000 feet offshore. The offshore sand deposit appears to be rather thin; often the Ekman sampler, which only penetrates a few inches, would recover some clay below the sand.

The average thickness of material to be removed along the course of the intake pipeline will be about 12 feet (sand, 1 foot; glaciolacustrine clay, 4 feet; glacial till, 7 feet) and along the discharge pipeline about 9 feet (sand, 1 foot; glaciolacustrine clay, 3 feet; glacial till, 5 feet).

#### ANTICIPATED EFFECTS

The area to be directly effected by the excavation and stockpiling process will be less than 100 feet wide. Once the pipeline is in place the excavation will be backfilled in a manner similar to that which is proposed for the barge channel. This work will result in the disruption of slightly over 10 acres of lake bottom.

In a report prepared in March 1972, I discussed five types of environmental disruptions that might be expected from the dredging of the temporary barge channel. Because of the character of the sediment, the sparse benthic populations, and the temporary nature of the opening, I concluded that no lasting environmental damage would result from this project. This conclusion is further substantiated by similar construction work in recent years in other parts of western Lake Erie which has not been detrimental to the

surrounding area. For example, the water intake at Oregon, Ohio was constructed to 7,000 feet offshore in a manner similar to that proposed for the Davis-Besse Nuclear Power Station without causing siltation problems in nearby harbors or altering the shore configuration (Kenneth R. Smith - Finkbeiner, Pettis & Strout, Toledo; personal communication).

Because the sediments along the proposed pipelines are similar to those to be excavated for the barge channel I believe that the same statements can be made regarding the relatively minor effect of this work on the surrounding lake ecosystem. The new factors to consider include the greater depth (11 feet at the intake) and the glacial till clay. The greater depth should reduce the probability of turbidity problems caused by breaking waves. The till clay, like the glaciolacustrine clay, is a hard, compact material which is considerably more stable than typical bottom muds and will cause far less turbidity and siltation problems.

In considering the more extensive construction for the pipelines, the following types of environmental disruptions should be considered: (1) increase water turbidity, (2) alteration of shore processes, (3) introduction of pollutants into the water by solution of material from bottom sediment, (4) creation of weak points in the shoreline which are susceptible to erosion (5) removal of potential beach building material from the bottom, and (6) disruption of bottom habitats.

The magnitude of water turbidity that will be caused by the proposed pipelines is minimal. This conclusion is based on the character of the material to be excavated, the weather conditions during the time of the year that the dredged material will be exposed to wave action, and the greater water depth at the intake structure. Approximately 10 percent of the bottom material to be excavated is sand which when disturbed does not increase water turbidity because of rapid settling. The remainder of the sediment to be removed is glaciolacustrine clay and glacial till clay which was deposited several thousand years ago. These materials are not the loose, fluffy muds found in the deeper water parts of the lake, but are hard, compact, and tenacious sediments which are not as susceptible to suspension as mud and do not cause as much turbidity.

The pipeline construction will require approximately four to five months to complete and will cover the period from late spring to early fall 1973. An analysis of wind and storm records indicates that the period between May and September produces the lowest wind velocities of the year. During this period the spoil

piles on the edge of the trench will tend to alter shore processes. For example the intensity of northeast storms will be reduced in the Sand Beach - Long Beach area because of the partial barrier created by the stockpiled material. Likewise, northwest storm damage will be lessened in the vicinity of the Toussaint River mouth. Because the intake pipeline is designed to be perpendicular to the shoreline, the movement of offshore material toward the beach will not be hampered. However, the angle of the shorter discharge pipeline will tend to funnel sand toward the beach near the point where the two pipelines converge.

The chemical nature of the sediments, being mainly clean sand and ancient lake and glacial clays, precludes the possibilities of them being grossly polluted by man's activities as often is the case for materials dredged from harbors. Wave action and open lake circulation in this area reduces the likelihood of stagnation and accumulation of deleterious substances. The high percentages of quartz in the sediment (a rather stable mineral in natural systems) indicates a relatively low chemical oxygen demand for dissolved oxygen in the water. This means that sediment placed temporarily in suspension due to the dredging operations are unlikely to result in any measurable oxygen depletion.

The creation of a weak point in the sediments which form a barrier between Lake Erie and Navarre Marsh is a factor that must be considered during and after the construction of the pipelines and the proper precautions instituted. During construction the stockpiled sand will be so arranged as to prevent the encroachment of lake waters into the marsh areas during high water storms. When the backfilling operation is completed the barrier beach and dune will be restored to an elevation that will again protect the marshlands. If an erosion problem develops at the site of the construction it can easily be checked by arming the toe of the beach on the lakeward slope of the dune with stone rip-rap.

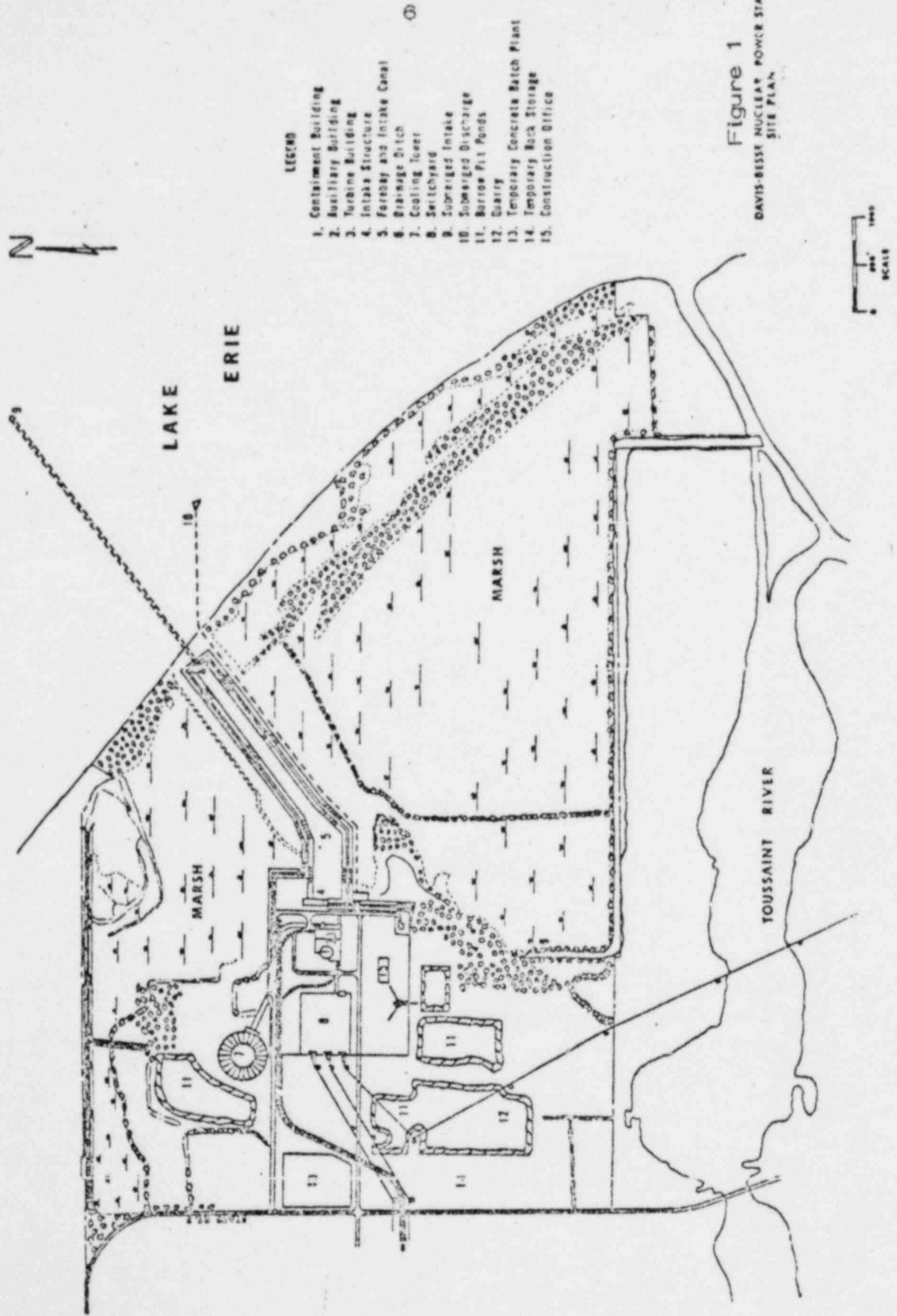
The construction plan calls for the restoration of the lake bottom including both the natural depth configuration and the replacement of the original sand deposits. This action eliminates the danger of the permanent removal of potential beach building material and dispels any continuing effects of the pipeline construction.

The channel will disturb approximately 10 acres of the lake's bottom surface for the combined dredging and stockpiling operation. Because much of the surface material is sand which lies within the high-energy nearshore zone, it is not a particularly good habitat

for benthic (bottom dwelling) organisms. Field examinations of the sediment samples revealed a distinct lack of bottom dwelling organisms, particularly in those rich in sand-sized particles. The glaciolacustrine clays are also sparse in benthic organisms but do contain some oligochaete worms and chironomide (midge) larvae. Large and more mobile aquatic organisms, such as fish, can readily move from the work site. Because of these considerations, the anticipated adverse effects on the aquatic fauna of the area are minimal.

### CONCLUSIONS

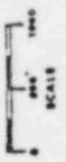
Although we will have a better understanding of the effects of lake dredging after the construction of the barge channel has been monitored in detail, present knowledge and experience indicate the proposed pipeline construction will have a negligible effect on the shoreline and only minimal effects to water quality and benthic habitats. No lasting damage should be anticipated from the project.



LEGEND

1. Containment Building
2. Auxiliary Building
3. Turbine Building
4. Intake Structure
5. Forebay and Intake Canal
6. Drainage Ditch
7. Cooling Tower
8. Switchyard
9. Submerged Intake
10. Submerged Discharge
11. Burrow Pit Ponds
12. Quarry
13. Temporary Concrete Batch Plant
14. Temporary Rock Storage
15. Construction Office

Figure 1  
DAVIS-BESSE NUCLEAR POWER STATION  
SITE PLAN





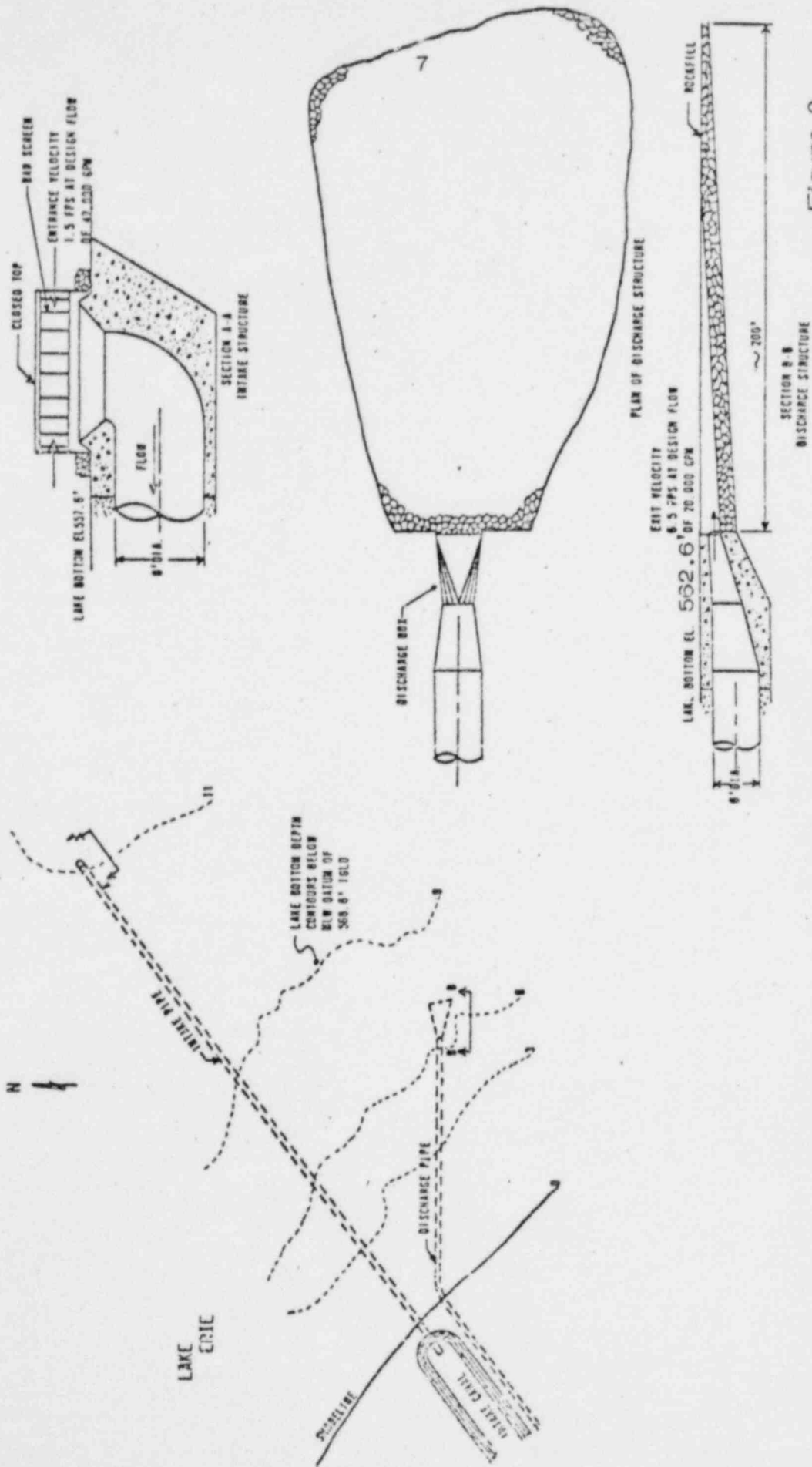


Figure 2  
 DAVIS-BESSE NUCLEAR POWER STATION  
 SUBMERGED INTAKE & DISCHARGE ARRANGEMENTS

TABLE 1

FIELD DESCRIPTIONS OF LAKE ERIE SEDIMENT SAMPLES  
ALONG CENTERLINE OF PROPOSED INTAKE PIPELINE

Sample	Offshore Distance	Water Depth (IGLD)	Description
I-1	46 ft.	+3.5 ft	Medium- to coarse-grained sand, brown; gravel and shell fragments
I-2	100	0.5	Medium- to fine-grained sand, brown
I-3	300	0.9	Fine-grained sand, brown
I-4	500	1.9	Fine-grained sand, brown
I-5	700	3.2	Fine-grained sand, brown
I-6	1000	5.3	Glaciolacustrine clay, gray with blue and brown inclusions, hard, tenaceous
I-7	1500	8.0	Fine-grained sand, brown thin layer over gray-brown glaciolacustrine clay
I-8	2000	9.6	Medium- to fine-grained sand, brown
I-9	2500	10.7	Fine- to coarse-grained sand, brown; gravel and shell fragments
I-10	3000	11.0	Medium- to fine-grained sand, brown, thin layer over gray-brown glaciolacustrine clay
I-11	3500	11.1	Medium- to fine-grained sand, brown
I-12	4000	12.0	Medium- to fine-grained sand, brown

TABLE 2

FIELD DESCRIPTIONS OF LAKE ERIE SEDIMENT SAMPLES  
ALONG CENTERLINE OF PROPOSED DISCHARGE PIPELINE

Sample No.	Offshore Distance	Water Depth (IGLD)	Description
D-1	23 ft.	+3.7 ft.	Fine- to coarse-grained sand, brown; shell fragments
D-2	100	0.7	Medium- to coarse-grained sand, brown, clean
D-3	300	2.0	Medium- to fine-grained sand, brown
D-4	500	1.5	Fine-grained sand, brown
D-5	700	2.4	Fine-grained sand, brown
D-6	1000	4.5	Fine-grained sand, brown, thin layer over gray-brown-red glaciolacustrine clay
D-7	1500	7.0	Fine-grained sand to gravel, brown, thin layer over gray-grown glaciolacustrine clay
D-8	2000	8.7	Fine- to coarse-grained sand, brown, clean
D-9	2500	9.8	Fine-grained sand to gravel, brown, thin layer over glaciolacustrine clay
D-10	3000	10.6	Medium- to coarse-grained sand, brown