

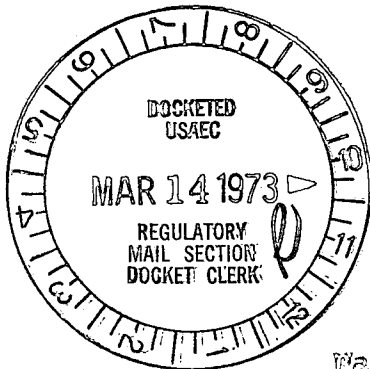
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## UNITED STATES ATOMIC ENERGY COMMISSION

### IN THE MATTER OF:

CONSOLIDATED EDISON COMPANY OF  
NEW YORK, INC.

(INDIAN POINT STATION, UNIT NO. 2)



DOCKET NO. 50-247

Washington, D. C.

Place -

Thursday, 8 March 1973

Date -

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UNITED STATES OF AMERICA  
ATOMIC ENERGY COMMISSION

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:  
In the matter of: :

CONSOLIDATED EDISON COMPANY OF  
NEW YORK, INC. :

(INDIAN POINT STATION, UNIT NO. 2) :  
:  
-----x

12th & Constitution Avenue  
Hearing Room C  
Washington, D. C.

Thursday, 8 March 1973

The above-entitled matter came on for further  
hearing, pursuant to adjournment, at 9 a.m.

SAMUEL W. JENSCH, Esq., Chairman, Atomic Safety  
and Licensing Board.

DR. JOHN C. GEYER, Member.

MR. R. B. BRIGGS, Member.

APPEARANCES:

(As heretofore noted.)

AL:mp  
CR 8370

# C O N T E N T S

<u>WITNESS:</u>	<u>DIRECT</u>	<u>CROSS</u>	<u>REDIRECT</u>	<u>RECROSS</u>
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George Knighton  
(recalled)

9971

C. M. Carter  
(recalled)

9976

Dr. C. P. Goodyear  
(recalled)

10,024

Dr. John P. Lawler  
(recalled)

10,124

10,131

Harry L. Woodbury  
(recalled)

10,133

## EXHIBITS

None.

P R O C E E D I N G S

CR 8370

CHAIRMAN JENSCH: Please come to order.

A 1

Reba 1

Before we proceed this morning, I would like to just advert again to this request that the Board made yesterday about requesting an accounting and engineering statement on the estimated costs of what would be proposed for cooling towers if cooling towers were to be required.

I don't want to interfere with whatever would be the contemplation of the Applicant in the kind of accounting statement that Applicant would prepare. I have been, let me say, not quite certain I have followed the presentation that was given by Mr. Newman heretofore and the other references to the items that might be factors for cost in a proposed cooling tower installation if one were required.

I am sorry we don't have staff counsel here.

Dr. Goodyear is here. I don't think this affects the interest of the Staff, so I will go ahead. Do you have any objection, Dr. Goodyear?

DR. GOODYEAR: No.

CHAIRMAN JENSCH: Very well.

In addition, therefore, to whatever the Applicant may desire to present in reference to an accounting and engineering presentation of the cost of the cooling tower, I wonder if there could at least be one presentation of accounting and engineering in that regard.

Let me say, based upon what is sometimes referred



Al 1  
Reba 2

1 to as general accounting principles, they use the term "general  
2 accounting principles" and sometimes they use just the first  
3 letters of those words and that makes a gap which I think is  
4 still pretty wide.

5 In fact, I don't know that there really are any  
6 general accounting principles, either for this type of pre-  
7 sentation or any other accounting presentation. I think that  
8 is one of the problems that the accounting principles board  
9 is going to wrestle with.

10 They are about now to engage in a vast new endeavor,  
11 as I understand it. Since the days of being at the Federal  
12 Power Commission, I have quite an intense interest in accounting  
13 presentations, and one of the more recent interesting readings  
14 is a booklet entitled, "Unaccountable Accounting", written  
15 by a very knowledgeable author.

16 But whatever be the background, what I would like  
17 to request, if I may use the term, is a sort of a country store  
18 accounting. Just take the costs at present day levels without  
19 any indices or escalations or deferred depreciation or acceler-  
20 ated depreciation or any other deferments or speculations about  
21 escalations and that sort of thing.

22 Just take the day and start with the figures  
23 that Mr. Newman used, of \$11 million for power, and then  
24 let's see how large that would be, and how much excavation  
25 is required. I know we have had a figure of, I don't know,

Al 1

Rosa 3

1 100,000 yards of rock. Maybe the \$11 million figure narrows  
2 that down some.

3 Maybe it won't be necessary to take so much rock,  
4 and at today's labor rates. I don't know how you measure  
5 productivity, but let's not get into that. Let's take the  
6 off-the-shelf type of costs that we know are there and apply  
7 those to the various items, whatever the items may be. The  
8 engineering people will know what has to be done, but let's  
9 not take a discounted net worth situation 30 or 40 years from  
10 now, or whatever it may be.

11 It seems to me a little more practical approach  
12 to their whole problem of what would cooling towers cost  
13 if such were to be required is available.

14 As I read the accounting literature, and in that  
15 phase the Journal of Accountancy, they have some suggestion  
16 that maybe estimates are very, very speculative, and history  
17 seems to think that maybe some of the estimates really are not  
18 very good, and in fact there is some suggestion that balance  
19 sheets and profit and loss statements should be presented in  
20 duplicate, one of which reflects the country store actual  
21 effects and the other based upon the lessening value of the  
22 dollar or some sort of thing like that, that depreciation  
23 doesn't cover the repurchasing arrangements and all that sort  
24 of thing.

So we get into so much different vagaries that I

A 1 1  
Reba 4

1 would like to see if we could get one statement, in addition  
2 to whatever else the Applicant may desire to present, but one  
3 that deals with just today's costs, today's projections of  
4 required items for construction, and that is all.

5 I just think that the problem that gives a lot of  
6 confusion in taking any accounting statement today -- in fact,  
7 I guess the common thought is, if you didn't read the foot-  
8 notes you never would find out what the balance sheet was  
9 like today.

10 Sometimes there is more information in the foot-  
11 notes than there is in the statement itself.

12 These exhortations are in the Journal of Accountancy  
13 that the accounting profession cleans it up a bit, and they  
14 almost look like copies from the Bar Association Journals, but  
15 I think accounting is in kind of a stage of confusion that  
16 doesn't lend much confidence to some of the presentations that  
17 are made.

18 I hope that we can get a statement that will just  
19 be actual today's costs, and then if anybody wants to speculate  
20 that they think the prices are going up. We can take the  
21 Wall Street Journal today, and we are going to get into a  
22 sluggish economy. But we perhaps won't have to get into that  
23 either way.

24 My thought was that something a little more fundam-  
25 ental could be presented, and I have understood it to be avail-  
able.

Al 1

Reba 5

1 I would be very appreciative. I will say to Staff  
2 Counsel I apologize for going ahead with the accounting matter  
3 solely with the Applicant. With the good graces of Dr. Good-  
4 year, he said we could go ahead ---

5 MR. KARMAN: I appreciate Dr. Goodyear's partici-  
6 pation.

7 MR. TROSTEN: Mr. Chairman, we have a number of  
8 questions we want to ask for clarification. May we have just  
9 a moment to discuss this among ourselves?

10 CHAIRMAN JENSCH: Surely.

11 .(Pause)

12 MR. TROSTEN: Mr. Chairman, what we are trying to  
13 do here is to be sure that we focus on the questions that  
14 we want to pose to you. We will take a few minutes and do that,  
15 and let us return to the subject a little later. Is that  
16 all right?

17 CHAIRMAN JENSCH: Surely. I don't want to indicate  
18 that I think you made a very complex statement. It is just  
19 some actual costs today of the items that you feel have to be  
20 involved in a construction and excavation, period. So that you  
21 can have another statement of your own, if you desire, of  
22 course, and have all these other items that are somewhat, let  
23 me say, less well founded in actual today costs, because they  
24 involve indices, and I must say that some of the economic  
charts prepared by economists on indices are some of the most

Al 1

Reb 6

1 interesting reading that you can find, but I think that when  
2 the event is past, you almost need the same number of charts  
3 to explain why it didn't happen what they said was going to  
4 happen, and that is kind of the problem I have with a lot of  
5 economic speculations about indices.

6 So I thought if we could just avoid that, "do you  
7 really think the price of tools is going to increase a hundred  
8 percent", and we are not so much interested in the speculation  
9 about it, but just today's cost.

10 MR. WOODBURY: We have one preliminary, Mr. Chair-  
11 man. I might first comment on what you have just said, Mr.  
12 Chairman, because it contributes somewhat to our confusion,  
13 if you will, in knowing what it is you want.

14 Because in the case of Vermont Yankee, for example,  
15 the facility is built, and so their costs are a matter of  
16 accounting, and accounting practices report things that have  
17 happened, you know, not things that are going to happen.

18 CHAIRMAN JENSCH: I am not referring to Vermont  
19 Yankee in my request, you understand.

20 MR. WOODBURY: And the same thing is true of  
21 Palisades, whereas in the case of Indian Point, there are no  
22 accounts yet, because the facility hasn't been built. There  
23 is but an estimate.

24 It would help us, sir, I think, if you would indicate  
to us the purpose behind your question. If we understood a

Al 1 1 little better what it was that you -- that is, why you wanted  
Reba 7 2 this -- then I think we could do a better job of providing it.  
3 We thought what you wanted was a comparison between what has  
4 been spent at other places and what we expected to spend at  
5 Indian Point.

6 That is what Mr. Newman endeavored to do in December.  
7 Apparently that is not what you want, and we will be happy to  
8 do what you want, but it isn't quite clear to us yet what it  
9 is.

10 CHAIRMAN JENSCH: Very well. Let me try to explain  
11 it. First of all, the request is seeking a presentation on  
12 a realistic basis. What is reality today if you were to build  
13 a cooling tower today at today's costs, and you would get it  
14 done with this off-the-shelf item. You know how much cement  
15 is today.

16 MR. WOODBURY: Yes, sir.

17 CHAIRMAN JENSCH: You know how many sacks of cement,  
18 how much sand, how much water that you are going to mix. Re-  
19 inforcing rods are so much today. Just whatever the items are.

20 It isn't a question of accounting in the sense of  
21 the past transaction, but what are the items you need for  
22 this project, how many sacks of cement times \$2.50 a cement  
23 sack.

24 How many pounds of sand, or loads of sand at \$5.00  
25 a load, that equals so much.

Al 1  
Reba 8

1 The purpose of it is to achieve something that  
2 doesn't have so much speculation in it that I feel that some  
3 presentations do involve.

4 Now perhaps I wasn't clear in my earlier request  
5 to which Mr. Newman responded. I wasn't asking him to add on  
6 to Palisades costs some costs for the same type of items that  
7 Palisades had, and I think that is what he did.

8 For instance, there was something done on excava-  
9 tion at Palisades. I don't know what it was. He said the  
10 other day that he had a response of \$80,000. Then he added  
11 his excavation costs, so we have two items of excavation costs,  
12 as an example of two comparisons that I think double counted  
13 the transaction.

14 Granted, soil conditions are entirely different,  
15 and the project is entirely different, but my request here is  
16 to forget Vermont Yankee, forget Palisades. Just tell us to-  
17 day how many sacks of cement you are going to need times so  
18 many dollars, just today's figures.

19 No indices, no economic fantasy, if I may use the  
20 term without disrespect to the economists, just a country store,  
21 off-the-shelf kind of thing.

22 MR. WOODBURY: You are interested in construction  
23 costs, first costs only.

CR 8370

Al 2

Reba 1

1 CHAIRMAN JENSCH: Whatever be the costs, first,  
2 second, third, fourth.

3 MR. WOODBURY: But not operating costs?

4 CHAIRMAN JENSCH: I assume after you establish your  
5 total construction costs so that it is ready for installation,  
6 you can then figure what your operating costs are.

7 MR. WOODBURY: Yes, but your interest is in the  
8 construction costs?

9 CHAIRMAN JENSCH: Yes, and I would be interested  
10 in the operating costs, too, but I think they are going to be  
11 modified somewhat from the 19 million and the 38 million we  
12 have seen in the record so far. I am interested to see. There  
13 are so many feet of pipe, so many sizes of pipe, so much digging,  
14 shielding, and that sort of thing.

15 Maybe I misconceive the problem, but it doesn't  
16 seem to me that a person needs more than a couple of sheets  
17 of paper and pencil and figure out what you need to do in a  
18 general way. You have to put on new door knobs and light  
19 fixtures, but overall, this cooling tower is not a nuclear  
20 facility that has the technology that is changing and advancing  
21 and improving.

22 You know, cement is cement, and I don't know that there  
23 has been much modification generally to cement that should hold  
24 up a calculation of how much it will cost.

25 Do I make myself any clearer?



Al 2

Reba 2

1 MR. WOODBURY: Yes, I think so. We have in our  
2 estimate, the total estimate that you are talking about, a  
3 number of something like \$32 million for the cost of the tower,  
4 and we can provide all of the back up for that in terms of the  
5 elements to make it up.

6 CHAIRMAN JENSCH: What happens between \$32 and  
7 \$138 (million)? Is that in indices?

8 MR. WOODBURY: That is the indices and the accounting  
9 and the fantasy comes in. We have attempted to explain the  
10 fantasy to you, but we haven't done a good job, and we will  
11 try to do it again.

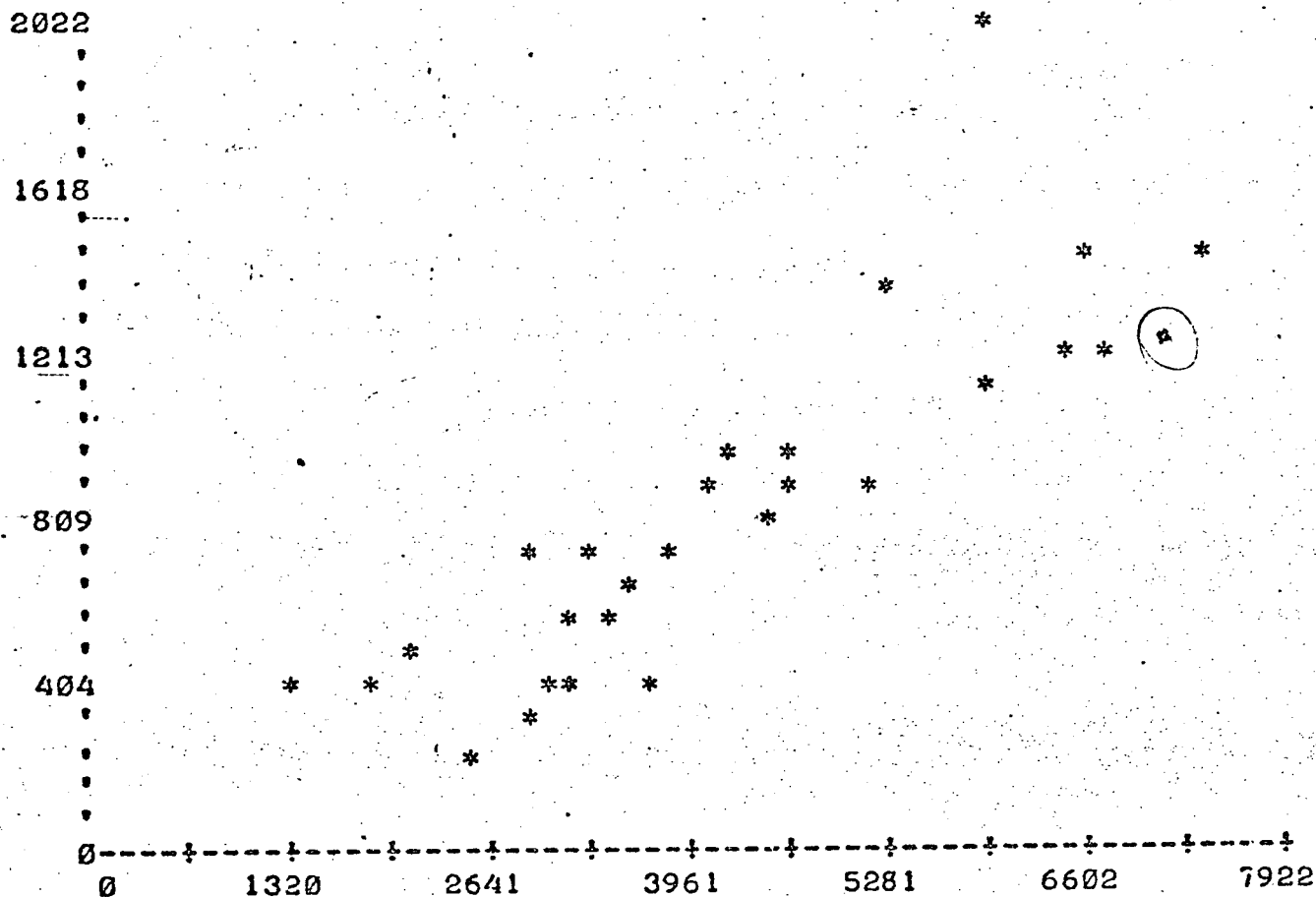
12 CHAIRMAN JENSCH: Thank you very much.

13 Are we ready to proceed with the witness?

14 MR. KARMAN: If it would not inconvenience Mr. Trosten  
15 and Mr. MacBeth, if we could have interrogation of Dr. Knighton  
16 and Dr. Carter at this time, while Dr. Goodyear is working on  
17 a calculation, if it would not inconvenience the parties,  
18 we would appreciate it.

19 MR. MACBETH: It is all right with me. Perhaps I  
20 could also take a moment to say that I have just distributed  
21 to the Board and the parties the chart of the Chesapeake Catch  
22 Against the Mid-Atlantic Catch two years later which we dis-  
23 cussed yesterday, and I simply wanted to state that we have  
24 it identified for inclusion in the transcript here.

(The document follows:)



X IS CHESAPEAKE-CATCH  
Y IS ATLANTIC(MID)-CATCH-2-YEARS-LATER

$$Y = -152.228 + 0.245X$$

0.97248 = COEFFICIENT OF SIMPLE CORRELATION

0.90000 = CORRELATION COEFFICIENT FOR REGRESSION

0.81000 = COEFFICIENT OF DETERMINATION = R SQUARE

0.19000 = PROPORTION OF VARIATION NOT EXPLAINED BY REGRESSION

NUMBER OF DATA SETS = 31

Al 2

1 MR. MACBETH: It has stars on it.

Reba 3

2 MR. TROSTEN: This copy we xeroxed for you has a  
3 point with a circle around it. Dr. Goodyear informed us that  
4 the point that has a circle around it is an additional data  
5 point which is not on, or was not in the regression analysis.

6 Is that correct, Dr. Goodyear?

7 DR. GOODYEAR: That is true.

8 MR. TROSTEN: So I would like the record to be  
9 clear at the point where we insert this in the record that that  
10 circled point on this regression analysis chart is a point that  
11 is not in the regression analysis.

12 MR. MACBETH: It is a true data point, it is not  
13 just an additional point on the paper?

14 DR. GOODYEAR: That is true, yes.

15 MR. MACBETH: All right.

16 MR. BRIGGS: I would like to ask Dr. Goodyear  
17 one question concerning this chart, if I may. Is there any  
18 reason in nature why there has to be a linear relationship  
19 between the Chesapeake catch and the Mid-Atlantic catch?

20 DR. GOODYEAR: No, assuming that the Chesapeake  
21 is producing stock. One could very well obtain the relation-  
22 ship. I tried fitting other equations to the data, but none  
23 of them produced a significantly better reduction in the  
24 error mean squared.

25 MR. KARMAN: Mr. Chairman, I wanted the record to

Al 2

Reba 4

1 indicate that I have distributed to the Board and parties  
2 three pages that were promised to the Board and parties in the  
3 testimony yesterday.

4 CHAIRMAN JENSCH: Very well.

5 The Hudson River Fishermen's Association chart will  
6 be included in today's transcript, and the material of counsel  
7 will be included.

8 (The documents follow:)

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TABLE 1. DEVELOPMENT OF THE STRIPED BASS AT A TEMPERATURE OF 16.8-17.3°C

Age	Length mm	Most important diagnostic characters
20-40 min after fertilization	2.3	Commencement of cleavage
2 hours	3.4	End of swelling
8 hours	3.4	Commencement of overgrowth
12 hours	3.4	Half overgrown
16 hours	3.4	Formation of embryo
20 hours	3.4	Formation of eyes
36 hours	3.4	Separation of caudal division from yolk sac
48 hours	2.9-3.7	Hatching
2nd day after hatching	4.5-5.2	Pigmentation of eyes; differentiation of jaws and intestine; 21-23 myotomes. Partly lying on bottom, partly floating
5th day after hatching	5.5-5.8	Resorption of yolk by one-third; commencement of intestinal peristalsis; 23-24 myotomes. Swimming pelagically
8th day after hatching	5.8-6.5	Teeth on jaws, orange pigment in caudal division; differentiation of stomach; resorption of three-quarters of yolk; 25 myotomes. Transition to active pelagic feeding
15th day after hatching	10-12.5	Division of fin fold into 3 divisions; complete resorption of oil droplet; single-chamber gas bladder filled with air. Feeding on plankton
20th-30th day after hatching	12-16	Differentiation of rays in caudal, anal and dorsal fins. Feeding on plankton and nectobenthos, cannibalism
40th-50th day after hatching	22-35	Differentiation of rays in first dorsal and pectoral fins. Feeding on nectobenthos. Possibility of habituation in nonliving food
50th-70th day after hatching	35-45	Scales
80th-90th day after hatching	50-80	Appearance of longitudinal stripes. Feeding on nectobenthos, fish fry and nonliving food

## DESCRIPTION OF THE FISHERY

### A. Geographic region

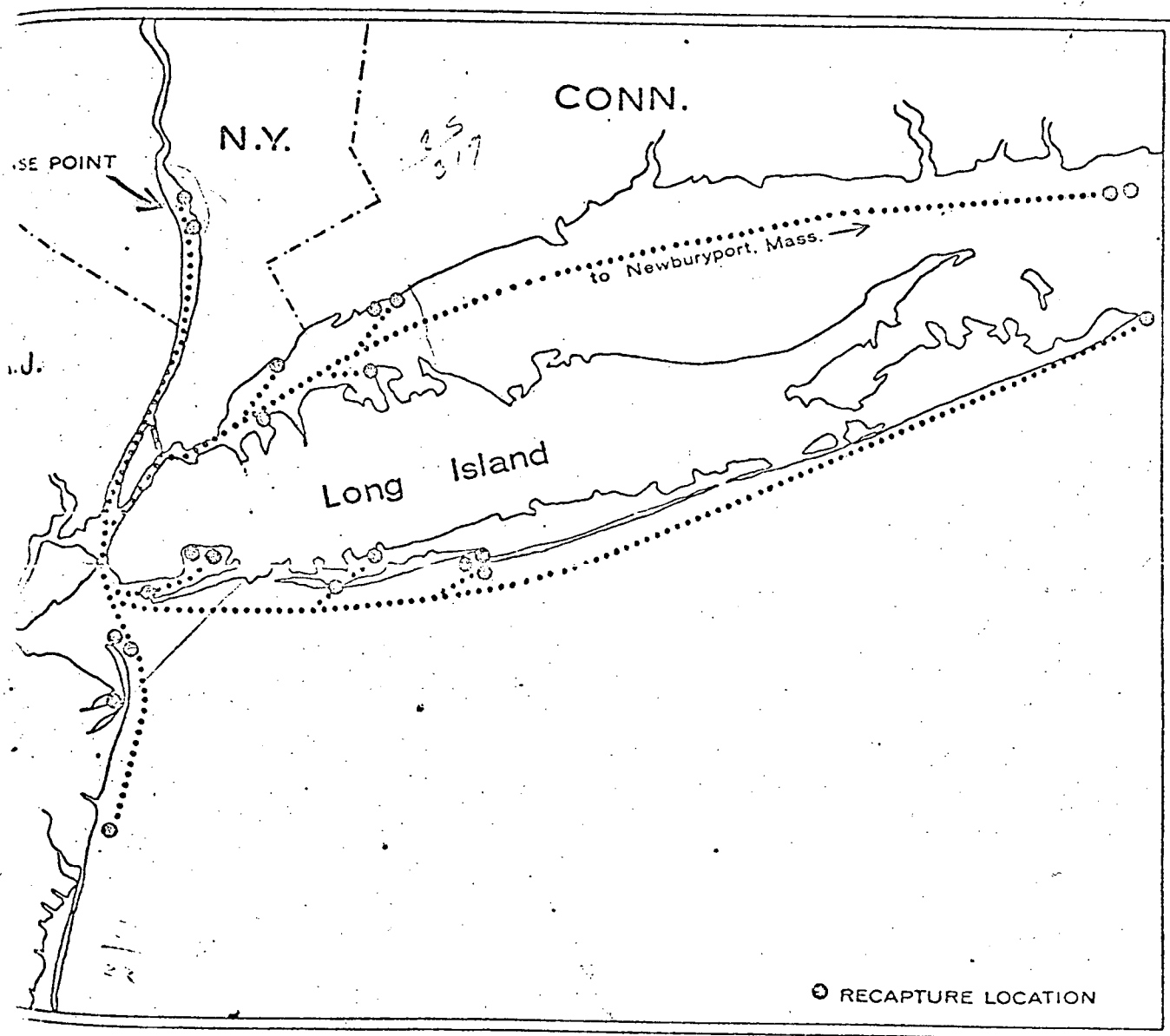
In its analysis, the Staff used the definition of the Middle Atlantic Region which was consistent with the definition used by other authors and with the area considered the Middle Atlantic Region as summarized in the commercial catch statistics (Koo, 1970). This region is illustrated in Figure 1 and consists of 3 states: New York, New Jersey, and Delaware.

Within this region, there are 2 major spawning and nursery areas which are known to be utilized by striped bass for reproduction. These 2 areas are the Hudson River and the Delaware Bay system. From the standpoint of location, striped bass produced in the Hudson River would be expected to contribute to stock in New Jersey, New York and Connecticut, whereas striped bass produced in the Delaware Bay would contribute mostly to New Jersey and Delaware. From a strict geographic standpoint, one cannot determine the relative proportion of the catch in New York which is composed of Delaware Bay fish, nor conversely can one likewise tell the proportion of the Delaware catch which is composed of Hudson-derived stock.

### B. Commercial landings

Commercial landings for this area were summarized by Koo in a recent publication. Some of the data which he tabularized is presented in Tables 1, 2, and 3. These data indicate that the landings in Delaware over the last 10 years of the data presented represent only a small proportion of the total Middle Atlantic catch - something on the order of 4%. If it is assumed that the N.J. catch from the Delaware Bay is equivalent to the Delaware catch from the Delaware Bay, then the total catch in the Delaware Bay system would represent something on the order of 7.5 to maybe 15% of the total Middle Atlantic catch over the last 10 years. Thus, the catch of striped bass on the N.J. coast and

FIGURE 2 Recapture locations of striped bass tagged by the Sandy Hook Marine Laboratory in the Hudson River in March, 1968.



Al 2

Reba 5

1 MR. TROSTEN: Mr. Chairman, could we pick up a  
2 few of the items left over from yesterday?

3 CHAIRMAN JENSCH: Yes.

4 MR. TROSTEN: One of them is the Board's ruling  
5 or statement, if you will, with regard to the stipulation among  
6 the parties that Mr. MacBeth referred to yesterday. The Board  
7 indicated, the Chairman indicated, that you would consider  
8 it overnight.

9 Have you reached a decision on that point?

10 CHAIRMAN JENSCH: There are some points of that that  
11 we would like to review.

12 MR. TROSTEN: I have a copy here. There is a minor  
13 error in the transcript.

14 CHAIRMAN JENSCH: Applicant's counsel has handed  
15 to us his copy of that portion of the transcript, and he has  
16 noted on page 9853 -- I might say I don't think the acoustics  
17 in this room are too good, but I think there are two typos  
18 on line 13 that he has suggested changing.

19 One is striking the word "nine" and insert the  
20 word "the" and changing the word "licenses" to the singular  
21 "license". That was my recollection of what had been written.

22 The Board has again considered the matter, and the  
23 Board has no objection to the stipulation, and in view of the  
24 motion that has been filed, the motion would be considered  
25 resolved by the stipulation.



Al 2

eba 6

1 No order will be entered on it. It will be con-  
2 sidered that the motion has been withdrawn.

3 MR. MACBETH: Thank you.

4 MR. TROSTEN: Under those circumstances, Mr. Chair-  
5 man, does that also resolve the matter of the interpretive  
6 decision, and there will be no need for that?

7 CHAIRMAN JENSCH: None will be entered.

8 MR. TROSTEN: Thank you.

9 Mr. Chairman, there were two other matters that  
10 I would like to go into. One is the offer which I made at  
11 the close of yesterday's session of the Compliance Report.  
12 I would like to review some of that matter this morning.

13 CHAIRMAN JENSCH: Very well.

14 MR. TROSTEN: Mr. Chairman, I have reviewed the  
15 document over the evening, and I must object to its entry into  
16 evidence. Basically, that is on the grounds of incompetence.  
17 For instance, on page D-1-2 of the first volume of the report,  
18 there are two paragraphs on entrainment at Indian Point.

19 I think my point would be clear if I simply read  
20 these.

21 "3. Experience from other plants and locations  
22 that is shown that fish eggs and larvae pass through the  
23 screens and subsequently Applicant's cooling water system. The  
24 portions killed passing through the cooling system have not  
25 been determined. The extent to which this has occurred in

Al 2

ba 7

1 IP-1 has not been established, and there are no applicable  
2 data obtained during the inquiry. At various periods each  
3 year the Hudson River near Indian Point contains substantial  
4 numbers of fish eggs and larvae.

5 "These eggs and larvae are distributed in the river  
6 by the action of currents, but their abundance in the area  
7 of the plant is not known. Since the mesh size of the screens  
8 used at IP-1 cannot screen out the eggs and larvae, it can be  
9 reasonably assumed that eggs and larvae flow through the IP-1  
10 cooling water system and that some of the eggs and larvae are  
11 damaged or killed."

12 "4. The significance of the numbers of fish  
13 killed at IP-1 has not been established. Previous studies of  
14 the Hudson River have not estimated the magnitude of the fish  
15 population that used the river during all or part of their  
16 life cycles. No evidence is available as to whether or not  
17 the population of fish in the river has declined since 1962.

18 "However, the large numbers of fish killed can be  
19 considered extensive. Although fish are killed in connection  
20 with the operation of some power plants in other areas, kills  
21 of this magnitude and duration in other plants have not been  
22 reported."

23 In the second volume of the report of inquiry ---

24 CHAIRMAN JENSCH: Excuse me. I wonder if I under-  
25 stand correctly, and I wonder if Staff Counsel could help us.

A1 2

Reba 8

1 It has been my understanding that the Compliance  
2 Section has a responsibility of taking, for instance, the tech-  
3 nical specifications and then examining the facts to say  
4 whether, or to ascertain, whether the facts as they discover  
5 them comply with the technical specifications.

6 I didn't understand that opinion evidence ---

7 MR. KARMAN: There was a special inquiry, Mr.  
8 Chairman.

9 CHAIRMAN JENSCH: Who were the authors?

10 Were they fish biologists?

11 MR. KARMAN: No, this was, as it was known at that  
12 time, the Division of Compliance, although it is a regulatory--

13 MR. MACBETH: No author is listed.

14 MR. TROSTEN: Was this report not done with the  
15 assistance of the Bureau of Sport Fisheries and Wildlife,  
16 with assistance of the personnel of the Water Quality Office?

17 MR. KARMAN: The authors were the AEC, who did use  
18 consultants.

19 MR. TROSTEN: "The following organizations particip-  
20 ated in the preparation of this inquiry report: Bureau of  
21 Sports Fisheries and Wildlife, Department of Interior, Water  
22 Quality Office, Environmental Protection Agency, Division of  
23 Biology and Medicine, U. S. Atomic Energy Commission, Division  
24 of Compliance, Atomic Energy Commission." That is on page 2.  
25 Is that a correct statement?

MR. KARMAN: Yes.

E3-ter-1

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CHAIRMAN JENSCH: As far as those who participate, I have seen some participations in environmental reports and some of the comments are directly opposite of the final statement that comes out from some sources.

I think the unnamed source problem is --

MR. KARMAN: I am not prepared to discuss the extent of anybody's participation.

CHAIRMAN JENSCH: Some people participate by objecting, and I wonder if that situation is here, the fact that all the fish people could have said, "Lord, this is a horrible situation."

I think what he is saying is that he objects to the lack of foundation with respect to the authors.

MR. MACBETH: Yes, but in Volume II, there is an Attachment A-2, which gives a list of references which it says were reviewed during the inquiry.

It is unclear as to whether or not they were relied on or for that matter, whether it is a complete list. There is, for instance, no mention of the Carlson-McMann Report, or the Rathjen-Miller Report, or other studies of striped bass eggs, and larvae and other fish in the Hudson which have been reviewed in this proceeding; all of which were available in October of 1971 when this report was published.

In that circumstance, I would really like to have an opportunity to have voir dire of the authors of this report,

ter-2

1 whose names are not given here, and see if they were aware  
2 of that material, whether they did look at it, whether they  
3 are expressing any judgment on it; because the statements  
4 made here, about fish eggs and larvae, and entrainment;  
5 obviously stand in stark contrast to other statements made  
6 by the regulatory staff, and the intervenors; and even the  
7 applicant, in this proceeding.

8           Until we know who the authors are and know whether  
9 they have made a serious study of the material reviewed in  
10 this proceeding, I have to object to the introduction of  
11 this, on the grounds of incompetency.

12           I really don't think you can review the whole situ-  
13 ation of the Hudson River without looking at Carlson-McCann,  
14 and Rathjen-Miller, and so many of the other things we have  
15 spent so much time discussing.

16           MR. KARMAN: My problem with the compliance report,  
17 Mr. Chairman, is that the date is October 1971, and subsequent  
18 thereto, as is evidenced by the massive final Environmental  
19 Statement, prepared by the Regulatory Staff, in

20           In my opinion, a much more comprehensive study  
21 was made of the Hudson River and all the ramifications thereto,  
22 and I really don't think that it would assist the Board in its  
23 determination in this particular hearing to examine a report  
24 which, in my opinion, is not as up to date and as comprehensive  
25 as our final Environmental Statement.

1           It was a report which the Regulatory Staff, I am  
2 certain, felt gave the facts as it had investigated, at that  
3 particular time, but I believe the final Environmental  
4 Statement should be our final word on that subject.

5           MR. MACBETH: I would have to add one other prac-  
6 tical point, which in a sense is not an objection, but if the  
7 report is accepted into evidence, I would really have to  
8 request to be able to cross-examine the authors.

9           There is a lot of bulky material in here, on a lot  
10 of issues, many of which we have gone over in this proceeding,  
11 and some of which we have not. There are many views expressed  
12 which are contrary to those expressed by the Regulatory Staff  
13 in other places, and I would have to cross-examine the basis  
14 of these opinions if they are going to be relied on as  
15 evidence in this proceeding.

16           MR. TROSTEN: Mr. Chairman, may I speak to that?

17           CHAIRMAN JENSCH: Surely.

18           MR. TROSTEN: Mr. Karman, there is a list of  
19 authors in the final Environmental Statement, that appears in  
20 the Statement?

21           MR. KARMAN: No, there is not a listing of authors.  
22 We have the references, and we have produced the witnesses.

23           MR. TROSTEN: There is no listing of authors --

24           MR. KARMAN: We have produced the witnesses. I  
25 agree with you, there is no listing of authors.

1 MR. TROSTEN: Thank you.

2 Am I correct in saying that the persons responsible  
3 for this report -- who was the person responsible in the  
4 Division of Compliance for this report?

5 MR. KARMAN: I have no idea.

6 MR. TROSTEN: Mr. Macbeth, is it your position that  
7 the report is irrelevant to the issues in this case?

8 MR. MACBETH: It has some relevance. I grant that.  
9 I think it is an incompetent report.

10 MR. TROSTEN: Is it your position that it is in  
11 immaterial?

12 MR. MACBETH: Parts of it are immaterial. Parts  
13 of it are material and relevant.

14 MR. TROSTEN: Is it your position that the sole  
15 reason this is inadmissible that the authors are incompetent?

16 MR. MACBETH: No. I tried to make that clear.  
17 Large parts of it are incompetent --

18 MR. TROSTEN: Basically, you are stating you are  
19 objecting to the report of the AEC Staff as being unreliable.  
20 Is that the basis of your objection?

21 MR. MACBETH: Large parts of it, yes. Let me make  
22 clear that we are talking about the Staff of the Division of  
23 compliance.

24 MR. TROSTEN: With the assistance of the other  
25 agencies?

1 MR. MACBETH: I think the phrase was "participation."  
2 I don't know what that means.

3 MR. TROSTEN: May I see it?

4 MR. MACBETH: If you will produce the authors here,  
5 we can voir dire them on what the participation was, and what  
6 it means, and so forth.

7 MR. TROSTEN: Excuse me a moment, will you?

8 MR. MACBETH: Sure.

9 MR. TROSTEN: I am reading from Page B-2, and there  
10 is a sort of an interesting statement of the conduct of the  
11 inquiry by the Division of Compliance that appears on Pages  
12 B-1 through B-2, of this report; and it details how the  
13 Division of Compliance was asked by the AEC to perform this  
14 study, how they advised people of their inquiry; they asked  
15 the persons who had originally raised the complaint about  
16 Indian Point 1 for information, how they sought information  
17 from the Hudson River Fishermen's Association and received  
18 information from the Association; how they received informa-  
19 tion from the State of New York.

20 There is a statement in here that the Fish and  
21 Wildlife Division, New York Department of Conservation, was  
22 contacted with respect to fish killed. This agency participa-  
23 ted in the review of the situation, and so forth.

24 There is a statement in here that the evaluation  
25 phase, and arrangements were made for participation of other



ter-6

1 Federal agencies having jurisdiction and expertise; particularly  
2 with respect to relevant conclusions, and so forth.

3 The Bureau of Sports Fisheries and Wildlife of the  
4 Department of Interior and the Water Quality Office of the  
5 Environmental Protection Agency reviewed the available infor-  
6 mation and data and were responsible for primary development  
7 of the conclusions concerning thermal discharges, chemical  
8 discharges, circulation of large volumes of water and fish  
9 kills.

10 Now, is it your position --

11 MR. MACBETH: I will say that; that whoever those  
12 authors are, it is incompetent. I agree that I have not  
13 analyzed every detail of this report over the eggs. If we  
14 are going to discuss the conduct of the proceeding, I would  
15 like to make another comment on the basis of that.

16 MR. TROSTEN: Let me make a further comment. Is  
17 it your understanding of the state of the law, Mr. Macbeth,  
18 that the matter of whether a document should be admitted  
19 into evidence and whether it is sufficiently reliable to be  
20 admitted within evidence is something within the sound dis-  
21 cretion of the Board?

22 Do you agree with that?

23 MR. MACBETH: What?

24 MR. TROSTEN: Do you agree that a document to be  
25 admitted in evidence in this proceeding is something within

1 sound discretion of the Board?

2 MR. MACBETH: Yes.

3 CHAIRMAN JENSCH: I think we disagree with that.  
4 I don't think everybody, handing a cornucopia there, and is  
5 to go out benefactioning. We have to comply with the law. If  
6 there is a foundation for a document, an objection with  
7 respect to lack of foundation -- there is a legal requirement  
8 to preclude its admission.

9 While we would like to be accommodating, and while  
10 we are receptive to all suggestions, I don't think we have  
11 discretion. --

12 MR. TROSTEN: This proceeding and other proceedings  
13 demonstrate that many documents which border, shall we say,  
14 on the limits of what is admissible have been admitted.  
15 They have been admitted without extensive cross-examination  
16 and what have you, on the grounds that they tended to fill out  
17 the record.

18 That has been the history of this proceeding. I  
19 think that is the way administrative proceedings -- and I  
20 am sure the Chairman agrees, that that is the way the adminis-  
21 trative proceedings ought to be governed.

22 As I say, I am interested in Mr. Macbeth's conclu-  
23 sions that the authors of this report are incompetent, that  
24 their conclusions are incompetent, and I guess, the Board  
25 should rule on the request.

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1           CHAIRMAN JENSCH: I don't know that the term,  
2 "incompetent," has been used properly in this sense. If he  
3 doesn't know who they are, he can't say whether they are  
4 incompetent.

5           MR. MACBETH: The report is incompetent.

6           CHAIRMAN JENSCH: This is one of the great com-  
7 plaints in an administrative hearing, that; one, we are doing  
8 things to fill up a record, and the second, is that we take  
9 any unnamed document that happens to come along and flush it  
10 into the system, here, and it gets kind of crowded in the  
11 outfall.

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1 MR. TROSTEN: Mr. Chairman, this is a rather small  
2 document prepared by the Regulatory Staff of the Atomic Energy  
3 Commission.

4 MR. MACBETH: We have been over that, Mr. Trosten.  
5 A moment ago you were making it out to be the Bureau of  
6 Sport Fisheries and Wildlife and the Water Quality Office of  
7 the EPA and a number of other organizations. Who did prepare  
8 it? That is a good question.

9 CHAIRMAN JENSCH: I think the Staff position is one  
10 that hasn't been discussed by either of you two gentlemen, and  
11 that is that the Final Environmental Statement reflects the  
12 view of the Staff.

13 MR. MACBETH: I am perfectly willing to rest on the  
14 Final Environmental Statement.

15 CHAIRMAN JENSCH: That is one of those generosities  
16 that shouldn't be passed unnoticed, of course.

17 MR. MACBETH: It is true that the Hudson River  
18 Fishermen's Association was one of the parties that made  
19 these allegations, and an inquiry was ordered. I think it  
20 is important to understand what the nature of the inquiry was.  
21 As far as I can make out from this, there was no kind of  
22 adversary proceeding at all.

23 On the last page, attachment 4 of volume 1, there is  
24 a list of people contacted, and two members of the Hudson River  
25 Fishermen's Association are noted. Both of those names have

1 asterisks next to them, which says "Telephone Contact." So  
2 the contacts with the Association in this inquiry were  
3 apparently one or two telephone calls.

4 Further, there is no contact with the attorney for  
5 the Hudson River Fishermen's Association whose name was signed  
6 to the original petition. That leaves me with the feeling that  
7 the inquiry was not of the nature that this inquiry has been,  
8 and that to suggest that there is, you know, full and complete  
9 analysis of any views of the Hudson River Fishermen's Association  
10 may have wished to present just is not so, and I just want to  
11 make that clear on the record in light of Mr. Trosten's earlier  
12 comments.

13 MR. BRIGGS: Mr. Trosten, what in particular do  
14 you want us to get from this report?

15 MR. TROSTEN: I think that there are many things that  
16 you could get out of it, Mr. Briggs. The principal thing that  
17 I get out of it is that the Regulatory Staff of the Atomic  
18 Energy Commission on direction of the Atomic Energy Commission  
19 are conducting an inquiry about the ecological impact of the  
20 Indian Point 1 plant from 1962 to 1970.

21 Recognizing that the Regulatory Staff of the AEC  
22 certainly at that time did not possess expertise in the bio-  
23 logical areas that were within the scope of this inquiry, they  
24 contacted the best people that they could contact in the  
25 Federal Government to obtain their views and comments.

1           The conclusions that they drew were, or among the  
2 conclusions they drew were that they were unable to discern  
3 whether there had been an adverse ecological impact. I think  
4 that the principal thing that I get from this is the following,  
5 that there is insufficient evidence to substantiate the  
6 allegation that there has been a significant, irreparable and  
7 adverse effect upon the river ecologically and marine life.

8           They conclude that large numbers of fish have been  
9 killed. However, they say, there is insufficient evidence to  
10 establish that the killing of large numbers of fish has caused  
11 a deleterious effect on fish population, propagation and  
12 overall ecology.

13           That is the overall conclusion. I think this is an  
14 extremely important conclusion for the Board to bear in mind  
15 because it is strikingly similar, actually, the result of an  
16 official inquiry by the Regulatory Staff of the AEC has a  
17 strikingly similar conclusion to the conclusion that the  
18 Applicant has drawn concerning the impact of this plant, and by  
19 direct analogy to the prospective impact of Indian Point 2.

20           MR. BRIGGS: But now we have another report from  
21 the Staff, the Final Environmental Statement, that seems to  
22 take another point of view.

23           MR. KARMAN: And, may I add, is more inclusive than  
24 the original.

25           MR. TROSTEN: That is a very important point and I

1 think the Board should weigh these things.

2 Mr. Briggs, I am suggesting -- I am not suggesting  
3 that these report is the absolute answer to all the question.  
4 I am suggesting that the Board accept it and take it for what  
5 it is worth. I am suggesting that it has a certain amount of  
6 reliability. Mr. Macbeth thinks the authors are incompetent.  
7 Maybe they are. Maybe the authors of the present Environmental  
8 Statement are incompetent. I don't know what Mr. Macbeth's  
9 view of that situation is. But be that as it may, this is a  
10 report, and there are other reports being prepared, and they  
11 may come to other conclusions; who knows.

12 MR. BRIGGS: We have listened to cross-examination of  
13 Dr. Goodyear, and we have asked for additional information from  
14 these people, and we have heard Mr. Carter and Mr. Knighton  
15 on their parts of the report, and yet this is just given to us  
16 without, essentially, without any opportunity until we go into  
17 the business of calling people in to talk with them, of  
18 judging the quality of that report.

19 MR. TROSTEN: I would say this is like some of the  
20 reports that came in on the radiological phase of this, Mr.  
21 Chairman. There are things in the report that the Applicant  
22 doesn't agree with, and we will take the bad with the good.  
23 In other words, there are things in here that we don't agree  
24 with.

25 On the other hand, there was an official report made

1 by the United States Atomic Energy Commission's Regulatory  
2 Staff. It is entitled to a certain amount of weight. It  
3 is certainly presumptively reliable, notwithstanding Mr.  
4 Macbeth's comments on the incompetency of the authors.

5 MR. MACBETH: I am attempting to overcome this  
6 assumption of reliability by showing the Board the references  
7 on which this relied. There is no reference to the Carlson-  
8 McCann report, or the Rathjen-Miller report. There is no  
9 reference to hundreds of other documents that have been  
10 referenced by Applicant's own consultants, Dr. Goodyear, and  
11 Mr. Clark. I think it is not reliable.

12 If Mr. Trosten would like to bring in the authors of  
13 this report and let me cross-examine them on the basis by  
14 which they reached these conclusions, that would be fine. I  
15 am not surprised that a group of men who did not look at all  
16 this other data reached that opinion. But I don't think it is  
17 one that has any reliability, and until the authors of the  
18 report are produced, however they are, and one of the major  
19 problems is that we don't even know who they are, I object  
20 to the introduction of this document into evidence in this  
21 proceeding.

22 CHAIRMAN JENSCH: The Board sustains the objection.

23 Are we going to proceed with interrogation of Mr.  
24 Knighton and Mr. Carter?

25 MR. MACBETH: Yes.



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1 CHAIRMAN JENSCH: Will they come forward, please?

2 Mr. Knighton has been previously sworn.

XXXXXXXXX

3 Whereupon,

4 GEORGE KNIGHTON

5 was recalled and, having been previously duly sworn, was  
6 examined and testified further as follows:

7 CROSS-EXAMINATION

8 BY MR. MACBETH:

9 Q Could I ask about this document with respect to  
10 cooling towers?

11 On page 2 of this document, they are discussing  
12 periods in which cooling towers have been built at other plants.  
13 They say the "Cooling tower schedule at the time the initial  
14 decision was made to build towers to completion of pre-  
15 operational testing of the installed towers, ranging from an  
16 objective period of about three years eight months down to  
17 three years one month for the Vermont Yankee mechanical draft  
18 towers to two years eight months for the Palisades mechanical  
19 draft towers."

20 Could you tell me in each of those three cases what the  
21 timing of the tower building in relation to the completion of  
22 the plant was? Were these towers that were being built, or  
23 the plant was being built, or was there any requirement that the  
24 plant not be operated until the towers were constructed?

MR. KARMAN: One question at a time, please.

ty 7

1 THE WITNESS: In the case of Palisades, the plant  
2 was running. The towers have not been completed yet.

3 BY MR. MACBETH:

4 Q And was there any requirement at Palisades that the  
5 plant not be operated until the towers were completed?

End #4

6 A No.

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Reba 1

1 Q All right.

2 A Vermont Yankee, the towers were built along with  
3 the plant. There was a decision at some point in time to  
4 put towers in, or closed cycle operations. They can do once-  
5 through, or closed cycle operations. They were constructed  
6 essentially at the time the plant was constructed.

7 Davis-Besse, this plant was designed with the natural  
8 draft tower, and so it is being constructed during the con-  
9 struction of the plant.

10 Q Now, let me take each in turn. That means that  
11 at Davis-Besse, there was the whole construction schedules  
12 worked out so that the building of the towers and the building  
13 of the plants were meshed together, as it were?

14 A That is correct.

15 Q So that there was no particular pressure on the  
16 utility at Davis-Besse to have quick construction of the  
17 towers. It was really controlled by the total period of the  
18 construction of the plant?

19 A Right, yes.

20 Q And at Vermont Yankee, the towers were completed  
21 in November of 1970, is that correct? That is on your Table  
22 1.

23 A Yes.

24 Q And the first license at Vermont Yankee was not  
25 issued until 1972, is that right?

Al 5

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A That is correct.

Reba 2

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Q So there was a lapse of something on the order of 18 months between completion of the towers and the issuance of the first operating license.

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Was there any time pressure to complete the construction of the towers at Vermont Yankee?

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A I am not -- I don't have enough information to really state one way or the other.

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Q What was the situation at Palisades? Was there pressure there to complete the towers on the fastest possible schedule?

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A I believe there is an agreement that the Applicant has that requires him to accomplish that work as early as possible, but that is hearsay evidence.

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Q In your opinion, does any one or all three of these schedules which are discussed on page 2, and appear on table 1, represent an expedited schedule, the fastest reasonable schedule which a utility could meet to construct cooling towers?

20

21

22

A I believe Palisades could be considered that type. Based on the schedules they used for constructing the towers.

23

24

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Q Palisades is a mechanical draft tower. Would you expect the schedules to be longer, shorter, or the same, if a natural draft tower were being constructed?

Al 5

1 A Would you repeat that?

ba 3

2 Q Palisades has a mechanical draft tower. If a  
3 natural draft tower were constructed instead, would you expect  
4 the expedited schedule to remain the same, or be less, or more?

5 A I would expect it to be more.

6 Q By how much?

7 A It is just a judgment I am making. I don't have  
8 any figures.

9 Q Substantially more, or just a few months?

10 A I don't really think I could say right now.

11 Q On page 3, you give a minimum time for natural  
12 draft tower construction of two years and nine months, which  
13 would be one month more than the Palisades time. That is the  
14 first paragraph on page 3. Do you have any reason to change  
15 your opinion from what is reported there?

16 A No. This is information that was given to us.

17 Q But you have no reason to change your opinion that  
18 that is reliable information?

19 A On a general basis, or in a specific case?

20 Q Well, first take a general basis.

21 A No. On a general basis, I have no reason to  
22 change what is stated here.

23 Q What about the specific basis?

24 A If we are speaking in terms of backfitting, then  
25 I would have to question it.

Al 5

1 Q But that would be the one element?

Reba 4

2 A That is the element that is the problem.

3 Q On page 4 you discuss wet towers, and I wanted to  
4 be clear that wet towers would include a natural draft closed  
5 cycle system. Is that correct?

6 A Yes.

7 MR. MACBETH: I have no further questions of Mr.  
8 Knighton. I do have question of Mr. Carter.

9 CHAIRMAN JENSCH: Does Applicant have any questions?

10 MR. TROSTEN: No questions.

11 CHAIRMAN JENSCH: Any redirect?

12 MR. KARMAN: No redirect.

13 CHAIRMAN JENSCH: You are excused.

14 (Witness Excused)

15 CHAIRMAN JENSCH: Mr. Carter, will you come forward?  
16 Mr. Carter has been previously sworn.

17 Whereupon,

18 C. M. CARTER

19 was recalled as witnesses, and, having been previously duly  
20 sworn, was examined and testified further as follows:

21 CROSS-EXAMINATION

22 BY MR. MACBETH:

23 Q I call your attention to Staff Document Number 13.

24 This is basically a question of clarification. On the first  
25 page, you discuss the schedule of the start-up of Indian Point

Al 5 1 2. It has been moved from the Applicant's Environmental Report,  
Reba 5 2 the date of June 1, 1972, to approximately September 1, 1973.  
3 You set out various revised costs which follow from those changes  
4 in dates.

5 Then you say at the bottom of the chart, "The increased  
6 costs result in delaying the start-up date of the plant and  
7 the alternatives." What did you mean when you said, "The in-  
8 creased costs result from the delaying of start-up dates"?

9 A Anytime you have a project in construction, under  
10 construction, or you delay the start or completion time of  
11 that construction, an escalation, normal escalation, will  
12 increase the cost, the final cost.

13 Q The start-up date of what? It seemed to me that  
14 one reading of this would be that you were adding costs because  
15 the beginning of the commercial operation of Indian Point 2  
16 had been delayed through various episodes?

17 A That is correct.

18 Q And so you are saying that it is the alternative  
19 to -- alternative methods -- of cooling will be more expensive  
20 because the plant did not operate between June 1, 1972 and  
21 September 1, 1973?

22 A No.

23 Q That is what I am confused about. Could you clarify  
24 that?

25 A I will try. The alternatives will be more expensive

A1 5  
Reba 6

1 because originally the alternatives had a start-up date in  
2 1975, but under the Staff recommendation, it would have to go  
3 into effect by January 1, 1978.

4 So that is an additional three year delay.

5 Q So it really has nothing to do with the start-up  
6 date for the plant?

7 A No, not on the alternatives.

8 Q That was really what I wanted to get clear.

9 I would like to turn now to Document 14, the benefit-cost  
10 analysis for alternative operating modes. On page 2 of that  
11 testimony, you discuss scheduled shutdowns, and say that  
12 scheduled shutdowns for large power reactors are keyed to  
13 refueling.

14 Now, a day or two ago Mr. Newman was here and was dis-  
15 cussing the way in which the company is able to control the  
16 period of refueling, and stated that they would burn up the  
17 core or modify it in other ways so that they would be able to  
18 maneuver the refueling cycle after the first 18 months to an  
19 annual cycle, to either the fall or spring of the year.

20 Now, is it not also true that the same methods could be  
21 used to maneuver the refueling cycle to, say, the period  
22 between the 15th of December and the 1st of March?

23 A I assume that it could be. There would be an  
24 operating problem between the company and the fuel vendor that  
25 would have to be worked out.



Al 5 1 Q But it would be no more difficult to move the  
ba 7 2 refueling cycle a few months one way or the other so that  
3 you ended up in that period, than to move it a few months one  
4 way or the other so that you ended up with a cycle falling in  
5 the spring or the fall. Is that correct?

6 A Well, it would depend on the date of the original  
7 start-up.

8 Q Yes, but that is comparatively random. At least  
9 we have heard no testimony from the company that they would  
10 delay starting up the plant, for instance, so that the fuel  
11 cycle would fall in the right place.

12 It is true that they may be lucky that the start of the  
13 plant falls at the time when naturall you would come out at  
14 the right place.

15 But assuming that didn't happen, and you did have to move  
16 the refueling cycle a few months one way or the other, there  
17 would be no more difficulty in moving it into the December 15th  
18 to March 1st period than there would be in moving it in the  
19 spring to fall period, is that correct?

20 A Theoretically, that is true.

end Al 5 21

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23

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1 BY MR. MACBETH:

2 Q And if modifications in plant operation had to be  
3 made to move the refueling cycle either to the period between  
4 the 15th of December and first of March, or in the spring and  
5 fall, would changing that cycle impose any greater economic  
6 burden on the utility if the cycle were being moved to  
7 December 15 to March 1st, rather than from the spring or  
8 fall?

9 MR. TROSTEN: Mr. Macbeth, would you clarify your  
10 question, please. Are you asking Mr. Carter, and I want to  
11 make sure with respect to your previous question, too, are  
12 you asking him whether refueling should be twice a year, or  
13 whether it should be once a year, or once every two years?

14 MR. MACBETH: No, I am not asking him any of those  
15 things.

16 MR. TROSTEN: What are you asking him?

17 MR. MACBETH: I thought the questions were pretty  
18 clear.

19 MR. TROSTEN: Are you asking him whether it would  
20 be easier to move it into a particular time of the year?

21 MR. MACBETH: Yes, I did ask him that.

22 MR. TROSTEN: Whether it would be easier to move  
23 it into June 1st, to July 31st, and December?

24 MR. MACBETH: I didn't use June 1st to July 31st.

25 MR. TROSTEN: Are you asking him whether it would

1 be easier to move it into a twice-a-year reviewing schedule?

2 MR. MACBETH: No.

3 MR. TROSTEN: Did you understand Mr. Macbeth's  
4 question?

5 THE WITNESS: It was my understanding that what he  
6 was asking me, was that once you got past the first 18-month  
7 period, and got on an annual fuel cycle, your witnesses pre-  
8 viously stated that normally, it would fall in the spring, or  
9 it could be adjusted to fall in the spring; and I understood  
10 the question to be, could that be slipped back to the December  
11 through February period.

12 MR. TROSTEN: But, not June through July?

13 MR. MACBETH: Nobody said anything about June or  
14 July.

15 MR. TROSTEN: You are just talking about December  
16 through February.

17 MR. MACBETH: Well, that is all I had in the  
18 question. What I was aiming at is, if in the 18-month period  
19 you have to make an adjustment to have a fuel cycle fall in  
20 a particular period, would there be any more difficulty, on  
21 a theoretical basis to making the adjustment so it falls in  
22 the spring and fall, as opposed to making it fall between  
23 December 15th and March 1st.

24 The answer was that there wouldn't be any more  
25 difficulty. It might in a particular case, but in the history

1 of this plant, no one knows when it is going to start up.

2 MR. TROSTEN: Are you asking him whether it would  
3 be more difficult to go to a schedule where you had only one  
4 opportunity for refueling as opposed to two?

5 MR. MACBETH: No, I didn't ask him that question.

6 MR. TROSTEN: You are contrasting the spring and  
7 the fall refueling as opposed to one refueling period in  
8 December?

9 MR. KARMAN: I think we ought to get clear on what  
10 is being asked. Now, I am confused.

11 MR. MACBETH: I thought my questions were straight-  
12 forward, and it is my memory that Mr. Newman said you are  
13 not going to have two refuelings a year.

14 Are you now suggesting that the plant is going to  
15 be refueled twice a year? I remember Mr. Newman saying it  
16 would be --

17 CHAIRMAN JENSCH: Let us take each question as  
18 we go along. Is there a pending question?

19 MR. MACBETH: Could you go back to the point before  
20 Mr. Trosten started asking me questions?

21 (The reporter read the record, as requested.)

22 MR. MACBETH: That is not a very good question.  
23 Would you like me to restate that?

24 THE WITNESS: Would you start afresh?

1 BY MR. MACBETH:

2 Q In a situation where the company decides it wants  
3 the annual fuel cycle at one particular time of year, and  
4 have the refueling cycle fall at that time; would modifications  
5 in the operation of the plant have to be made, so that the  
6 scheduling would fall at an appropriate period?

7 If the company decided the point where it wanted  
8 that annual refueling cycle to fall should be between the  
9 15th of December and the end of March, rather than the spring  
10 or fall, would that impose any economic burden --

11 MR. TROSTEN: How many months are you contrasting?  
12 On the one hand, the spring and fall number of months, and  
13 on the other hand, the December 15 period to March 1st, what  
14 is the period of months that you are contrasting with the  
15 two and a half month period from December 15th to March 1st?

16 You talked about contrasting a spring and fall  
17 period. How many months are you asking Mr. Carter to compare?

18 MR. MACBETH: Well, I would obviously like to line  
19 it up against Mr. Newman's testimony. How many months did  
20 Mr. Newman have in his testimony?

21 MR. TROSTEN: Well, spring and fall.

22 MR. MACBETH: If you get it over six months,  
23 I won't believe it.

24 MR. TROSTEN: Six months, I think six months could  
25 be borne out.

1 and what its operating history was?

2 A Right.

3 Q All right. And you couldn't project what would  
4 happen, what that start-up date and operating history would  
5 be?

6 A No, I could not.

7 DR. GEYER: May I ask a question, Mr. Carter?

8 Would it involve less economic burden to move  
9 from the fall up to the winter period, or move from the spring  
10 back to this winter period, because you wouldn't move the whole  
11 month period, I am sure.

12 THE WITNESS: Well, again, it would depend upon the  
13 initial start-up and the initial 18-month period. If you  
14 ran out of fuel in the fall and you wanted to get on the  
15 December schedule, then, if the difference in the time period  
16 and the timespan coincided with the time required for refueling,  
17 then you would be in good shape.

18 If it fell beyond the period in the spring, and  
19 you wanted to get on the cycle, then you would have to shut  
20 down and refuel before.

21 DR. GEYER: And that obviously would be more  
22 costly?

23 THE WITNESS: It would be more costly.

24 BY MR. MACBETH:

25 Q Mr. Carter, on Pages 4 and 5, you have set out a

1 MR. MACBETH: Could you tell me the beginning and  
2 end of spring and fall for those purposes?

3 MR. TROSTEN: I would have to consult.

4 The information I have is that it would run from  
5 March 1st to May 15th. That is a two and a half month period,  
6 and from October 1st to December 15th, which would be another  
7 two-and-a-half month period. It is five months rather than  
8 six.

9 MR. MACBETH: All right.

10 BY MR. MACBETH:

11 Q Mr. Carter, could you answer the question?

12 A It would depend upon the circumstances of how much  
13 economic burden it would place on the applicant. If, like  
14 I stated before, if the initial fuel cycle hit at the right  
15 time, and fell within the December 15th to March 1st period,  
16 then it would be a matter of refueling, and hopefully, if  
17 the operation went, as I am sure the applicant hopes it does,  
18 without any unscheduled outages during the remainder of the  
19 year before that refueling cycle came up again, then they  
20 would be able to maintain the cycle.

21 If they had an unscheduled outage sometime during  
22 the year, it would possibly extend the life of the core, and  
23 then you get off-schedule again.

24 Q So essentially, it might, or might not, depending  
25 on circumstances at the particular plant, when it started up,

ter-7

1 number of costs that would be imposed on the utility through  
2 the use of Indian Point 2, as a peaking unit.

3 Now, you have used in this analysis a period  
4 running to January 1, 1978. Could I just be clear to start  
5 with, what your beginning date in 1973 is?

6 When did you assume these costs listed for 1973  
7 would start to be imposed?

8 A The costs on Page 5?

9 Q Yes.

10 A Unit production costs. Those are for the calendar  
11 years.

12 Q But in your analysis of the total cost that this  
13 mode of operation would impose on the utility, did you assume  
14 that Indian Point 2 would begin commercial operation after July  
15 31, 1973, or before that time?

16 I think, on Page 2, you say that --

17 A September 1st.

18 Q Well, what confused me was that on Page 2, you  
19 said that the period to be covered is from June 1, 1973,  
20 through December 31, 1977; which is in accordance with the  
21 proposed conditions in the final Environmental Statement?

22 A That is correct. This work was completed and sub-  
23 mitted to be these, the day before the other document we  
24 reviewed first, on revised generating costs, and it was  
25 during that interim period that I learned that the hearings



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would not be completed until August.

Q So that these figures on Page 7 do include costs for unit production costs for the summer of 1973?

A Right.

Q Now, further, the figures as I look at them for operation and maintenance of nuclear plants for both fuel and operation maintenance at oil-fired plants, fuel and operation of combined cycle plants -- in fact, glancing down this, for everything except nuclear fuel, there is an escalation amount worked into the figures across the years from 1973 through 1977; is that not correct?

A There is escalation in the nuclear for O&M, but not for the fuel costs, cost that is a levelized fuel cost, that the applicant gave us.

end 6

1 Q So nuclear fuel is the only kind of fuel that  
2 doesn't get more expensive. I can see why they are interested  
3 in running the plant.

4 On the other hand, that also means that if the closed  
5 cycle cooling system were built and installed within, say,  
6 three years from the time that a license was issued, we would  
7 have proportionately lower costs. We would be striking out the  
8 year 1977 and the end of 1976 so that we would come to a  
9 situation where we would be reducing the unit production cost  
10 that you reported here on page 5 by more than a fifth since  
11 1977 has the highest escalation figure in it?

12 A What would be the startup date for your cooling  
13 tower?

14 Q Say, September 1, 1976.

15 A I don't see what effect that would have on your fuel  
16 cost.

17 Q Well, you wouldn't have any fuel cost in 1977.  
18 That is the effect it would have. Also, you would be losing  
19 the year that has the highest fuel cost because it has the  
20 highest cumulative escalation in it.

21 A This study was based on closed cycle cooling systems  
22 by January 1, 1978. If that goes in prior to that time, if you  
23 back off a year or two years, then certainly it would cut off  
24 that end of the study.

25 Q Yes. It is a rather simple-minded question. The

ty 2

1 only point I was trying to bring out is that you would -- if  
2 you removed 1977, you do lose somewhat more than a fifth of the  
3 total cost because 1977 is the year with the highest escalation.  
4 In other words, the faster you get the cooling tower in, the  
5 cheaper it is; correct?

6 A Correct.

7 Q Fine.

8 Now on the summary sheet, in Table 1, page 7, you  
9 give a list under 3, of increased stack emissions in New York  
10 City and tons of particulates, sulfur dioxide, nitrogen oxide.  
11 Taking each in turn, could you tell me the effect which those  
12 emissions will have on the people of New York City?

13 A I am afraid I can't, Mr. Macbeth. I do know that the  
14 Applicant operates plants using the percent sulfur content in  
15 fuel that is required by law.

16 Now, there are so many things involved. If they  
17 stay within the law and everyone else does, it may or may not  
18 have an effect upon the population because you don't know what  
19 else is coming in riding on the wind from other locations.  
20 Normally in Tennessee we have pretty clear air but occasionally  
21 we get pollution coming down from the Northeast and it gets  
22 pretty rough.

23 So what effect the additional stack emissions would  
24 have on the population in New York City would depend upon the  
25 air quality at the time, and then that evaluation would have to

1 be made by a doctor.

2 Q You have made no evaluation of that sort?

3 A I am not qualified, Mr. Macbeth.

4 Q Would that also hold true for the effects on plants  
5 and animals and buildings and other objects?

6 A Certainly.

7 Q Somewhere here, and I am afraid I can't find it,  
8 there was an indication that in conducting the analysis and  
9 arriving at the cost figures, you assumed that from the 15th  
10 of December to the 1st of March and the months of June and July  
11 for each of the years through 1978, Indian Point 2 would be  
12 simply at hot standby, that it would not be used to produce  
13 power for the Con Edison system; is that correct?

14 A A list of the alternative cases is on page 4.

15 Q My point is that in calculating the production costs  
16 on page 5, at the top, is it true that you assume that all the  
17 power that could be produced from Indian Point 2 in the winter  
18 and summer restricted periods would in fact come from outside  
19 sources and Indian Point 2 itself would be held on hot standby  
20 throughout those periods?

21 A For each case where I have indicated hot standby,  
22 I did consider it being held at hot standby throughout the  
23 period, and that the makeup power necessary for holding Unit 2  
24 in standby would come from the existing generating facilities in  
25 New York City.

1 Q And was that condition based on an analysis of the  
2 power supply available to the utility, either through its own  
3 plants or through purchases of power from other plants?

4 A I had to assume that whatever generating equipment  
5 that the Applicant had in New York City, a sufficient amount of  
6 it was available to carry the load without Unit 2.

7 This gives you what you might call a midrange cost.  
8 I had no way of determining what the amounts of purchased power  
9 would be that would be required. I had no way of predicting  
10 which of those units in New York City would be down.

11 By assuming hot standby throughout the period, then  
12 if purchased power was required, in all probability it would be  
13 emergency power which has a high price tag, and so the cost would  
14 go up.

15 If they could not purchase power and had to use Unit  
16 2 to generate that power, then the costs would come down. So  
17 this is sort of the midrange in cost.

18 CHAIRMAN JENSCH: Is this a convenient place to  
19 interrupt your examination?

20 MR. MACBETH: Yes.

21 CHAIRMAN JENSCH: At this time, let's recess to  
22 reconvene in this room at 10:40.

23 (Recess.)

24 CHAIRMAN JENSCH: Please come to order.

25 Do you have further interrogation?

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1 MR. MACBETH: I have a few more questions.

2 CHAIRMAN JENSCH: Proceed, please.

3 BY MR. MACBETH:

4 Q Mr. Carter, before the break I was trying to question  
5 you on the assumption which you have made, basically assump-  
6 tions about electrical supply within the Con Edison system and  
7 through purchases.

8 You said that you assumed for your Case 4 that  
9 Indian Point 2 would be held at hot standby throughout both the  
10 restricted periods, and that you assumed that sufficient  
11 power would be available through purchase and within the Con  
12 Edison system.

13 Was that assumption based on analysis of the  
14 power supply and demand, plus availability to purchase within  
15 the, or for the, Con Edison system?

16 A The only new capacity --

17 CHAIRMAN JENSCH: Could you try that yes or no and  
18 then explain it? Was it based on an analysis?

19 THE WITNESS: It was based on an analysis?

20 BY MR. MACBETH:

21 Q Of the amount of power available within the Con  
22 Edison system and the amount that could be purchased?

23 A Yes, with limitations.

24 Q Would you explain the limitations?

25 A As I said before, I have to assume that the plants

1 within the city, the generating capacity within the city,  
2 would be available. With that limitation, the new capacity  
3 added during the period as shown in item 3 on page 4, those  
4 were taken into account, also.

5 Q So that you reached the conclusion that if the  
6 capacity within the city was available and the new capacity  
7 in item 3 on page 4 is added over the period to January 1, 1978,  
8 Indian Point 2 could be held at hot standby and not used for  
9 the production of power until January 1, 1978, and the power  
10 demands within the Consolidated Edison system would be  
11 met?

12 A That is correct, provided the capacity within the  
13 city is available.

14 Q Yes. Obviously.

15 If Big Allis, goes out, we are in more trouble.

16 MR. WOODBURY: It is out.

17 CHAIRMAN JENSCH: Trouble, trouble.

18 MR. MACBETH: It is just out for scheduled maintenance  
19 now.

20 BY MR. MACBETH:

21 Q In the course of my interrogation of Mr. Newman  
22 earlier in the week, he indicated that the significant problems  
23 with stress on the turbines and on the electrical generating  
24 equipment, if Indian Point 2 were to be used as a peaking unit,  
25 were very largely caused by moving the plant from a cold

ty 7

1 position to a heated state, and that if the plant were run at  
2 a base load of 30 percent of full power, or 50 percent of  
3 full power, almost all that problem of thermal stress would be  
4 overcome.

5 Would you agree with at least my characterization  
6 of Mr. Newman's testimony, and assume at the moment I have  
7 paraphrased it correctly, would you agree that that is correct?

8 MR. KARMAN: What is correct; that he is correct,  
9 or what he said?

10 MR. MACBETH: The opinion that I have assigned to  
11 Mr. Newman is a correct opinion.

12 THE WITNESS: I am not sure I could state that the  
13 lack of the turbine could be decreased some by a fluctuation  
14 between 30 percent and full power, but it would certainly be  
15 increased from cold to hot, and thermal cycling over the full  
16 range.

17 MR. TROSTEN: Did you say increased or decreased?

18 THE WITNESS: The life would be increased if you  
19 start at some level, 30 percent, and fluctuate from there up,  
20 rather than from the cold state to full power.

End #7

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CR 8370

BY MR. MACBETH:

Q And that change from a cold state of 30 percent, would that be very significant in terms of thermal stress?

A I didn't put that too well. Really, the vast bulk of the thermal stresses are experienced between cold state and 30 percent, rather than between 30 percent and 100 percent?

A I would say that probably your initial damage would occur from cold to 30, or 40 or 50, somewhere in there, but your maximum thermal stress would be at full power.

Q If you went all the way up?

A Yes.

Q On the bottom of page 9, you discuss the release of radioactivity and liquid effluents during a hot standby status. You say that this total radioactivity and liquid effluents during a hot standby status may be greater than during normal operation for an equivalent period.

This anomaly may arise should increased volumes of waste water for maintenance activities produce in-plant build-up times thus offsetting an expected gain from radioactive decay.

What kinds of maintenance activities are you referring to there? Are you referring to maintenance activities connected to the core itself, or other kinds of maintenance activity?

A I don't think I could be specific. There are many things about a reactor that anytime your reactor is down and you want to go in and perform maintenance, some maintenance

Al 8 1 cannot be performed unless you shut down, or at a very low  
R 2 2 level.

3 So what you would be doing would be generating radioactive  
4 wastes at a period -- in hot standby, you would only have one  
5 circulating cooling water pump running, so you wouldn't have  
6 the dilution for the waste or the discharge that you would  
7 have if the full condenser cooling water flow was going  
8 through.

9 Not being able to discharge these wastes to get the  
10 proper dilution, you have higher concentrations.

11 Q On page 3 of the testimony, you say the failure  
12 to return to power operation within, and I am paraphrasing  
13 here, in a period of 30 minutes or less, may result in a  
14 forced shutdown of 1 or 2 days to permit xenon decay. In the  
15 testimony from Mr. Newman and in cross-examination, he indicated  
16 that the period of shutdown would be 7 to 8 hours at the be-  
17 ginning of the life of the core and would range 10 to 19 hours  
18 in the later life of the core, and his analysis was based on  
19 a consideration of the Indian Point plant in particular, and  
20 I notice in the footnotes that your analysis is based on some  
21 work.

22 Do you have any reason to believe that the period of  
23 incapacitation for Indian Point 2 in particular would be longer  
24 than Mr. Newman suggested, and closer to the one or two days  
25 that you give?

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1           A       No, I do not. The statement I made here was a  
2 general statement. There are many factors that go into it,  
3 where you are in the life of the fuel, and a lot of it, that  
4 information, would have to come from the fuel vendor for curves  
5 furnished by the fuel vendor to the Applicant.

6           So I would assume that Mr. Newman's estimates were a lot  
7 more accurate than mine, in general terms.

8           Q       Thank you. A question of clarification on page 4.  
9 Under alternative cases, you give various rated capacities  
10 for Indian Point 2 in cases 2 and 3, 100 percent power in the  
11 winter and 50 percent power in the winter respectively.

12          Those are steady state operations? In other words, in  
13 case 2, Indian Point 2 would be operating at 100 percent of  
14 full power throughout the winter, and in case 3, at 50  
15 percent of power throughout the winter?

16          A       Yes.

17          Q       Could you tell me on page 5, looking at the intro-  
18 duction costs, what mix of the various fuels you used to pro-  
19 duce the increase in generating costs that is reflected in  
20 item 2 on Table 1?

21          A       I used all the fuels listed with the exception of  
22 the nuclear fuel.

23          Q       But you must have had some mix to produce the  
24 actual cost figures, since the costs of the fuels differ,  
25 and what percentage did you assign to oil fired gas turbines,

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Reba 4

1 pump storage, and so forth?

2 A I will have to have some way of estimating the  
3 generation mix, so what I did was take a typical daily demand  
4 curve for the summer period and for the winter period, and  
5 then from that determine the baseload in mid-range of the  
6 peaking units and estimate the number of hours per day that  
7 those units would have to operate, and then assume that as  
8 -- that mix -- as being constant throughout the period.

9 Q Do you know how that in fact broke down? Perhaps  
10 if you had a simple backup sheet where you indicated the number  
11 of hours that would be needed from a baseload fossil fuel and  
12 peak load, peaking plants and so on -- do you have something  
13 of that sort?

14 A I can dig it out of my notes.

15 MR. MACBETH: Could I ask to have that supplied to  
16 me at some point? I don't need it now, but I would like to  
17 see it.

18 BY MR. MACBETH:

19 Q If Indian Point 2 were operated so that it is  
20 baseloaded to either 30 percent of full power or 50 percent  
21 of full power, and then fluctuated from that point to 100 per-  
22 cent of full power when needed for peaking demand, would there  
23 be any change in your estimates of the time that the plant  
24 would be incapacitated because of the problem of xenon decay?

25 A Certainly your xenon problem would be less. Again,

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Reba 5

1 I think you would have to go back to your fuel vendor, or if  
2 the Applicant has the information as to how fast you would be  
3 able to go up (indicating). Depending on the fuel cycle  
4 remaining, using a cross-section of your xenon, when you start  
5 back up your reactivity jumps way up, and that has to be con-  
6 trolled.

7 You get in a large reactor like this, you can get incon-  
8 sistencies within the core, and I believe Mr. Newman pointed  
9 this out in his *testimony* refueling, that you had to be very careful  
10 about the enrichment to take care of the parts where under  
11 burning was taking place, so that you had enrichment in the  
12 new fuel to take care of that.

13 Q Would you expect a significantly shorter period  
14 of incapacitation due to xenon decay if the plant were operated,  
15 baseloaded at either 30 or 40 percent?

16 A I would tend to believe that the period would be  
17 shorter if you were up to some significant power level, yes.

18 Q Take the situation where, if you were going from  
19 zero to a hundred, the period of incapacitation due to the  
20 point of the life of the core would be ten hours, and then  
21 you, instead, operated from 30 percent or 50 percent to a  
22 hundred.

23 What scale of reduction would you expect?

24 A I am afraid I am not qualified to answer that.

25 MR. MACBETH: Does Staff have a witness qualified

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Reba 6

1 to answer that?

2 MR. KARMAN: Not here, and I am not sure where.

3 CHAIRMAN JENSCH: While there is a pause, you don't  
4 seem to have the transcript readily available to us at the  
5 moment, but what is your background, Mr. Carter?

6 WITNESS CARTER: I am a civil engineer but since  
7 1960 I have been in the long range planning business at the  
8 laboratory, and I have had to deal with all of the other di-  
9 visions in planning their new facilities, and the various --  
10 I have had to learn a little bit about a lot of disciplines.

11 CHAIRMAN JENSCH: Thank you. You were present,  
12 were you not -- he was part of the panel sworn originally,  
13 was he not?

14 MR. KARMAN: Oh, yes, Mr. Chairman.

15 CHAIRMAN JENSCH: And his qualifications are in  
16 the record at that point?

17 MR. KARMAN: That is correct.

18 CHAIRMAN JENSCH: Thank you. Please proceed.

end

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Reba 1

1 MR. MACBETH: I have no further questions for  
2 Mr. Carter. The last question on xenon decay is one that I  
3 would like to have an answer from an appropriately qualified  
4 staff witness on.

5 I think it is an important one in the proceeding and ---

6 MR. KARMAN: We can submit this in writing. Would  
7 that be all right?

8 MR. MACBETH: I will try to reduce my questions  
9 to a small set of interrogatories, and I understand the staff  
10 will try to answer them, and I think it would avoid having to  
11 call another witness.

12 WITNESS CARTER: Mr. MacBeth, before we could  
13 give you want answer, we would have to have information from  
14 the Applicant or from his fuel vendor pertaining to this  
15 specific reactor. We would also like to know from you what  
16 time in the fuel cycle you want to consider, and if we can get  
17 that information, then we have qualified people in reactor  
18 operations at the lab who can provide you with the information.

19 MR. MACBETH: I will certainly give you the times,  
20 and I trust the Applicant will let you know how the plant  
21 operates.

22 I hear a deadly silence from the Applicant.

23 MR. TROSTEN: I will wait to see what the question  
24 is.

25 CHAIRMAN JENSCH: Do you have some question of

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1 Mr. Carter?

Reba 2

2 MR. TROSTEN: Yes, I have one.

3 CHAIRMAN JENSCH: Proceed.

4 BY MR. TROSTEN:

5 Q Mr. Carter, do you agree that this time for an  
6 annual refueling of Indian Point 2 were required to take place  
7 from December 15th to March 1st, instead of during the five-  
8 month period in the spring and fall as we have defined it  
9 previously, that that would reduce the operating flexibility  
10 significantly of Con Edison in operating the plant?

11 A Annually?

12 Q Yes, on an annual cycle.

13 A It probably would. As stated earlier, if you ran  
14 into difficulties, and you tried to meet one specific time  
15 period during the year, then you, let us say, it would be  
16 like driving an automobile and you are looking at your gas  
17 gauge and you are out in the desert and you know you have to go  
18 so far.

19 So if you are going 80 or 90 miles an hour in  
20 order to conserve fuel, if you are running short to reach that  
21 point, then you would have to slow down to a more economical  
22 speed and make better use of your fuel.

23 If you have unscheduled shutdowns where you conserve  
24 fuel, then it might be the other case, and you might reach  
25 your appointed place without having used your fuel up. So it



1 would decrease the flexibility of operations.

2 Q And that decrease in the flexibility could be trans-  
3 lated into increased economic costs?

4 A Yes.

5 Q Now would it not only decrease the flexibility but  
6 of operating the Indian Point 2 plant, but also the system  
7 as a whole?

8 A The effects would be felt in the system.

9 Q And the effects in the system as a whole could be  
10 translated into economic terms, could they not, as increased  
11 costs?

12 A Certainly.

13 Q Mr. Carter, on page 4, you have a listing of new  
14 capacity, and you show a share of Bowline unit number 1, share  
15 of Roseton units number 1 and 2 for 1973?

16 A Yes.

17 Q And share of Bowline unit number 2 for 1975, is  
18 that correct?

19 A Yes.

20 Q Now if those units were not to be available, would  
21 this increase the cost to Con Edison of operating in one of  
22 the modes suggested by the Hudson River Fishermen's Association?

23 A Yes, it would, because it would put a further  
24 crunch on your capacity in New York City, and probably would  
25 require extended operations of your gas turbine facilities

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1 which are higher generating costs.

Reba 4

2 Q If those units were to be put on a schedule of re-  
3 stricted operation such as has been suggested ---

4 MR. KARMAN: What units are you talking about?

5 MR. TROSTEN: Bowline units 1 and 2 and Roseton  
6 units 1 and 2.

7 BY MR. TROSTEN:

8 Q If those units were to be put on hot standby during  
9 the period of December 15th to March 1st, and during the period  
10 from June 1st to July 31st, would that increase the cost in  
11 Con Edison of operating in the mode suggested by the Hudson  
12 River Fishermen's Association in this proceeding?

13 A Unless you add sufficient capability, baseload  
14 capability running in New York City, it certainly would.

15 MR. TROSTEN: Mr. MacBeth, has the Fishermen's  
16 Association taken legal steps to restrict the operation or  
17 prevent the operation of Bowline units 1 and 2, and Roseton  
18 units 1 and 2?

19 MR. MACBETH: We have filed suit against the Army  
20 Corps of Engineers for failure to produce an impact statement  
21 for the Bowline, and have filed suit against the Central Hudson  
22 Gas Company and the Corps of Engineers over the failure to file  
23 an impact statement for Roseton.

24 There are prayers of relief that would include restriction  
25 to no operation of the plants until such a statement is produced.

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Reba 5

1 The case has not gone to trial, and there is certainly  
2 no order from the court. When I was last in New York, there  
3 had been no answer from either the Federal Defendants or from  
4 the companies.

5 MR. TROSTEN: What are the specific requests in the  
6 prayer for relief?

7 MR. MACBETH: I would be happy to produce the  
8 complaint.

9 CHAIRMAN JENSCH: Are we going into Roseton and  
10 Bowline? What is the relevancy of what they are doing up there?  
11 How far do we want to get into that?

12 MR. TROSTEN: I want to get a factual basis for  
13 another question.

14 CHAIRMAN JENSCH: Not any discrimination among the  
15 utilities.

16 MR. TROSTEN: I wanted to get a factual foundation.  
17 What was your prayer for relief?

18 MR. MACBETH: I have signed the complaint.

19 CHAIRMAN JENSCH: The best evidence might be the  
20 complaint.

21 MR. MACBETH: I would be happy to supply the com-  
22 plaint if the Board thinks that is appropriate.

23 CHAIRMAN JENSCH: We are making no such suggestion.  
24 We are getting into Bowline and Roseton a lot more than we  
25 would like and perhaps the Applicant is suggesting that we  
should.

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1 Perhaps these factors may be important. How far do you  
2 want us to take a look at the operation of Roseton and Bowline?

3 MR. TROSTEN: I think we have enough in the record  
4 in view of Mr. Carter's answers, if Mr. MacBeth cannot recall  
5 it.

6 CHAIRMAN JENSCH: I think he could, but the best  
7 evidence would be the complaint.

8 MR. MACBETH: I think it would be, since it is  
9 obviously technical language, and I don't want to make an error  
10 in reciting it to you.

11 MR. TROSTEN: I have no further questions of Mr.  
12 Carter.

13 MR. MACBETH: I have one.

14 This question of the cost of the plant, the economic  
15 cost that would be imposed by moving the refueling cycle,  
16 is it not true that the economic costs might or might not be  
17 imposed depending on when the natural end of the fuel cycle  
18 fell? It might be necessary to shift from a longer period,  
19 or it might not.

20 THE WITNESS: I thought I had qualified that  
21 earlier. I said if everything ran as planned, then it would  
22 be fine, but if something happened within the life of the fuel,  
23 then it could.

24 MR. MACBETH: Yes. I just wanted to establish  
25 that flexibility may be diminished, but that that doesn't

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1 automatically mean there are greater economic costs, because  
2 you might not need the flexibility.

3 THE WITNESS: That is true.

4 MR. MACBETH: Thank you.

5 CHAIRMAN JENSCH: I believe you were referring to  
6 Murphy's Law, that if anything is going to happen, it will.

7 MR. KARMAN: No further redirect.

8 CHAIRMAN JENSCH: You were mentioning, and also  
9 to Applicant's counsel, that there might be less end flexibility  
10 if you had to adjust a fuel cycle to different schedules and  
11 perhaps complete burnup, and that sort of thing. None of those  
12 costs would develop if this were a closed cycle operation,  
13 would they, in the sense that you would consider it less  
14 flexibility?

15 WITNESS CARTER: Problems could still exist with  
16 closed cycle operation, but in looking at the Hudson River  
17 Fishermen's Association motion, to me the prime purpose of it  
18 was to protect the fish, reduce the impact on the fish from  
19 impingement during the winter and entrainment during the  
20 summer.

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1 CHAIRMAN JENSCH: Is it the position of the Hudson  
2 River Fishermen's Association that closed cycle operations,  
3 if they were undertaken, would still require some shutdown  
4 in periods of --

5 MR. KARMAN: We are talking about the interim  
6 period?

7 MR. MACBETH: Yes. Once the closed cycle system is  
8 installed and operating.

9 CHAIRMAN JENSCH: This is just for the interim  
10 period. The faster they build the cooling towers, if they are  
11 required, the less cost there will be.

12 MR. MACBETH: Precisely.

13 CHAIRMAN JENSCH: Are there further questions?

14 DR. GEYER: I have some questions.

15 On page 4 of the testimony you have been looking  
16 at, item 3 is new capacity. I don't see Indian Point in  
17 there. Is it assumed that it won't be ready until some time  
18 after 1977?

19 THE WITNESS: That sort of bugged me, too, in this  
20 study. That is a hard question to answer. The Hudson River  
21 Fishermen's Association's motion only talked about Units 1  
22 and 2, and I guess I assumed that whether Unit 3 went on  
23 schedule or not would depend at least in part on the outcome of  
24 this hearing. But you are right, I did not consider it.

25 DR. GEYER: This is kind of hard to understand,

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1 although I suppose since Indian Point No. 3 has to come up for  
2 a hearing that that issue will be faced then, and this table  
3 will be somewhat different.

4 THE WITNESS: Yes.

5 CHAIRMAN JENSCH: Excuse me. What is the capacity  
6 of Indian Point No. 3?

7 MR. WOODBURY: What is the what?

8 CHAIRMAN JENSCH: What is the capacity of Indian  
9 Point 3?

10 MR. WOODBURY: It is essentially the same as  
11 Indian Point 2, sir.

12 CHAIRMAN JENSCH: What is your projected schedule  
13 for criticality of operation?

14 MR. WOODBURY: I believe it is 1975, sir.

15 CHAIRMAN JENSCH: Thank you.

16 As you said, some of your answers were upon the  
17 premise that everything proceeds as planned, and that would  
18 make a substantial alteration to your whole consideration of the  
19 power supply situation, would it not?

20 THE WITNESS: Yes, it would.

21 CHAIRMAN JENSCH: Are there any further questions  
22 of the gentleman?

23 MR. KARMAN: No, Mr. Chairman.

24 MR. MACBETH: No more questions.

25 CHAIRMAN JENSCH: Thank you, Mr. Carter, you are

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1 excused.

2 (Witness excused.)

3 CHAIRMAN JENSCH: Dr. Goodyear is the next witness.

4 Whereupon,

5 DR. C. P. GOODYEAR

6 was recalled and, having been previously duly sworn, was  
7 examined and testified further as follows:

8 MR. TROSTEN: Before that, I had another matter  
9 to take up with the Board, and that has to do with the  
10 Bowline-Roseton motion by the Hudson River Fishermen's Associa-  
11 tion and the Board's comments yesterday.

12 I think it is rather important that all the parties  
13 know where we stand in terms of further presentation, that  
14 we really obtain a ruling from the Board with respect to this  
15 motion because the Hudson River Fishermen's Association has  
16 filed a motion to rule the Final Environmental Statement  
17 inadequate for failure to take into account the effects of  
18 Bowline and Roseton and to require that further evidence be  
19 admissible. That is really the way the motion reads.

20 In order to have a clear direction as to where we are  
21 going on this, we really have to know what the Board's position  
22 is on it.

23 CHAIRMAN JENSCH: Yes. The Board has given  
24 consideration to it during the course of this matter. We tried  
25 to indicate that we do not feel that whatever would be our



1 consideration about the Roseton-Bowline information that its  
2 absence compels a rejection of the Environmental Statement.

3 I would like to hear further from the Hudson  
4 River Fishermen's Association respecting that. We have  
5 requested data on Roseton and Bowline, and those data have been  
6 supplied, and we are unable to reconcile the admission of that  
7 data from the Final Environmental Statement as the compelling  
8 reason for rejection of the Final Environmental Statement.

9 Would you like to speak further to that matter?

10 MR. MACBETH: Yes. Just to make clear the position  
11 of the Fishermen, the motion is couched in terms of ruling the  
12 statement inadequate. The Fishermen aren't suggesting that  
13 everyone go back to Oak Ridge and write the statement over again  
14 from scratch, but rather that additional information on  
15 Bowline and Roseton be added to the statement. That would,  
16 in our view, make the statement adequate.

17 CHAIRMAN JENSCH: And the data which have been  
18 supplied would do that in your opinion?

19 MR. MACBETH: Yes. The Fishermen would also then  
20 put into evidence the affidavit from Mr. Clark on Bowline-  
21 Roseton, and we would like to put in one further short item  
22 discussing the increased heat in the river which the Staff  
23 reported on, and we would have that ready probably a week or  
24 10 days, and it is my memory from December that the Board said  
25 there would be a time to comment afterwards, and simply because

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1 there has been so much going on in the rest of the proceeding,  
2 we haven't had an opportunity to do that.

3 The Fishermen's position would be that if the  
4 report in mid-February, which the Staff supplied to the Board  
5 on the heat problem and on the entrainment and the impingement  
6 problem with the two plants, if that were added to the  
7 impact statement, the impact statement would then be adequate.

8 If it is not added, we maintain our position that  
9 the statement is inadequate.

10 I should say further that yesterday I learned that  
11 a very lengthy decision has been handed down by a district  
12 court in Texas which deals with this problem. I was told that  
13 in the typed form the opinion ran to something like 150 pages.  
14 I have not had an opportunity to review it.

15 I was also told that it very strongly supported the  
16 position taken by the Fishermen's Association.

17 I would like to draw that decision to the Board's  
18 attention when I have the citation to it.

19 CHAIRMAN JENSCH: If you could give us the title?

20 MR. MACBETH: It is Sierra Club versus Froehlke.  
21 Froehlke is the Secretary of the Army. I believe it is a federal  
22 district court in Texas.

23 I simply say that because it is one more legal  
24 support for the Fishermen's position which I would like the  
25 Board to take into account in ruling on the motion.

1 CHAIRMAN JENSCH: Would you like to speak further  
2 to that, Applicant counsel?

3 MR. TROSTEN: Yes. I just want to be sure I  
4 understand what Mr. Macbeth is saying. I gather his position  
5 is that if the February 13 statement were added to the Final  
6 Environmental Statement it would be adequate, and the only two  
7 pieces of testimony you propose to add is Mr. Clark's October  
8 6 affidavit, the one served with your order, and a comment on  
9 this.

10 If the Board were to rule that both the additional  
11 statement by the Staff and the additional statement by the  
12 Hudson River Fishermen's Association were admissible and proper  
13 in this proceeding, we would have an additional piece of  
14 testimony that we would want to introduce in rebuttal. I  
15 believe this could be submitted promptly.

16 We would want to submit this, or we would like to  
17 submit it within 10 days to two weeks, or perhaps less than  
18 that.

19 Of course, our position is that we maintain our  
20 position that it is not proper to consider this evidence  
21 admissible, and that the Staff's statement without this  
22 addition is proper.

23 *We*  
~~you~~ might wish to add a brief additional comment  
24 with regard to our brief and that would be it, Mr. Chairman.

25 MR. MACBETH: Mr. Chairman, I should say one more

1 thing. Obviously, if that material were added to the statement,  
2 the Staff would then have to say whether that changed their  
3 recommendations. I don't require any lengthy explanation of why  
4 they are changed or not changed, but obviously the Staff has to  
5 consider the data when it is part of the statement. So  
6 there would have to be one last step in which the Staff said  
7 "We change the recommendations to X, Y, Z," or "We have  
8 considered the material and do not change the recommendations."

9 But that, I think, would be a very simple process  
10 of the Staff.

11 MR. KARMAN: I don't know whether we are getting on  
12 highly technical ground, Mr. Chairman. The position of the  
13 Staff was that it was not required of the Staff in the Final  
14 Environmental Statement to furnish this testimony. The Board  
15 expressed an interest in seeing some additional information  
16 on these matters. The Staff furnished this information to  
17 the Board and to the parties.

18 CHAIRMAN JENSCH: This was in February.

19 MR. KARMAN: February 13.

20 CHAIRMAN JENSCH: We were awaiting those data. That  
21 is why we were withholding the ruling.

22 MR. KARMAN: Exactly.

23 Now, there is talk about attaching it to or  
24 appending it to the Final Environmental Statement and coming to  
25 different conclusions. It would be my opinion, Mr. Chairman,

1 that the Final Environmental Statement -- we have had  
2 additional testimony on that statement and correlative to that  
3 statement, and in my opinion this is some additional testimony  
4 which has been furnished by the Regulatory Staff pursuant to  
5 a request of the Board, and I don't believe it has to be  
6 included as part of the Final Environmental Statement, but  
7 part of the testimony in this proceeding.

8 MR. MACBETH: That is all right, too.

9 MR. KARMAN: Which does not require any additional  
10 conclusions by the Staff.

11 MR. MACBETH: That I disagree on. I think the  
12 Staff has to consider it. I don't think they have to do  
13 anything very elaborate to do that, but it clearly wasn't  
14 considered at the time the conclusions of the impact statement  
15 were reached. I think it does have to be considered.

16 I don't know. I don't care about physically  
17 attached to the impact statement. If it is introduced as  
18 testimony as part of the record, that is sufficient. It  
19 presently has not been produced for the record. It has been  
20 served on the Board and the parties, and I do insist it become  
21 a part of the record, whether through attaching it to the state-  
22 ment or putting it into the testimony.

23 CHAIRMAN JENSCH: At this time, the Board will give  
24 further consideration to the matter, and we will recess to  
25 reconvene in this room at 11:35.

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1 CHAIRMAN JENSCH: Please come to order.

2 The Board has been giving consideration to this  
3 matter, the motion by the Hudson River Fishermens Association,  
4 and as we indicated, we take due recognition of the schedule  
5 the Staff has, and there is no reflection upon the time that  
6 has been taken to reproduce the data, but we have been anxious  
7 to see what these data would be like; and the Board has, again  
8 reviewed these data now; and it is the opinion of the Board  
9 that these data should be made a part of the record, that the  
10 motion of the Hudson River Fishermens Association is denied  
11 to disqualify the final Environmental Statement.

12 The final Environmental Statement has been accepted  
13 in the record, and the motion to reject a part of it or all  
14 of it is denied.

15 These data, however, we do believe, should be made  
16 a part of the record and considered in connection with the  
17 final Environmental Statement, as to which we request a  
18 statement from the Staff, perhaps not today, but at a time  
19 when they have given further consideration to the matters set  
20 forth in the submittal which was filed on February 14, 1973;  
21 as to the effect of these data, or these calculations upon  
22 the conclusions reflected in the final Environmental Statement.

23 The applicant will have an opportunity to answer  
24 these data in whatever form it desires to do so.

25 We will include the opportunity for that presentation

1 presentation at our next session, or at any other time that  
2 the parties request.

3 MR. MACBETH: Mr. Chairman, may the intervenors  
4 also submit brief additional testimony with regard to this?

5 CHAIRMAN JENSCH: I think, if there is going to  
6 be, and it should be in this sense, a statement prepared in  
7 advance by the Staff, the Hudson River Fishermens Association,  
8 and the Staff, and then the parties can confer among themselves  
9 whether they want witnesses with respect to the material the  
10 parties present.

11 MR. KARMAN: The information has been furnished.  
12 It is whether our conclusions would be different.

13 CHAIRMAN JENSCH: Yes, it is a question of whether  
14 modifications or changes would be effected by the Staff.

15 MR. TROSTEN: I assume your ruling from the Bench  
16 is subject to any further comments or argument that is  
17 offered to the Board as you provided an opportunity to do?

18 CHAIRMAN JENSCH: I thought you had completed your  
19 presentation.

20 MR. TROSTEN: No, sir. I indicated to you that  
21 we were prepared to make a further supplement to our brief.  
22 Mr. Macbeth also indicated that he was prepared to do this.

23 I would like to have the opportunity to supplement  
24 our argument in this respect.

25 CHAIRMAN JENSCH: Do you want to present it in

1 writing, or do you want to do it now?

2 MR. TROSTEN: I would like to do it in writing,  
3 and I would like to have the final determination of the Board  
4 on this matter held in abeyance following the receipt of this  
5 material.

6 CHAIRMAN JENSCH: We can either do that, or we  
7 can receive your motion in a motion for reconsideration, and  
8 if we modify our ruling, we will so indicated it. But, as  
9 you indicated, I think the parties should know now, so the  
10 course of action could be indicated.

11 We have, in a sense, established one milepost here  
12 on this situation, so the parties can proceed on this basis.  
13 If there is a change, all parties will be fully informed.

14 MR. TROSTEN: All right. If there is a schedule  
15 for presentation of additional data to the Board on this  
16 matter, or as far as that schedule is concerned, subject to  
17 all reservations of our rights with regard to the underlying  
18 legal question, we will be prepared to present to the Board,  
19 as promptly as we can, a supplement to the data as previously  
20 sent; and we will try to have this available within 10 days  
21 to two weeks.

22 CHAIRMAN JENSCH: We just don't know what the  
23 schedule will be in that regard, but if that seems to be too  
24 limited a period for you, you should feel free to extend it,  
25 because we regard this as a very important portion of



1 additional material.

2 MR. BRIGGS: There is one item that is of concern  
3 to us, Mr. Trosten, and that is in looking at the Staff's  
4 presentation, it indicates that the temperatures of the water  
5 in the vicinity of Indian Point could be well above the 79  
6 degrees that the Staff, or that the applicant, rather, has  
7 used as the basis for most of its calculations relative to  
8 maximum temperature.

9 In fact, some of the curves seem to show the temp-  
10 erature 83 degrees and above 83 degrees. It was my impression  
11 that this makes a difference in terms of how one meets the  
12 standards of the State of New York if the water temperature  
13 is 83 degrees as opposed to its being 79 degrees, and we  
14 expect that that would be considered in any information that  
15 we provided -- that you provided for us.

16 MR. TROSTEN: All right, Mr. Briggs. You are  
17 referring, now to the intake water temperature at Indian  
18 Point 2?

19 MR. BRIGGS: Yes.

20 MR. KARMAN: Pardon me, Mr. Chairman, I called my  
21 office, yesterday in anticipation of this morning's discussion  
22 with respect to Roseton and Bowline, and I indicated that we  
23 would advise -- sufficient copies were sent, I hope, to the  
24 reporter, so that it could be incorporated in today's trans-  
25 transcript.

1 CHAIRMAN JENSCH: Very well. The Board will pro-  
2 vide, and it now does provide, for the receipt into the record  
3 of evidence in this proceeding, the submittal of data trans-  
4 mitted by the Regulatory Staff to the Commission under letter  
5 of transmittal, dated February 13, 1973, and received on  
6 February 14, 1973; which data is reflected in two enclosures,  
7 one of which, or the first of which is entitled, "Preliminary  
8 Study of the Expected Temperature Distribution in the Hudson  
9 River as the Result of the Operation of the Danskammera and  
10 Roseton Units 1 and 2; Lovett and Bowline Power Stations."

11 That conclusion Number 1 was dated February 8, 1973  
12 and it bears the author's name of M. Simanotov.

13 The second enclosure is entitled, "Probable  
14 Reduction in Survival of Young of the Year, Striped Bass in  
15 the Hudson River as a Consequence of the Operation of the  
16 Danskammera, Roseton, Indian Point Units 1 and 2; Lovett and  
17 Bowline Steam Electrical Generating Stations," and bears the  
18 authorship of C. P. Goodyear, and is dated February 8, 1973.

19 These two enclosures will be considered as a part  
20 of the final Environmental Statement, submitted by the  
21 Regulatory Staff, and should be considered in connection with  
22 the final Environmental Statement.

23 The submittals which have been transmitted as  
24 indicated, and as Staff counsel has just commented, that com-  
25 panies will be made available to the reporter and at this

1 place in the transcript, the letter of transmittal can merely  
2 be recited at this point.

3 "Pursuant to the Board's request for information  
4 regarding the impact which certain electrical facilities and  
5 combinations of facilities, would have on the Hudson River  
6 biota, I am enclosing herewith the results of an AEC Regulatory  
7 Staff evaluation.

8 "A brief discussion of the models employed on this  
9 evaluation is included in each of the enclosed presentations.  
10 This submittal was transmitted to all attorneys for the  
11 parties."

12 It is signed by Myron Karman, counsel for the  
13 Regulatory Staff.

14 The enclosures 1 and 2, should be physically  
15 incorporated into the transcript as if orally presented. As  
16 I understand, it reflects a verifiable presentation by Staff  
17 witnesses.

18 Is that correct?

19 MR. KARMAN: That is correct.

20 (DOCUMENTS FOLLOW.)

21

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23

24

II. Probable Reduction in Survival  
of Young of the Year Striped Bass in  
the Hudson River as a Consequence of  
the Operation of Danskammer, Roseton,  
Indian Point Units 1 and 2, Lovett,  
and Bowline Steam Electrical Generat-  
ing Stations.

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C. P. Goodyear

February 8, 1973

## INTRODUCTION

On December 15, 1972, the Atomic Safety and Licensing Board requested the staff to prepare data to reflect calculations of the combined effects of power plants on the Hudson River. The staff believes that the most serious consequence of plant operations will be caused by the mortality of young fishes withdrawn with the water used for cooling the condensers of the various plants. The staff has performed a preliminary study of one phase of that problem, i.e., the effect on striped bass young of the year.

Because the distribution of young striped bass in the estuary is related to the fresh water flows, the staff examined the potential effects of multiple plant operations for various flow situations. This was accomplished by utilizing flow data collected during different past years as an input to the model. Thus, the estimated reduction of striped bass young of the year presented in Table 1 illustrates comparatively the importance of the various facilities and combinations of facilities over a range of flow conditions. Data from 1964 represent a low flow situation, 1968 data represent a high flow situation, and 1969-70 data are similar to the mean flows over the period from 1949-1966.

Although the results presented here are preliminary, the staff, however, feels that they are generally correct, particularly when used

to infer the relative importance of the different power plants. Additional evaluation is needed to insure accuracy and to increase precision in the estimates.

#### The Model

The model employed in this study is basically similar to the one presented by the staff in Appendix V-3 of the Final Environmental Statement for Indian Point Unit No. 2. However, the present model is more sophisticated in many respects and has been found to closely predict the distribution of striped bass in the Hudson. A detailed description of the model is currently being prepared but will be omitted here in the interest of a timely presentation of the initial results. However, the general features are outlined below.

The spawning distribution was considered to be the same as that estimated by the HRFI investigation but was dependent on temperature. Fish were considered to be entrainable for approximately 64 days. Mortality upon condenser passage was considered to be 100%. Natural mortality was a function of age but not a function of density. The concentration of entrainable individuals in the intake water of each power plant was considered to be the same as the mean concentration of the adjacent cross section. Migratory responses were considered to be a function of convective water flows and the vertical movements

of the fish as modified by the product of the S/A ratio\* with a coefficient for habitat preference.

The model utilized 18 river compartments as described in Table 2. Freshwater flow as estimated by the USGS for Poughkeepsie for various years was used to determine the position of the salt front in the estuary and to establish the advective transport between compartments. The operating characteristics and locations of the power plants that were considered in this study are presented in Table 3.

$$*S/A \text{ ratio} = \frac{\text{shoal area of compartment}}{\text{total surface area of compartment}}$$

TABLE 1. ESTIMATED REDUCTION IN STRIPED BASS YOUNG OF THE YEAR\*

CONDITION	Percentage Reduction According to Flow Year Simulated						
	1949	1955	1964	1967	1968	1969	1970
No plants (base)	0	0	0	0	0	0	0
Roseton, Danskammer IP 1&2, Lovett, Bowline	55.4	64.0	54.4	48.7	38.2	63.8	61.4
Roseton, Danskammer, Lovett, Bowline	37.1	40.9	40.4	33.3	29.2	41.5	40.5
IP 1&2	32.9	42.8	25.6	26.8	14.4	41.7	39.9
Roseton, Danskammer	15.1	12.2	23.7	16.9	5.3	9.4	12.6
Danskammer	5.9	4.5	10.5	6.7	1.8	3.4	4.8
Lovett	12.4	16.0	9.5	9.7	4.5	15.6	15.1
Bowline	13.9	18.4	10.6	9.7	21.9	22.6	18.5

\*Assuming flow conditions similar to the year specified



Table 2. SEGMENT PARAMETERS OF THE STAFF'S HUDSON RIVER STRIPED BASS TRANSPORT MODEL

Segment	Upper* Bound	Lower* Bound	Midpoint*	Length (mi)	Width (ft x 10 <sup>3</sup> )	Cross Section (ft <sup>2</sup> x 10 <sup>4</sup> )	Shoal Area (ft <sup>2</sup> x 10 <sup>6</sup> )	S/A**	Volume (ft <sup>3</sup> x 10 <sup>9</sup> )	RIVFAC (10 <sup>3</sup> ft/sec)
1	135.0	125.0	130.0	10.0	2.0	29.6	4.75	0.44	1.56	0.0
2	125.0	115.0	120.0	10.0	3.5	38.6	3.86	0.75	2.04	0.0
3	115.0	105.0	110.0	10.0	4.0	68.6	2.54	0.59	3.62	0.0
4	105.0	95.0	100.0	10.0	4.0	82.3	9.32	0.44	4.34	0.0
5	95.0	85.0	90.0	10.0	4.5	116.0	7.86	0.33	6.12	0.0
6	85.0	77.5	81.25	7.5	3.0	119.0	1.64	0.14	4.71	0.0
7	77.5	70.0	73.5	7.5	2.5	124.0	1.12	0.11	4.91	0.0
8	70.0	62.5	66.25	7.5	3.5	154.0	4.72	0.34	6.10	0.0
9	62.5	55.0	58.75	7.5	6.2	160.0	3.97	0.16	6.34	3.0
10	55.0	50.0	52.5	5.0	2.0	185.0	0.18	0.03	4.88	4.5
11	50.0	45.0	47.5	5.0	2.0	131.0	0.25	0.04	3.46	8.0
12	45.0	40.0	42.5	5.0	4.0	160.0	4.89	0.46	4.22	14.0
13	40.0	35.0	37.5	5.0	11.0	202.0	5.89	0.89	5.33	20.0
14	35.0	30.0	32.5	5.0	9.0	187.0	3.84	0.58	4.94	26.0
15	30.0	25.0	27.5	5.0	9.0	216.0	3.84	0.58	5.70	30.0
16	25.0	20.0	22.5	5.0	6.0	193.0	3.84	0.87	5.10	36.0
17	20.0	15.0	17.5	5.0	4.5	143.0	2.67	0.22	3.78	43.0
18	15.0	10.0	12.5	5.0	4.5	140.0	2.54	0.21	3.70	50.0

\*Locations are miles upstream from battery

\*\*S/A = Ratio of shoal area to total surface area

TABLE 3. POWER PLANTS ON THE HUDSON RIVER

STATION	LOCATION (mile point)	FLOW (cfs x 10 <sup>-3</sup> )	TEMPERATURE RISE (F°)
Danskammer	66	686	14.5
Roseton	65	1,448	15.4
Indian Point	43	2,650	15.0
Lovett	42	720	14.8
Bowline	38	1,711	13.5

CONSIDERATION OF OTHER

HUDSON RIVER POWER PLANTS

AEC Regulatory Staff

February 12, 1973

Preliminary Study of the Expected Temperature  
Distribution in the Hudson River as a Result  
of Operation of Danskammer, Roseton, Indian  
Point Units 1 and 2, Lovett, and Bowline Power  
Stations

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M. Siman-Tov

February 8, 1973

## Introduction

On December 15, 1972, the Atomic Safety and Licensing Board requested an evaluation of the effect of other power plants, in addition to Indian Point, on the Hudson River. In order to study the effect of heat discharge from power plants in the Hudson River and Estuary, a time dependent three-dimensional model is required. The applicant has presented in the environmental report (Ref. 1, 2) a very simplified steady state one-dimensional model. The staff has presented its reservations about this model (Ref. 3) but agreed that a time dependent three-dimensional model is not available at the present time. The need for using an extensive parametric study to evaluate various possible assumptions has been also emphasized by the staff (Ref. 3). The applicant's thermal model cannot be used for the prediction of such multiplant effects. The staff has performed a preliminary study of that problem by developing a truly time dependent one-dimensional thermal model (cross sectional averaged). The development of this model was started at about the time when the AEC Final Environmental Statement on Indian Point Unit 2 was published and is still in process of completion. The results presented here should be looked at as preliminary. Additional study is required for reaching final conclusions. However, the staff believes that the results presented here are, for the most part, correct so that general conclusions can be derived.

## The Model and Results

The model presented here is a one-dimensional truly time dependent model which was developed for predicting the cross sectional average temperatures along the Hudson River. Single as well as multiplant heat

discharges may be simulated by the model. The water physical properties, the river geometry and the heat exchange to the atmosphere are considered to be constants along the length of the river. The longitudinal dispersion coefficient can vary along the length so that the apparent increase in mixing capability at the salt intrusion zone can be indirectly taken into account. The river water velocity is taken as truly instantaneous, but constant along the river, i.e.,

$$U(t) = U_F + U_T \sin 2\pi(t/T_d) , \quad (1)$$

where

$U(t)$  = actual instantaneous velocity,

$U_F$  = downstream fresh water velocity,

$U_T$  = maximum tidal velocity,

$t$  = time,

$T_d$  = tidal period.

Equation 1 above assumes a sinusoidal variation of velocity with time which is reasonably correct at Indian Point site but not necessarily so at other locations.

The differential equation on which the model is based is

$$\frac{\partial T}{\partial t} + U(t) \frac{\partial T}{\partial X} = \frac{\partial}{\partial X} \left[ E_L(X) \frac{\partial T}{\partial X} \right] - \frac{\bar{K}T}{\rho C_p H} + \frac{Q}{\rho C_p A \Delta X} , \quad (2)$$

where

$T$  = temperature,

$E_L$  = longitudinal dispersion coefficient,

$\bar{K}$  = surface heat exchange coefficient,

$Q$  = power plant heat discharge,

$H$  = river depth,

$X$  = distance along the river,

A. = river cross section area,

t = time.

The boundary conditions assumed are as follows.

1. At Troy where  $X = 0$ , the river temperature is assumed to be constant and equal to the maximum ambient temperature ( $80^{\circ}\text{F}$ ).

2. At the Battery, the boundary condition depends on the tidal direction. At the flood tide when velocity at the Battery is upstream, the river temperature equals the ocean temperature ( $70^{\circ}\text{F}$ ). At ebb tide, when velocity at the Battery is downstream, the temperature gradient is assumed to be constant. Those boundary conditions are designed to include the flushing effect of the estuary.

A major problem connected with the use of the model, or any other convection-diffusion model, is the correct evaluation of the longitudinal dispersion coefficient, and especially so at the salt intrusion zone of the estuary. Figure 1 shows such dependence of the cross sectional average temperature at Indian Point site on the longitudinal dispersion coefficient (taken as constant for this plot). It can be seen that:

1. Both the tidal average temperature and the tidal maximum temperature at Indian Point site are strong functions of the longitudinal dispersion coefficient.

2. The ratio between maximum and average temperature occurring within one tidal period depends strongly on the dispersion coefficient used.

The staff believes that for real time model like the one presented here, the dispersion coefficient cannot be much higher than the value based on, let us say, Taylor's approach which is about 0.2 sq miles/day (about  $65 \text{ ft}^2/\text{sec}$ ) for the Hudson Estuary at the Indian Point site. In

the zone of salt intrusion some increase in the effective dispersion coefficient might be needed in order to take into account the density induced flow which cannot be simulated in a one-dimensional model. The applicant is using a value of 12 sq miles/day (about  $3850 \text{ ft}^2/\text{sec}$ ) in his steady state one-dimensional model (Ref. 1). The method used by the applicant to derive the dispersion coefficient is based on tidal average salinity data substituted into a steady state concentration equation. The staff does not believe that this is a valid approach since the case cannot be analyzed on steady state basis nor does Reynolds analogy between salt intrusion mechanism and dispersion of polluted discharge, especially heat, hold for the case at hand. The argument behind this opinion is too lengthy to be discussed here. In any case, the specific dispersion coefficient to be used is not exactly known at the present time. Field data taken from time dependent dye discharge studies might be more realistic, although not ideal, for that purpose. Additional studies, both analytical and experimental, are needed for establishing the correct dispersion coefficient to be used. Nevertheless, the staff has decided, for the purpose of getting an approximate analysis of the multiplant effect, to use the longitudinal dispersion coefficients reported by the applicant's consultant in the study made for New York State on the Hudson River (Ref. 4). These values are duplicated here in Fig. 2 for a fresh water flow of 3000 cfs. The staff does not adopt these values as being correct but rather believes that they are too optimistic. Based on Fig. 2 the dispersion coefficient at Indian Point is about 8 sq miles/day. This value is about  $2/3$  of the value used by the applicant in his environmental report (Refs. 1, 2). It is slightly higher than the value of 7.5 sq miles/day recently reported by Prof. Harleman from MIT (Refs. 5, 6). All those values are considered by the staff to be too optimistic for a real time model like the one presented here.



The set of conditions presently investigated is the one considered by the applicant in Table 6 of Ref. 2 as "Drought-Fall Conditions" which imply a fresh water flow of 4000 cfs and a surface heat exchange coefficient of 90 Btu/ft<sup>2</sup>·°F·day. The value of the longitudinal dispersion coefficient, however, was changed as indicated before. Figures 3-9 show the results of the present analysis in four different combinations of power plants operations: (1) no power plant in operation, (2) only Indian Point Units 1 and 2 are in operation, (3) five power plants (Danskammer, Roseton, Indian Point 1 and 2, Lovett, and Bowline) are in operation, (4) same as case 3 but without Indian Point Units 1 and 2.

This kind of presentation allows one to see the effect of Indian Point alone or its incremental effect as well as its combined effect when the other four power plants are in operation. Figure 3 shows the cross sectional average temperature as a function of time at Indian Point site for each of the four cases.

The table below summarizes the tidal maximum, average, and minimum temperatures which occur at Indian Point site under the various combinations of plants operation.

Case		At Indian Point Site			Other Max. Temp.	
		Max. Temp, °F	Avg. Temp, °F	Min. Temp, °F	Max. Temp, °F	Location
1	No. power plants	79.59	79.00	79.36	79.95	Troy
2	I.P. 1 and 2 only	82.39	82.26	82.10	82.39	I.P.
3	Danskammer, Roseton, I.P. 1 & 2, Lovett, and Bowline	85.73	85.40	85.05	85.73	I.P.
4	Danskammer, Roseton, Lovett, and Bowline	82.67	82.53	82.38	83.30	Roseton
5	Incremental effect of I.P. 1 & 2 based on no power plant	2.80	2.76	2.74	---	--
6	Incremental effect of I.P. 1 & 2 based on all five power plants	3.06	2.87	2.43	---	--

The preceding table also shows that the maximum temperature occurs at the Indian Point site except in the case when Indian Point Units 1 and 2 are not in operation (Case 4). In this case the maximum temperature occurs at Roseton Power Plant site. Figures 4, 5, and 6 show the instantaneous temperatures as functions of distance from Troy at three different quarterly tidal periods for Indian Point only (Fig. 4), for four power plants (Fig. 5), and for five power plants (Fig. 6) with the case of no power plants given as a background. The movements of the peak temperature with the tide can be seen clearly in the figures with the distance of movement being equal to the tidal excursion length. The effect of ocean intrusion into the estuary can also be seen clearly in those three figures.

Figures 7, 8, and 9 show the tidal maximum, average, and minimum temperatures along the river for Indian Point only, four power plants, and five power plants, respectively. This is not a truly existing situation but rather the tidal maximum, average, and minimum temperatures which occurred at any point during the entire time range of the case and after reaching quasi steady state equilibrium.

It is interesting to indicate at that point that the time required to reach thermal quasi steady state equilibrium (that is, all tidal periods having similar behavior) is relatively long. It changes with various assumptions of longitudinal dispersion coefficient or initial conditions but its order of magnitude is between 80 and 100 tidal periods. This means that to have any meaningful temperature measurements one must wait some 6-12 weeks after startup operation begins.

Since some possibility exist that the correct dispersion coefficient might be as low as 0.2 sq miles/day the staff has run two additional cases using the above value in order to get an idea of the possible upper bound

to the maximum predicted cross sectional excess temperature. The maximum excess temperature at Indian Point site was 7.5°F for only Indian Point Units 1 and 2 in operation and 11.57°F when all five power plants are in operation. Those values should certainly be considered as upper limits to vary pessimistic conditions.

### Conclusions

Although the above study is considered preliminary, the following conclusions can be derived.

1. Both tidal average temperatures and tidal maximum temperatures as well as the ratio between them are strong functions of the longitudinal dispersion coefficient.
2. The staff believes that the correct values to be used for the longitudinal dispersion coefficients are not yet established and that the values reported by the applicant are biased to the high side.
3. For the purpose of approximate analysis the staff has used the longitudinal dispersion coefficients reported by the applicant's consultant in Ref. 4. It must be emphasized again that those values for dispersion coefficient are considered by the staff to be too high and therefore the maximum temperatures can be even higher than predicted here.
4. The staff preliminary estimate of the expected tidal maximum excess temperature averaged over the cross sectional area at Indian Point site is about 2.80°F when only Indian Point Units 1 and 2 are in operation and about 6.14°F when Danskammer, Roseton, Indian Point Units 1 and 2, Lovett, and Bowline Power Plants are in operation. It can be seen that

the effect of the other two power plants is considerable. The corresponding tidal average excess temperatures are 2.76°F and 5.90°F. By comparison the value reported by the applicant for the tidal average excess temperature for Indian Point Units 1 and 2 only is about 1.65°F (Ref. 2).

5. The above results are for cross sectional average temperature. In the opinion of the staff, the analytical prediction of the extent of the 4°F excess temperature isotherms is not possible with the presently available models. A parametric study, as proposed by the staff in the Final Environmental Statement (Ref. 3), is still possible and necessary. Such a parametric study with the present results can only strengthen the staff conclusions already stated in the FES.

6. Considering the fact that the cross sectional average temperature at Indian Point site when all five power plants are in operation can be about 6.14°F, the staff is also concerned that recirculation of heated water into the intake may be much higher than considered before. Such recirculation can effect directly the near field temperature distribution including the maximum surface temperature that can occur at the center of the surfacing submerged jet. The staff believes that the 90°F maximum surface temperature criteria might still be met but the confidence in this prediction is reduced considerably when the effect of the other power plants are also taken into account. Additional studies are needed on this point.

7. The staff is concerned that the temperature distribution at Indian Point site will be well above the values reported by the applicant even for the operation of Indian Point Units 1 and 2 only. This is certainly true when the effect of the other power plants is also taken into account.

In the Final Environmental Statement (Ref. 3) the staff has expressed its concern that the New York State thermal criteria for the 4°F excess temperature on the river surface will be violated. This is definitely true when the results of the present study are considered.

## References

1. Quirk, Lawler and Matusky Engineers, "Effect of Indian Point Cooling Water Discharge on Hudson River Temperature Distribution," Appendix K in Consolidated Edison Corporation's Environmental Report on Indian Point Unit 2.
2. Testimony of John P. Lawler, PhD, Quirk, Lawler and Matusky Engineers, "On the Effect of Indian Point Units 1 and 2 Cooling Water Discharge on the Hudson River Temperature Distribution," April 5, 1972.
3. AEC Final Environmental Statement on Indian Point Units 1 and 2, September 1972.
4. Quirk, Lawler, and Matusky Engineers, "Hudson River Water Quality and Waste Assimilative Capacity Study," report to State of New York Department of Environmental Conservation, December, 1970.
5. T. M. Llewellyn, D. R. F. Harleman, "A Mathematical Model for the Prediction of Unsteady Salinity Intrusion," Report No. 144, Ralph M. Parsons Laboratory of Water Resources and Hydrodynamics, MIT, February 1972.
6. J. E. Dailey, D. R. F. Harleman, "Numerical Model for the Prediction of Transient Water Quality in Estuary Networks," Report No. 158, Ralph M. Parsons Laboratory of Water Resources and Hydrodynamics, MIT, October 1972.

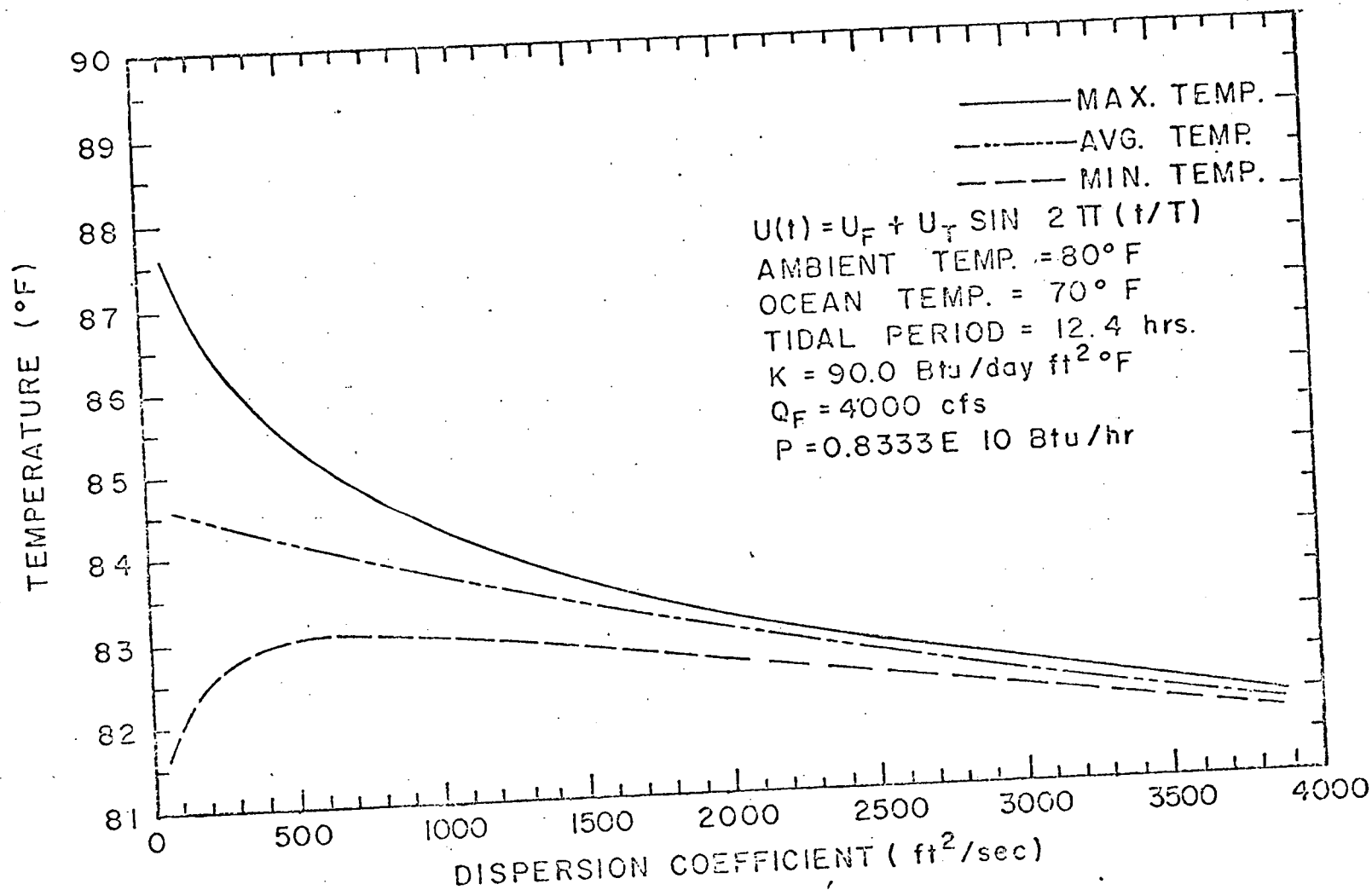


Fig. 1 Tidal Maximum, Average and Minimum Temperatures as a Function of Longitudinal Dispersion Coefficient for Indian Point, Units 1 & 2 Only.

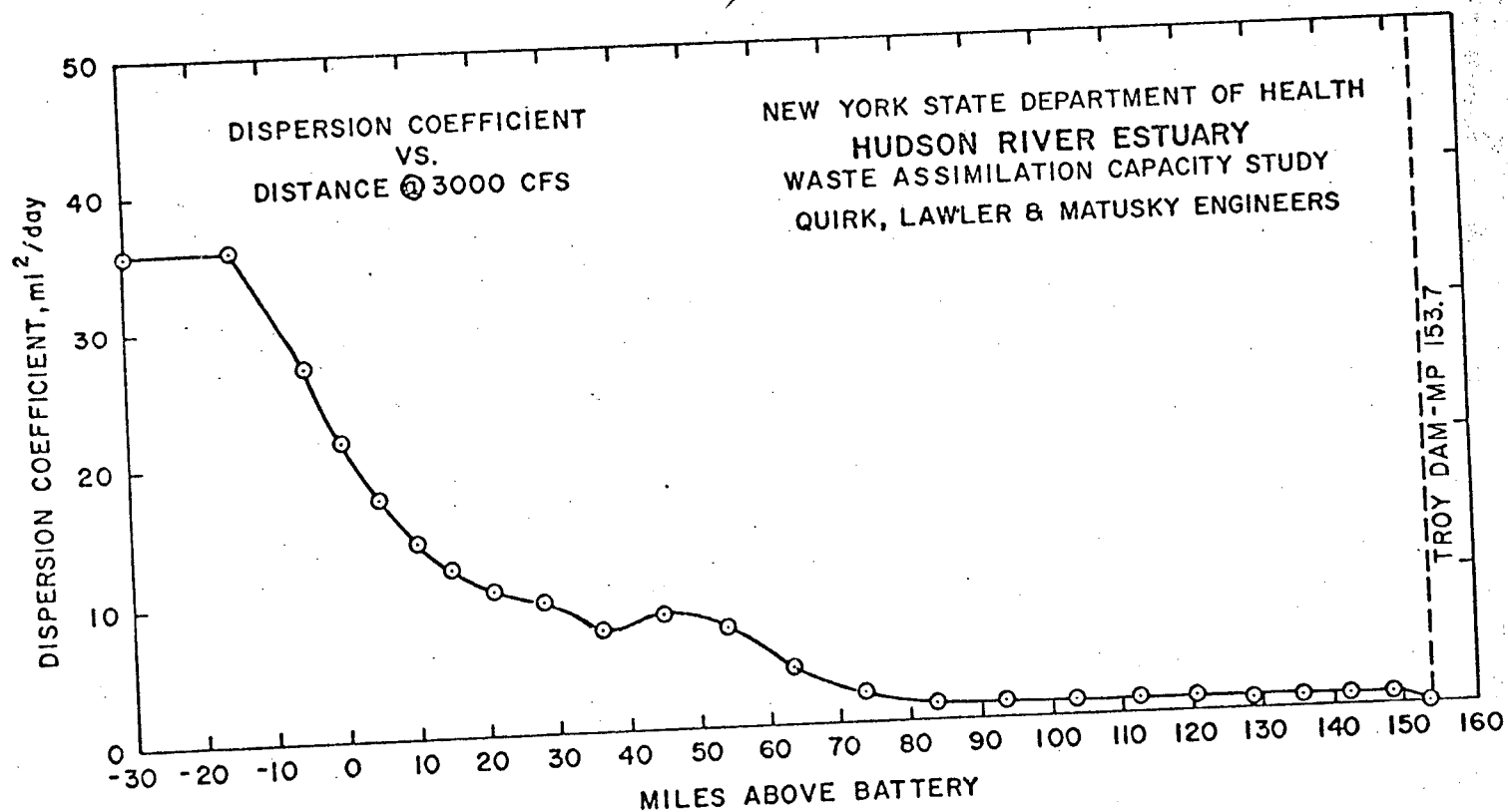


Fig. 2. Effective Dispersion Coefficient as a Function of Distance in the Hudson River (Ref. 4)



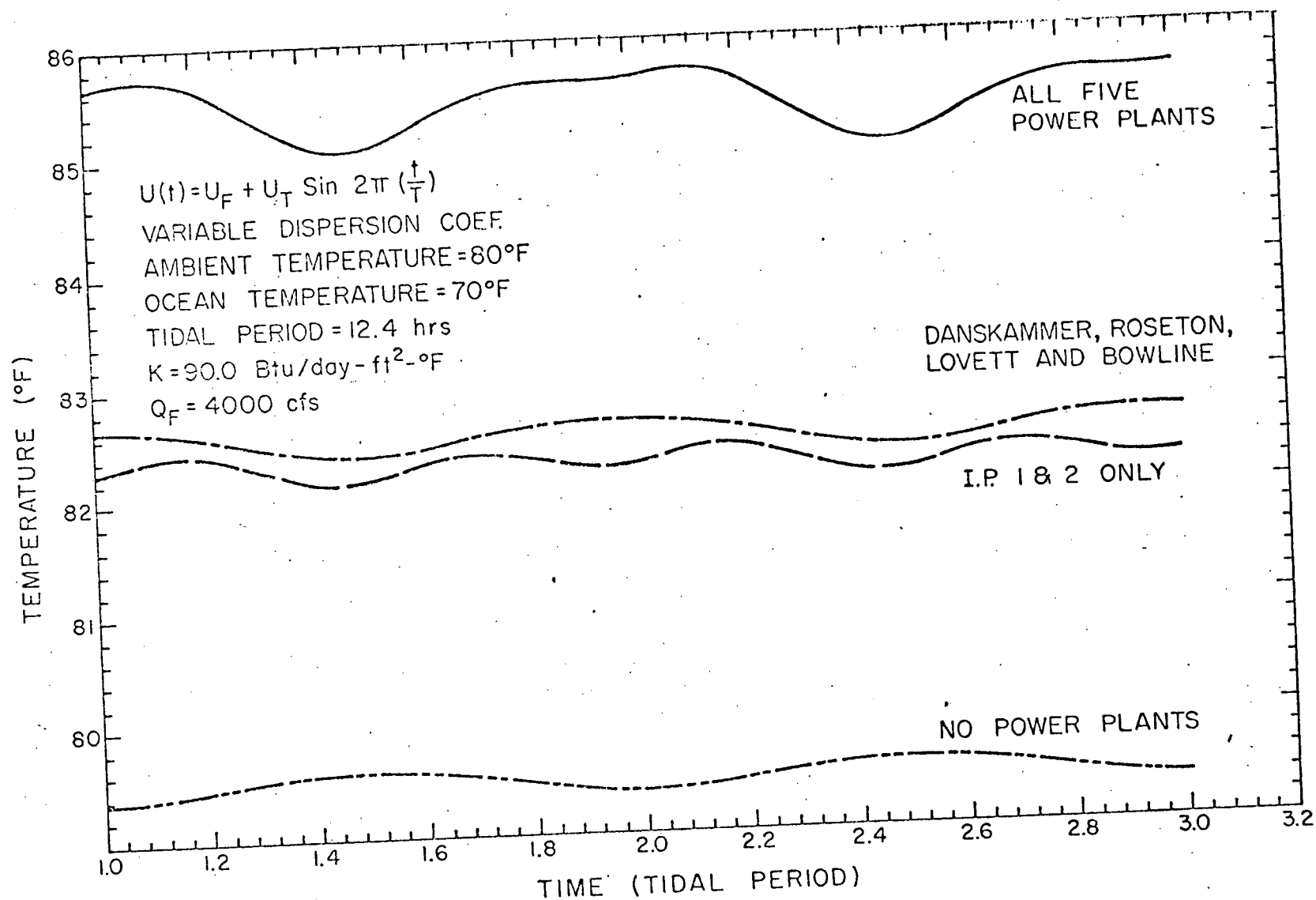


Fig. 3 TEMPERATURE AT INDIAN POINT SITE AS A FUNCTION OF TIME DURING TWO TIDAL CYCLES FOR FOUR COMBINATIONS OF POWER PLANTS OPERATION.

TEMPERATURE (°F)

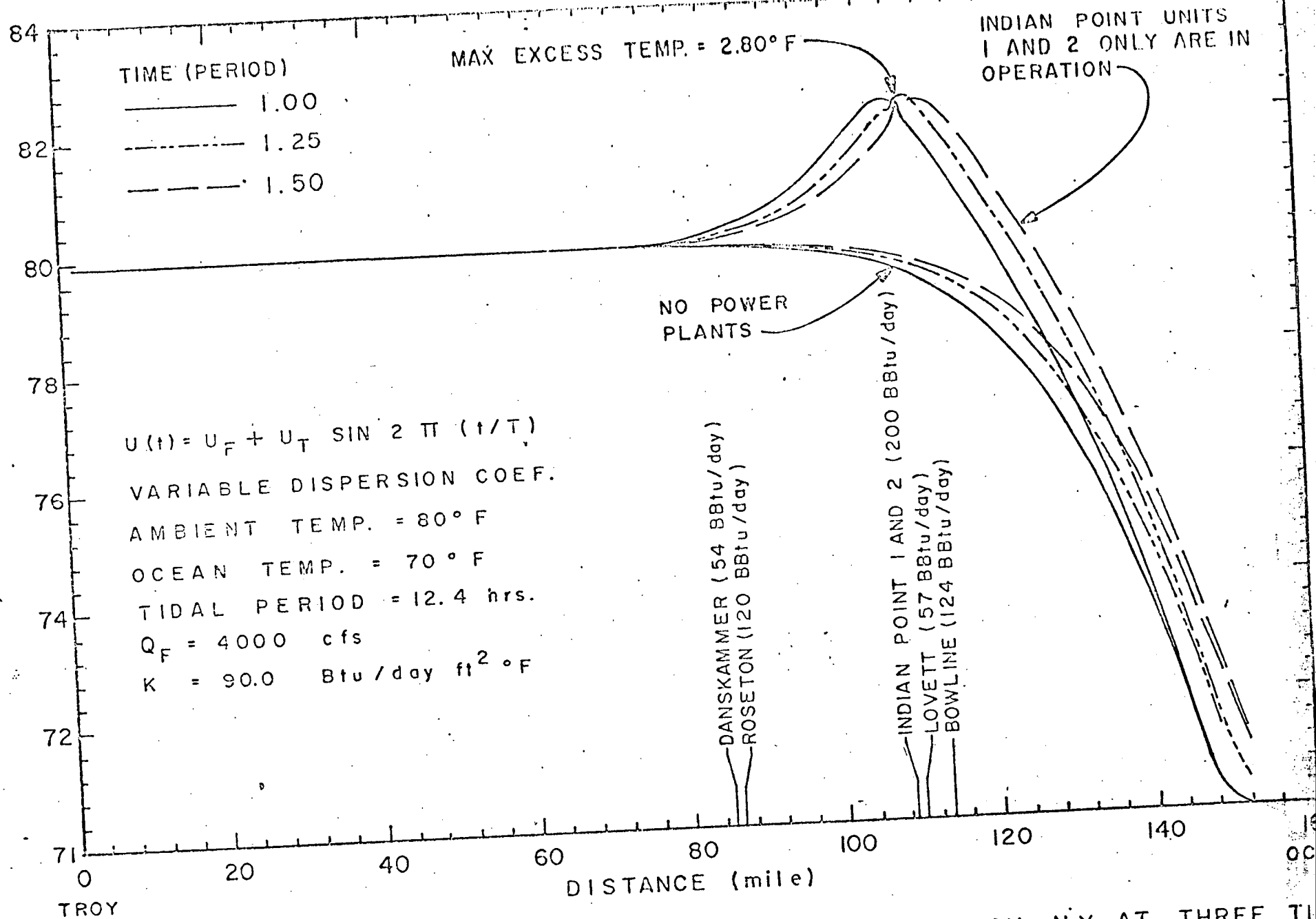


Fig. 4 ACTUAL TEMPERATURE AS A FUNCTION OF DISTANCE FROM TROY, N.Y. AT THREE TIMES WHEN ONLY INDIAN POINT UNITS 1 AND 2 ARE IN OPERATION.

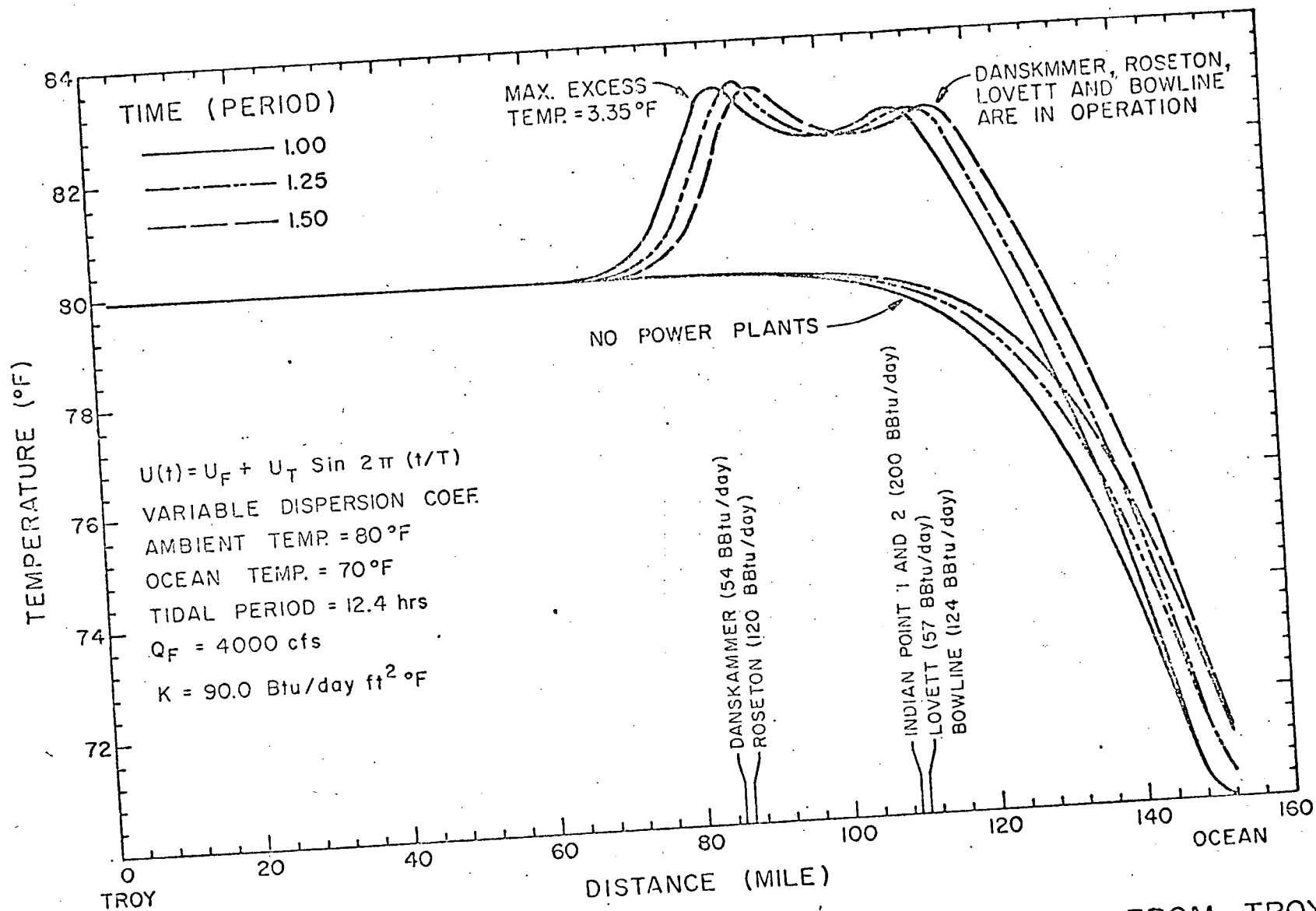


Fig.5 ACTUAL TEMPERATURE AS A FUNCTION OF DISTANCE FROM TROY N.Y. AT THREE TIDAL TIMES, WHEN DANSKAMMER, ROSETON, LOVETT AND BOWLINE POWER PLANTS ARE IN FULL OPERATION.

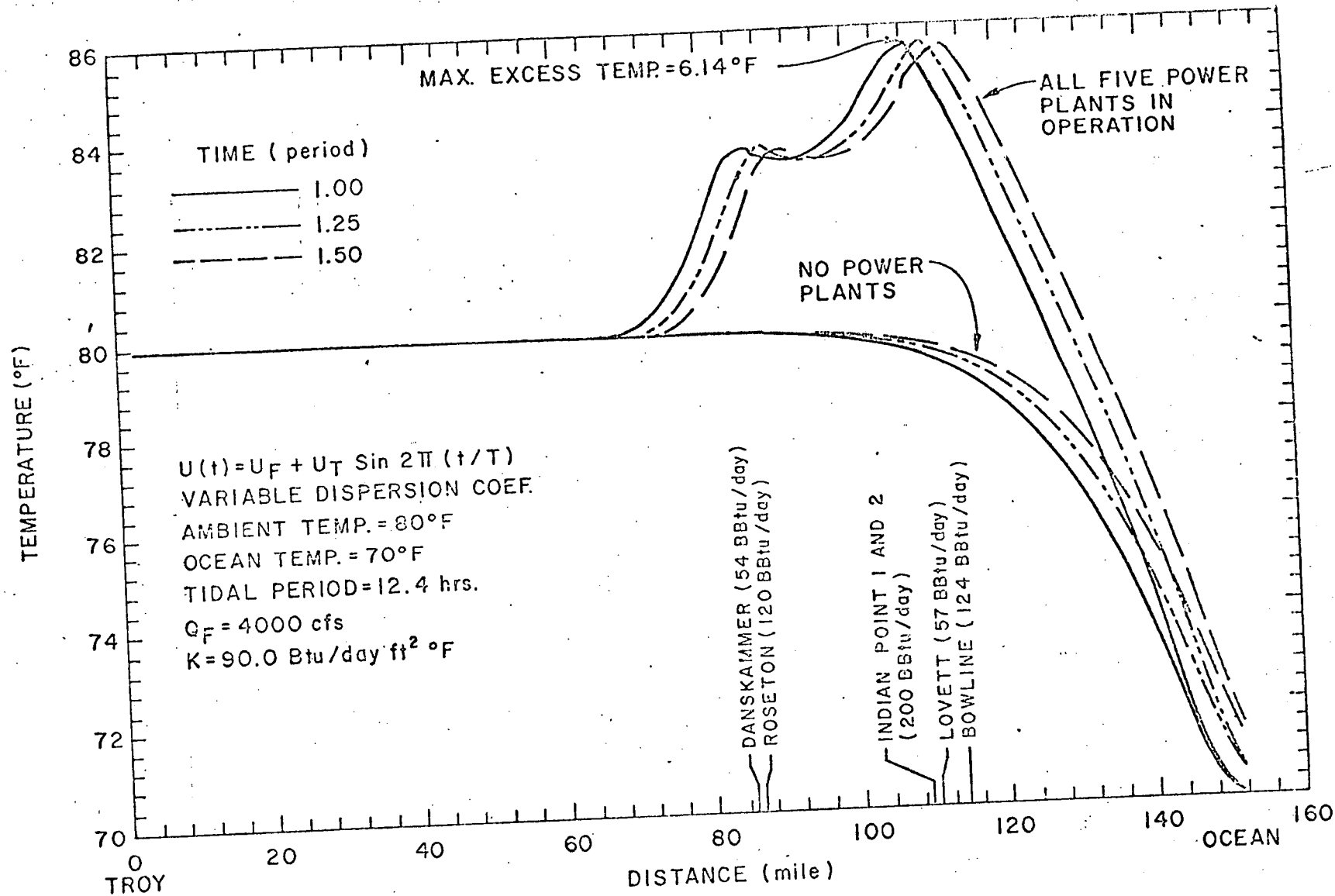


Fig. 6, ACTUAL TEMPERATURE AS A FUNCTION OF DISTANCE FROM TROY, N.Y. AT THREE TIDAL TIMES WHEN ALL FIVE POWER PLANTS ARE IN FULL OPERATION.

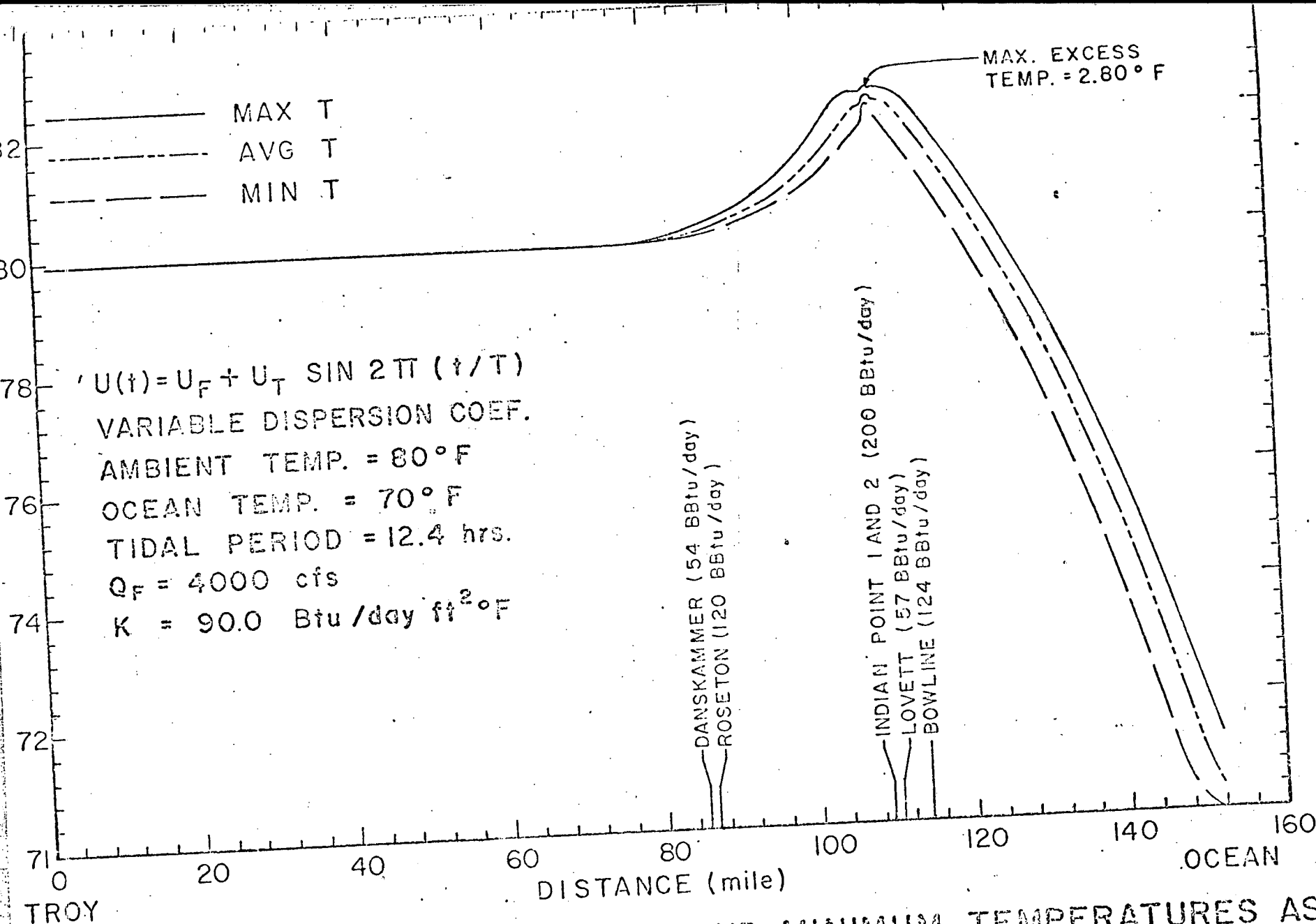


Fig. 7 TIDAL MAXIMUM, AVERAGE AND MINIMUM TEMPERATURES AS A FUNCTION OF DISTANCE FROM TROY, N.Y. WHEN ONLY INDIAN POINT UNITS 1 AND 2 ARE IN FULL OPERATION.

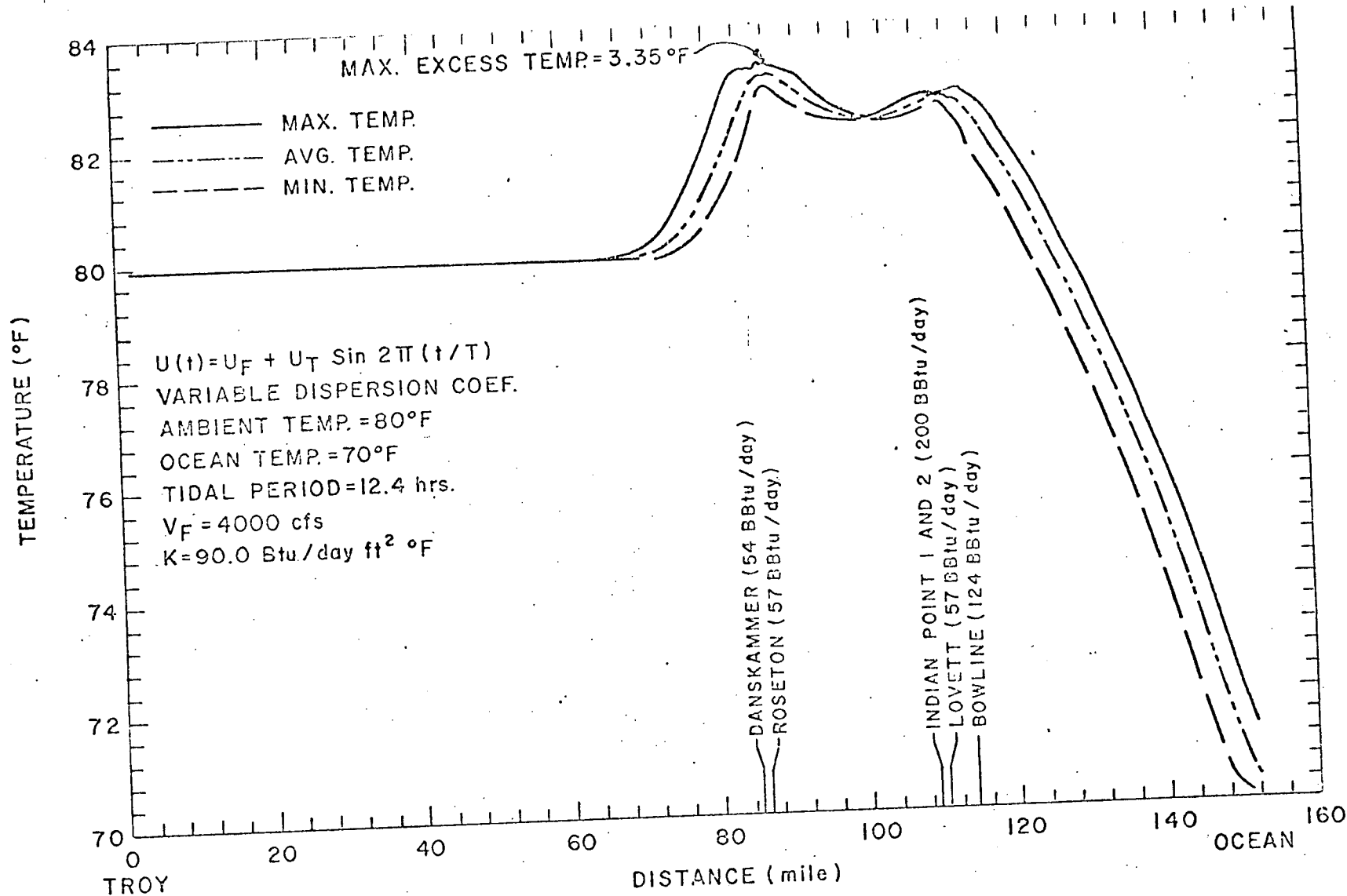


Fig. 8, TIDAL MAXIMUM, AVERAGE AND MINIMUM TEMPERATURE AS A FUNCTION OF DISTANCE FROM TROY, N.Y. WHEN DANSKAMMER, ROSETON, LOVETT AND BOWLINE POWER PLANTS ARE IN FULL OPERATION.

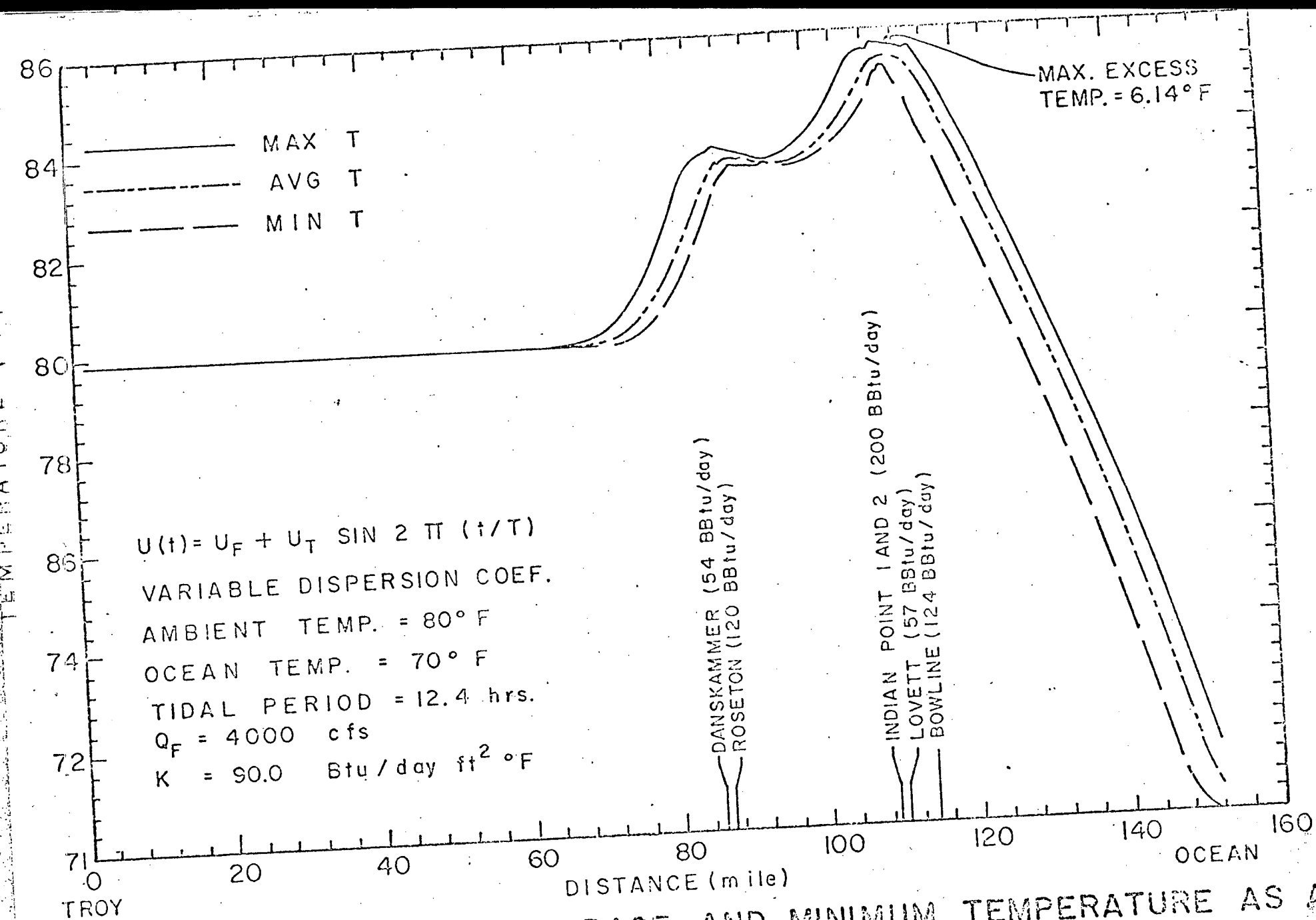


Fig. 9 TIDAL MAXIMUM, AVERAGE AND MINIMUM TEMPERATURE AS A FUNCTION OF DISTANCE FROM TROY, N.Y. WHEN ALL FIVE POWER PLANTS ARE IN FULL OPERATION.

II. Probable Reduction in Survival  
of Young of the Year Striped Bass in  
the Hudson River as a Consequence of  
the Operation of Danskammer, Roseton,  
Indian Point Units 1 and 2, Lovett,  
and Bowline Steam Electrical Generat-  
ing Stations.

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C. P. Goodyear

February 8, 1973



## INTRODUCTION

On December 15, 1972, the Atomic Safety and Licensing Board requested the staff to prepare data to reflect calculations of the combined effects of power plants on the Hudson River. The staff believes that the most serious consequence of plant operations will be caused by the mortality of young fishes withdrawn with the water used for cooling the condensers of the various plants. The staff has performed a preliminary study of one phase of that problem, i.e., the effect on striped bass young of the year.

Because the distribution of young striped bass in the estuary is related to the fresh water flows, the staff examined the potential effects of multiple plant operations for various flow situations. This was accomplished by utilizing flow data collected during different past years as an input to the model. Thus, the estimated reduction of striped bass young of the year presented in Table 1 illustrates comparatively the importance of the various facilities and combinations of facilities over a range of flow conditions. Data from 1964 represent a low flow situation, 1968 data represent a high flow situation, and 1969-70 data are similar to the mean flows over the period from 1949-1966.

Although the results presented here are preliminary, the staff, however, feels that they are generally correct, particularly when used

to infer the relative importance of the different power plants. Additional evaluation is needed to insure accuracy and to increase precision in the estimates.

### The Model

The model employed in this study is basically similar to the one presented by the staff in Appendix V-3 of the Final Environmental Statement for Indian Point Unit No. 2. However, the present model is more sophisticated in many respects and has been found to closely predict the distribution of striped bass in the Hudson. A detailed description of the model is currently being prepared but will be omitted here in the interest of a timely presentation of the initial results. However, the general features are outlined below.

The spawning distribution was considered to be the same as that estimated by the HRFI investigation but was dependent on temperature. Fish were considered to be entrainable for approximately 64 days. Mortality upon condenser passage was considered to be 100%. Natural mortality was a function of age but not a function of density. The concentration of entrainable individuals in the intake water of each power plant was considered to be the same as the mean concentration of the adjacent cross section. Migratory responses were considered to be a function of convective water flows and the vertical movements

of the fish as modified by the product of the S/A ratio\* with a coefficient for habitat preference.

The model utilized 18 river compartments as described in Table 2. Freshwater flow as estimated by the USGS for Poughkeepsie for various years was used to determine the position of the salt front in the estuary and to establish the advective transport between compartments. The operating characteristics and locations of the power plants that were considered in this study are presented in Table 3.

$$*S/A \text{ ratio} = \frac{\text{shoal area of compartment}}{\text{total surface area of compartment}}$$

TABLE 1. ESTIMATED REDUCTION IN STRIPED BASS YOUNG OF THE YEAR\*

CONDITION	Percentage Reduction According to Flow Year Simulated						
	1949	1955	1964	1967	1968	1969	1970
No plants (base)	0	0	0	0	0	0	0
Roseton, Danskammer IP 1&2, Lovett, Bowline	55.4	64.0	54.4	48.7	38.2	63.8	61.4
Roseton, Danskammer, Lovett, Bowline	37.1	40.9	40.4	33.3	29.2	41.5	40.5
IP 1&2	32.9	42.8	25.6	26.8	14.4	41.7	39.9
Roseton, Danskammer	15.1	12.2	23.7	16.9	5.3	9.4	12.8
Danskammer	5.9	4.5	10.5	6.7	1.8	3.4	4.8
Lovett	12.4	16.0	9.5	9.7	4.5	15.6	15.1
Bowline	13.9	18.4	10.6	9.7	21.9	22.6	18.5

\*Assuming flow conditions similar to the year specified

Table 2. SEGMENT PARAMETERS OF THE STAFF'S HUDSON RIVER STRIPED BASS TRANSPORT MODEL

Segment	Upper* Bound	Lower* Bound	Midpoint*	Length (mi)	Width <sub>3</sub> (ft x 10 <sup>3</sup> )	Cross Section <sub>4</sub> (ft <sup>2</sup> x 10 <sup>4</sup> )	Shoal Area <sub>5</sub> (ft <sup>2</sup> x 10 <sup>6</sup> )	S/A**	Volume <sub>9</sub> (ft <sup>3</sup> x 10 <sup>9</sup> )	RIVFAC (10 <sup>3</sup> ft <sup>3</sup> /sec)
1	135.0	125.0	130.0	10.0	2.0	29.6	4.75	0.44	1.56	0.0
2	125.0	115.0	120.0	10.0	3.5	38.6	3.86	0.75	2.04	0.0
3	115.0	105.0	110.0	10.0	4.0	68.6	2.54	0.59	3.62	0.0
4	105.0	95.0	100.0	10.0	4.0	82.3	9.32	0.44	4.34	0.0
5	95.0	85.0	90.0	10.0	4.5	116.0	7.86	0.33	6.12	0.0
6	85.0	77.5	81.25	7.5	3.0	119.0	1.64	0.14	4.71	0.0
7	77.5	70.0	73.5	7.5	2.5	124.0	1.12	0.11	4.91	0.0
8	70.0	62.5	66.25	7.5	3.5	154.0	4.72	0.34	6.10	0.0
9	62.5	55.0	58.75	7.5	6.2	160.0	3.97	0.16	6.34	3.0
10	55.0	50.0	52.5	5.0	2.0	185.0	0.18	0.03	4.88	4.5
11	50.0	45.0	47.5	5.0	2.0	131.0	0.25	0.04	3.46	8.0
12	45.0	40.0	42.5	5.0	4.0	160.0	4.89	0.46	4.22	14.0
13	40.0	35.0	37.5	5.0	11.0	202.0	5.89	0.89	5.33	20.0
14	35.0	30.0	32.5	5.0	9.0	187.0	3.84	0.58	4.94	26.0
15	30.0	25.0	27.5	5.0	9.0	216.0	3.84	0.58	5.70	30.0
16	25.0	20.0	22.5	5.0	6.0	193.0	3.84	0.87	5.10	36.0
17	20.0	15.0	17.5	5.0	4.5	143.0	2.67	0.22	3.78	43.0
18	15.0	10.0	12.5	5.0	4.5	140.0	2.54	0.21	3.70	50.0

\*Locations are miles upstream from battery

\*\*S/A = Ratio of shoal area to total surface area

TABLE 3. POWER PLANTS ON THE HUDSON RIVER

STATION	LOCATION (mile point)	FLOW (cfs x 10 <sup>-3</sup> )	TEMPERATURE RISE (F°)
Danskammer	66	686	14.5
Roseton	65	1,448	15.4
Indian Point	43	2,650	15.0
Lovett	42	720	14.8
Bowline	38	1,711	13.5

1 MR. TROSTEN: I assume receipt of this into the  
2 transcript is subject to the Board's ultimate ruling on the  
3 admissibility of this evidence into evidence, which as you  
4 say, is subject to further argument from the applicant on  
5 the matter?

6 CHAIRMAN JENSCH: As to that, the enclosures are  
7 considered now a part of the evidence in this proceeding.

8 The Board, however, will entertain a motion for  
9 reconsideration, or a motion to strike, whichever the appli-  
10 cant desires, and the Board will give further consideration  
11 to a further ruling, but to achieve the finality that the  
12 applicant indicated was desirable, and as to which the Board  
13 agrees; the Board believes it better to make a positive ruling  
14 receiving these data in the record at this time.

15 We will, however, entertain a motion to strike and  
16 reconsider.

17 These two submittals do now constitute a part of  
18 the record in this proceeding.

19 It should be understood, however, that if there is  
20 not a change modifying, or affecting the ruling, the Board  
21 now is making that the two witnesses who authored these two  
22 enclosures should be available for cross-examination to the  
23 parties if desired.

24 MR. KARMAN: They will be available, Mr. Chairman.

25 CHAIRMAN JENSCH: Presumably, not at this session,

1 however, but at a time convenient that can be arranged by  
2 and among the attorneys.

3 MR. KARMAN: Yes, sir.

4 CHAIRMAN JENSCH: Very well, Dr. Goodyear has  
5 resumed the stand.

6 Would you prefer to recess and come back earlier,  
7 or continue now, or whatever you desire?

8 MR. TROSTEN: When? Let me see. We have a  
9 schedule to reconvene at two o'clock on radiological matters.

10 CHAIRMAN JENSCH: We could go ahead now, or we  
11 could come back earlier and take up the environmental matters,  
12 and when two o'clock comes, we can interrupt it.

13 MR. TROSTEN: Let us recess, now.

14 CHAIRMAN JENSCH: What time do you want?

15 MR. TROSTEN: And reconvene here at 1:15?

16 CHAIRMAN JENSCH: At this time, let us recess, to  
17 reconvene in this room at 1:15.

18 (Whereupon, the hearing was recessed at 11:47 a.m.,  
19 to reconvene at 1:15 p.m., this same day.)

end 11

20

21

22

23

24



AL #12 mml  
cr8370

AFTERNOON SESSION

1:15 p.m.

CHAIRMAN JENSCH: Please come to order.

Dr. Goodyear is resuming the stand.

Whereupon,

C. P. GOODYEAR

resumed the stand, and having been previously duly sworn,  
was further examined and testified as follows:

CHAIRMAN JENSCH: Are you ready to proceed,  
Applicant?

MR. TROSTEN: I am.

CHAIRMAN JENSCH: Will you proceed, please?

CROSS-EXAMINATION

BY MR. TROSTEN:

Q I would like to retrace some of our steps on the  
questions we were discussing yesterday so that the record  
can be complete in one place.

Are you able to compare the river flows of the  
San Joaquin system and the Hudson River?

This is net fresh water flows.

A. I checked that.

Q I am referring now to May, June and July.

A. I don't have a good tally of the May flow for  
the San Joaquin, but the June, July flow in the years 1959  
through 1970 averaged 19,000 cfs for those two months in the

mm2

1 San Joaquin-Sacramento system.

2 This would compare with about a 10,700 cfs flow  
3 in the Hudson.

4 Q What is the number you gave?

5 A 10,700.

6 Q Now, are you able to compare the river diversions  
7 in the San Joaquin system with those of the Hudson River?

8 I am referring here now to river diversions for  
9 irrigation purposes.

10 MR. MACBETH: Am I right in understanding that you  
11 mean the San Joaquin-Sacramento system combined?

12 MR. TROSTEN: Yes.

13 THE WITNESS: I don't know of any diversions for  
14 irrigation from the Hudson.

15 From the Sacramento-San Joaquin system, about 57  
16 percent of the total flow is diverted, or was during the  
17 period that I was referring to.

18 BY MR. TROSTEN:

19 Q For irrigation purposes?

20 A Well, it was diverted for various purposes, most of  
21 it going to irrigation.

22 Q Now, how does that diversion compare with the  
23 amount of water that would be circulated through the Indian  
24 Point 1 and 2 power plants?

25 Are you able to compare that?

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1 Dr. Goodyear, before you respond to that question,  
2 let me ask you a further background question.

3 That number you quoted, 57 percent, is that just  
4 the Tracy diversion, or is that total irrigation diversion?

5 A. It is delta and Tracy. It is the total.

6 Q. Total?

7 A. It is total insofar as Turner and Chadwick.

8 CHAIRMAN JENSCH: Do you have a figure that you  
9 have calculated to show water circulated through Indian Point  
10 1 and 2? Can you use that for your premise? I don't expect  
11 he has done the computation.

12 MR. TROSTEN: 2650 cfs. It is stated in the  
13 Final Environmental Statement.

14 CHAIRMAN JENSCH: That is the two plants?

15 MR. TROSTEN: Yes.

16 CHAIRMAN JENSCH: What is the comparison?

17 MR. TROSTEN: The amount of water circulated  
18 through the Indian Point 1 and 2 plants and the amount of  
19 water diverted from the San Joaquin system for irrigation  
20 purposes.

21 CHAIRMAN JENSCH: He used the figure 57 percent.

22 THE WITNESS: I convert it.

23 MR. TROSTEN: I think he could do it.

24 THE WITNESS: The flow through the Indian Point  
25 plant, assuming 60 days at 2600 cfs, is 1.4 times 10 to the 10th.

mm4  
1 BY MR. TROSTEN:

2 Q Would you repeat that? Your voice dropped and I  
3 missed it.

4 A I believe I said 1.4 times 10 to the 10th.

5 CHAIRMAN JENSCH: I suppose your next question is,--  
6 if one figure is 26000 cfs, and the other is whatever it is cfs,  
7 what do you want him to do with those two figures?

8 MR. TROSTEN: I wanted him to compare them in  
9 magnitude.

10 CHAIRMAN JENSCH: It is a mathematical calculation  
11 that you can make and he will accept it, or something.  
12 I am trying to move along to what is your ultimate step.

13 We can always take the figures and give some  
14 consideration to them later.

15 MR. TROSTEN: I don't have a calculation,  
16 Mr. Chairman.

17 THE WITNESS: I get a factor of four difference.

18 BY MR. TROSTEN:

19 Q A factor of four?

20 A Yes.

21 Q Thank you.

22 CHAIRMAN JENSCH: By that you mean that the water  
23 circulated through the Indian Point plants is four times  
24 greater than the diversion from the San Joaquin-Sacramento?

25 MR. TROSTEN: No, it is one-fourth. The water

mm5

1 circulated through the Indian Point 1 and 2 plants is one-fourth.

2 THE WITNESS: That is, exported from San Joaquin,  
3 yes.

4 CHAIRMAN JENSCH: Very well.

5 Thank you.

6 BY MR. TROSTEN:

7 Q Now, turning to the statement that appears on  
8 page 5 concerning the investigation that took place in the  
9 San Joaquin, I am not going to read that quotation to you  
10 again.

11 CHAIRMAN JENSCH: Would you give us the title of  
12 that to which you are referring?

13 MR. TROSTEN: Yes.

14 It is Dr. Goodyear's testimony on Con Edison's  
15 research program. It is their testimony number 1, I believe.

16 CHAIRMAN JENSCH: Thank you.

17 MR. TROSTEN: The statement in question appears on  
18 page 5.

19 BY MR. TROSTEN:

20 Q I guess I had better read it again, Dr. Goodyear,  
21 so we can have the context.

22 You said:

23 "Unfortunately, the intensive investigation of  
24 this population, the intensive investigations of this  
25 population which have been conducted since the mid-1940s

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1 have not provided sufficient information to establish  
2 a cause and effect relationship which exists in the  
3 population."

4 Now, yesterday you were starting to describe the  
5 intensity of the investigations that took place in the San  
6 Joaquin system. I believe you said the work started in 1947  
7 and ran through 1949, is that correct?

8 A. The initial study began in 1945 and ran through  
9 1949.

10 The document that was prepared in analyzing that  
11 information was published in 1950. It is a "Special Scientific  
12 Report Number 56, of the United States Department of Interior  
13 Fish and Wildlife Service, Sacramento-San Joaquin Delta Fishery  
14 Source."

15 The quantity of information that they have compiled  
16 is rather incredible. The first two years were spent getting  
17 gear together, techniques worked out, and in 1947 and 1948 --  
18 or 1948 and 1949 -- they did some fairly extensive studies of  
19 the larval egg deposition and distribution of young of the  
20 year in the Sacramento system.

21 They have growth rate information, size  
22 distribution, and relative distribution in the estuary there  
23 itself.

24 I am not sure exactly what you are interested in.  
25 There were 25 stations, or 26 stations, rather, utilized.

mm7

1 to take temperatures, salinity, dissolved oxygen, turbidity  
2 and various other types of physical information.

3 They concluded from their study, and I quote, and  
4 it is the last statement in their summary:

5 "The evidence is conclusive that in order to  
6 protect and maintain populations of king salmon,  
7 striped bass and shad, positive means for preventing  
8 their passage through pumps, must be adopted."

end #12

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1 Q Which pumps were they talking about?

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2 A These were in particular the pumps at the Tracy  
3 Pumping Facility, which was the focus of this study.

Reba 1

4 Q Have you finished with that portion of your  
5 statement?

6 A Yes.

7 Q Was that the whole study? You mentioned that it  
8 went on for several years. What was the other study?

9 A That was the initial study. There are so many  
10 things. Shortly after that study was completed, other studies  
11 were initiated. I am not certain who they -- there was some  
12 work done in, or between the period 1948 to 1951. After 1951,  
13 the Inlet Fisheries Branch of the Department of Fish and Game  
14 of the State of California began to take over the work, and  
15 much of it has been summarized and published by Chadwick.

16 But there are continuous data from 1953 to present  
17 on distribution, abundance and various other features of the  
18 population there.

19 In more recent years, the studies have become more  
20 sophisticated, and they have been able to distinguish changes  
21 in recruitment to the fishery, which are associated with changes  
22 in survival of young fish to a length of one to one and a half  
23 inches.

24 Those factors which influence the survival to  
25 that size have been correlated with the river flow. The



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Reba 2

1 correlation is positive with river flow, and it is inversely  
2 related to the pumping at the Tracy Plant. The analysis has  
3 been done with all of the export water.

4 The relationship of the Tracy Plant, the export  
5 pumped from the river, to the recruitment and survival to  
6 1 to 1 and a half inches is not well defined, because there are  
7 several alternative conclusions which have been produced by  
8 various investigators.

9 I might add that from time to time short term, fairly  
10 intensive investigations concerning not only striped bass  
11 but everything else that is in the Sacramento-San Joaquin  
12 system there -- for instance in July, 1961, the Delta Fish and  
13 Wildlife Protection Study was initiated to investigate the  
14 ecology of the Sacramento-San Joaquin Estuary, and they produced  
15 at least two reports such as this one.

16 I am not sure if they have produced any further  
17 information, but the data that is contained in this volume of  
18 the -- you see it is a Fisheries Bulletin, number 136, of the  
19 Department of Fish and Game, State of California, Ecological  
20 Studies in the San Joaquin-Sacramento Delta, published in  
21 1946 -- data is included in here on the food habits of young  
22 fish through, actually, from the later early stages, of four  
23 and a half inch fish and beyond, the later year classes as well.

24 It relates the food habits to the distribution and  
25 to the various organisms which are associated with the fish.

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1 They evaluated the importance of several different  
2 kinds of food, evaluated some cause and effect relationships  
3 associated with the location of spawning, and a number of other  
4 factors concerning striped bass.

5 There is actually quite a lot of data in here which  
6 was useful to me in evaluating certain features related to  
7 the striped bass as a fish.

8 There also has been a great deal of work done on the  
9 fishery itself to evaluate the decline which has been observed  
10 since about -- I am not sure exactly when it started, but it  
11 is mostly since the Tracy Plant began operations.

12 Q The factor of four to one that you gave before, the  
13 irrigation diversions to Indian Point 1 and 2 circulation, that  
14 was not strictly the Tracy diversion, was it?

15 A No.

16 Q So the Tracy diversion would be somewhat less than  
17 four to one, is that right?

18 A Yes. I am not certain exactly what it would be at.

19 Q On the order of, say, 3 or 4 to 1?

20 A I am not certain that the numbers that they provided  
21 in their original analysis would not be on the order of four  
22 to one.

23 Q Isn't Tracy 7,000 cfs?

24 A That would sound more reasonable.

25 Q All right. So we can just perform the diversion

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Reba 4

1 ourselves.

2 All right, now. Let me ask you about the study.

3 Were these various studies that went on from 1945 to 1949 and  
4 then there was more work from 1948 to 1951 and then some work  
5 under Chadwick from 1951 on, were these all coordinated or  
6 unified studies, or were they a series of studies that took  
7 place on the river, sometimes the same investigators, sometimes  
8 different investigators?

9 Was there one specific objective they were going  
10 for, or were they sort of collecting data and going for a  
11 series of different <sup>objectives</sup> ~~conjectures~~? Do you know the answer to  
12 that question?

13 A I think there are two answers. There is and has  
14 been a long term effort directed at the anadromous fish, but  
15 the intensive studies, for instance, I was discussing the  
16 results of the Delta fish and Wildlife Protection Study, was  
17 not a part of that concentrated effort, or was not a part of  
18 that continuous effort.

19 It was really directed at reevaluating the whole  
20 situation in connection with additional export that was planned.

21 Q That was the 1945 to 1949?

22 A No, that was the studies that were conducted  
23 between, I guess, 1961 and 1966.

24 Q 1961 and 1966. Now do you have any idea of the  
25 number of persons, the number of biologists who were involved

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Reba 5

1 in these studies? That is one measure of determining how in-  
2 tensive the work was. Do you have any idea of how many biolo-  
3 gists were involved in these studies?

4 A Not right offhand. There are probably six or seven  
5 major authors, but some of them have additional support. I  
6 don't know how much of the work was done by people who were not  
7 the authors of papers.

8 It looks like there was considerable effort.

9 Q You mentioned yesterday, I believe, that the work  
10 that was done from 1947 to 1949 was more extensive than the  
11 Hudson River Fisheries Study. Is that what you said yesterday?  
12 I recall that.

13 A In certain respects, I would say so, yes.

14 CHAIRMAN JENSCH: I have the transcript here, if you  
15 would like to refer to it. If you refer to the transcript,  
16 give him the page, and then you don't have to ask the witness  
17 to recall several things that he may have gone over.

18 THE WITNESS: The answer is yes, in certain respects  
19 it certainly was.

20 BY MR. TROSTEN:

21 Q In what respects was it more intensive?

22 A The type of sampling that was done, the type of  
23 analysis that was done. The effort was directed at analyzing  
24 three different species. Actually, they included four.

25 Q Have you finished?

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1 A I think so.

Reba 6

2 Q Now, Dr. Goodyear, would you say that the studies  
3 that have been conducted to date on the Hudson River, such as  
4 the Hudson River Fisheries Investigation and the Raytheon  
5 Study and the NYU Study, are analagous to the work, and form  
6 sort of a baseline that would be roughly analagous to the work  
7 that was done in San Joaquin? That is, in terms of a baseline  
8 for future studies?

9 A I think so, yes.

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1 Q Dr. Goodyear, you say on page 6 of your paper that  
2 the cause of reduced recruitment has not yet been resolved.

3 Now, you are not implying by that statement that  
4 the existing Pittsburgh power plants on the Sacramento River  
5 continued to be suspect as a major contributor to the reduction  
6 in recruitment, are you?

7 CHARIMAN JENSCH: I wonder if I could have that  
8 question read back.

9 (The reporter read the question as requested.)

10 CHAIRMAN JENSCH: I want to understand the question.  
11 You are asking Dr. Goodyear: Do these Pittsburgh plants  
12 contribute to pollution in the river? Is that your question?

13 MR. TROSTEN: No, I was asking him just the question  
14 that I asked him, Mr. Chairman.

15 CHAIRMAN JENSCH: I don't quite get that. I thought  
16 you had a double negative in there.

17 MR. TROSTEN: He was saying here that unfortunately  
18 the intensive investigations of the population which have been  
19 conducted since the mid-1940s have --

20 CHAIRMAN JENSCH: I have that.

21 MR. TROSTEN: As a result, the cause of recruitment  
22 has not been resolved.

23 I am saying to him that he is not suggesting that  
24 the Pittsburgh power plants are suspect as a contributor, or  
25 continued to be suspect as a contributor.

1 CHAIRMAN JENSCH: When you use "continued to be  
2 suspect" what is the foundation for that?

3 MR. TROSTEN: I will drop the word "continued."

4 THE WITNESS: As a major contributor?

5 They are certainly not. My own feeling after look-  
6 ing at the data that is available that the -- let me back up  
7 for a second.

8 In the late 1930s or early 1940s --

9 Well, the State of California outlawed the commercial  
10 fishery. In doing so, the survival rate increased in the  
11 population. The result of that is the age distribution changed,  
12 the size of the stock began to increase. The consequence of  
13 that was that a larger standing stock existed.

14 If you study the food habits of the fish in the  
15 Sacramento-San Joaquin system, you will find that a very large  
16 proportion of the food of the older striped bass is young  
17 striped bass, and it can account for a very large proportion of  
18 the total mortality in the age group zero fish as a consequence  
19 of that cannibalism.

20 A comparison can be made between the Hudson data  
21 I have looked at and the survival rate of the zero-plus age  
22 group in the Hudson versus in the Sacramento-San Joaquin  
23 during, say, July and August.

24 Chadwick in summarizing the recent results found a  
25 decline in abundance, a daily reduction of 5 percent of the

1 zero-plus age group per day. Over a 60-day period, two months,  
2 say, that reduction would be equivalent to -- I forgot -- it  
3 would result in about 5 percent surviving after 60 days. If  
4 you look at the data that has been gathered on the Hudson  
5 in Haverstraw Bay, for instance, you will note a decline of  
6 maybe half during this same time interval.

7           The consequence of the increased mortality is a  
8 result of higher standing stock in the adult population that  
9 is reducing the recruitment. So if you have a higher standing  
10 stock but lower recruitment rates, the fluctuations in the year  
11 classes are actually buffered to a great extent by comparison to  
12 the times in the past.

13           MR. TROSTEN: I have no further questions of Dr.  
14 Goodyear.

15           We would like to interrogate Dr. Goodyear through  
16 Dr. Lawler.

17           CHAIRMAN JENSCH: What are the technical qualifi-  
18 cations of Dr. Lawler? Have they been established in the record  
19 yet?

20           MR. TROSTEN: I think so.

21           CHAIRMAN JENSCH: I am recalling Mr. Skinner's  
22 ordeal yesterday.

23           If you state Dr. Lawler is qualified, we will accept  
24 your statement.

25           MR. KARMAN: At this time, Mr. Chairman, I would like



1 to offer into evidence a document entitled "Recent Changes  
2 in the Mid-Atlantic Striped Bass Landings" by Dr. C. P. Goodyear.  
3  
4 Copies of this have already been distributed to the Board,  
5 to the parties and to the reporter.

6 CHAIRMAN JENSCH: Is there any objection?

7 MR. KARMAN: I request they be incorporated in the  
8 transcript as if read.

9 MR. TROSTEN: We have no objection.

10 MR. MACBETH: No objection.

11 CHAIRMAN JENSCH: The request is granted and the  
12 statement consisting of four sheets entitled "Recent Changes in  
13 the Mid-Atlantic Striped Bass Landings" may be incorporated  
14 in the transcript and shall constitute evidence on behalf of the  
15 Staff.

16 (The document follows:)  
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## RECENT CHANGES IN THE MID-ATLANTIC STRIPED BASS LANDINGS

C. P. Goodyear

The following discussion presents an analysis of the recent changes which have occurred in the Mid-Atlantic striped bass landings. This data covers the period subsequent to the 1930-1966 period analyzed in preparation of the FES for Indian Point Unit No. 2. It is pointed out that there are several alternative cause-and-effect relationships which can be hypothesized in connection with this data. However, there is no basis for the conclusion that power plant operations on the Hudson River have had no important effects on recruitment of striped bass to the Middle Atlantic stock. This conclusion results from the fact that a substantial reduction in Mid-Atlantic landings occurred during the period 1967-1971. A reduction in Hudson recruitment of some 40% is consistent with the concept that the Hudson contributes about 80% of the stock utilized by the Middle Atlantic fishery.

Catch Data\* for the Middle Atlantic Region 1967-1971  
(\* thousands of pounds)

<u>Year</u>	<u>State</u>			<u>Total</u>
	<u>New York</u>	<u>New Jersey</u>	<u>Delaware</u>	<u>Middle Atlantic</u>
1967	1630	327	66	2023
1968	1551	459	49	2059
1969	1535	311	42	1888
1970	1338	223	54	1615
1971	1160	283	50	1493

The most recent data available (January 5, 1973) show that the total New York catch for period January through July declined from 559,160 lbs. in 1971 to 293,890 lbs. in 1972.

It is assumed that the Middle Atlantic stock is derived from Chesapeake Bay (C), Delaware (D), and the Hudson River (H), i.e.

$$MA = c*C + d*D + h*H$$

where c = fraction of Chesapeake stock captured in Mid-Atlantic region,

d = fraction of Delaware stock captured in Mid-Atlantic region, and

h = fraction of Hudson River stock captured in Mid-Atlantic region.

Tagging studies indicate that about 1.5% of the Chesapeake stock (by numbers) leave the Bay annually, and of these about one-half are recaptured in the Middle Atlantic region. Because of the size and age differences of fish taken in the two regions, Chesapeake recruits from given year classes contribute most heavily to Mid-Atlantic catches two years after their heaviest contributions to Chesapeake Bay landings, but at about twice the average weight. Thus, the Chesapeake portion ( $C_p$ ) of the Mid-Atlantic catch on a given year (y) is herein estimated from the following relationship:

$$C_{p(y)} = c*C_{y-2} = (.015)(2)(C_{y-2})/2 = .015(C_{y-2})$$

The Chesapeake landings applicable to the present analysis are for years 1965 to 1969 (i.e. 1967 - 2 years = 1965 and 1971 - 2 years = 1969).

These data follow:

Chesapeake Landings (thousands of pounds)

1965	5162
1966	6150
1967	5827
1968	6146
1969	7759

#### Characteristics of Chesapeake landings 1965-1969

$$\text{Mean} = 6209$$

$$\text{Change} = (7759 - 5162) = 2597$$

$$\text{Change as percentage of mean} = (2597 \times 100) / 6209 = +41.8\%$$

#### Characteristics of Mid-Atlantic landings 1967-1971

$$\text{Mean} = 1815.6$$

$$\text{Change} = (1493 - 2023) = -530$$

$$\text{Change as percentage of mean} = (-530 \times 100) / 1815.6 = -29.2\%$$

#### Characteristics of New York landings 1967-1971

$$\text{Mean} = 1442.8$$

$$\text{Change} = (1160 - 1630) = -470$$

$$\text{Change as percentage of mean} = (-470 \times 100) / 1442.8 = -32.6\%$$

#### Computation of change in recruitment from Hudson

- A. Assuming Delaware recruitment constant and responsible for an average of 15% of the Middle Atlantic landings

$$\bar{D}_p = (.15)(1815.6) = 272.3$$

- B. Average contribution from Chesapeake to Mid-Atlantic

$$\bar{C}_p = (.015)(6209) = 93.1$$

- C. Average contribution from Hudson

$$\bar{H}_p = \bar{MA} - (\bar{D}_p + \bar{C}_p) = 1815.6 - (272.3 + 93.1) = 1450.2$$

- D. Change in Chesapeake recruitment

$$\Delta C_p = (.015)(2597) = 39.0$$

E. Change in Hudson recruitment

$$\Delta H_p = \Delta MA - (\Delta D_p + \Delta C_p) = -530 - (0.0 + 39.0) = -569$$

F. Change in Hudson recruitment as percentage of mean

$$\text{Change} = (-569 \times 100) / 1450.2 = -39.2\%$$

Other Cases

a. Delaware = 7.5% = 136.2

$$\text{Chesapeake} = 93.1 \times 10^3 \text{ lb.}$$

$$C_p + D_p = 229.3$$

$$\text{Percentage change in Hudson} = (-569 \times 100) / (1815 - 229.3) = -35.9$$

b. Delaware = 7.5% = 136.2

$$\text{Chesapeake contribution} = 5\% \text{ Chesapeake stock}$$

$$\text{Mean from Chesapeake} = (.05)(6209) = 310.45$$

$$C_p + D_p = 310.45 + 136.2 = 446.65$$

$$\Delta C_p = (.05)(2597) = 129.9$$

$$\text{Hudson change} = -530 - (0.0 + 129.9) = -659.9$$

$$\text{Percentage change in Hudson} = (-659.9 \times 100) / (1815 - 446.7) = -48.2\%$$

1 MR. TROSTEN: I am correct that this document is  
2 a written summary of what Dr. Goodyear said in the transcript  
3 with some relatively minor corrections, and it is being put  
4 in the transcript for the ease --

5 MR. KARMAN: That is correct.

6 CHAIRMAN JENSCH: And it will constitute evidence.

7 Dr. Lawler, will you proceed?

8 BY DR. LAWLER:

9 Q We have a series of questions on the paper that  
10 has been introduced.

11 With respect to this paper, you have presented a  
12 calculation which yields an estimated change in the recruitment  
13 for the Hudson of 36 to 48 percent; is that not right?

14 CHAIRMAN JENSCH: Would you refer to a portion of the  
15 statement where that computation appears?

16 DR. LAWLER: Yes, Mr. Jensch. This is given on  
17 pages -- the last page, page 4. There are three cases given on  
18 values of 35.9 percent decrease, a 39.2 percent decrease, and  
19 48.2 percent decrease. Those are given, and I have asked  
20 Dr. Goodyear if he does not agree that the calculations in this  
21 paper present an estimated change in the recruitment from the  
22 Hudson to the Middle Atlantic fishery of 36 to 48 percent.

23 THE WITNESS: The answer is yes.

24 BY DR. LAWLER:

25 Q To clarify matters a bit, is not this range your

ty 2

1 estimate of the change in the Hudson contributed portion of the  
2 Middle Atlantic fishery for the period 1967 to 1971?

3 I just want to make sure I understand what this  
4 change refers to. It seems to me it refers to that portion  
5 of the change in the Middle Atlantic fishery that can be --  
6 that presumably was contributed by the Hudson.

End #14 7 A Well, yes, essentially so.

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Reba 1

1 Q Okay. Does not this percentage change also corres-  
2 pond to the change in Hudson River catch for the period five  
3 years earlier, namely 1962 to 1966?

4 A I would have to check to make sure the same exact  
5 numbers could be derived.

6 Q What I am driving at there is that in making your  
7 computations, you used the change in the Chesapeake Bay catch  
8 for the years 1965 to 1969, which is a period of two years  
9 earlier than the Middle Atlantic catch, and based on the testi-  
10 mony that you have given previously, what I am asking is, would  
11 not the contribution of the Hudson correspond percentage-wise  
12 to the change in the Hudson River catch for the period five  
13 years earlier?

14 That would be 1962 to 1966.

15 A The Hudson River spawning effort, or survival of  
16 the young-of-the-year for that period.

17 Q Let me try again. What I am saying is that in  
18 making the calculation -- I am just trying to establish a con-  
19 sistency here. In making the calculation, you have used Chesa-  
20 peake Bay catches from the year 1965 through 1969?

21 A Right.

22 Q And you have staggered them two years back?

23 A The difference is that the actual fish present in  
24 the Chesapeake that were being taken as a portion of the fishery  
25 are the same fish that are being caught in the Mid-Atlantic,



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Reba 2

1 the same stock, the same year classes. On the other hand, the  
2 year class that was being taken in the Hudson five years earlier  
3 is not the same year class.

4 They are different fish. Actually, the production  
5 of fish for that year is the factor which should be related  
6 to the Middle Atlantic catch five years later.

7 Q Okay. I understand your point there. In the one  
8 case you are ascribing the Chesapeake Bay contribution to the  
9 same general year class, whereas in the other class you are  
10 ascribing it to the progeny of the given year class.

11 CHAIRMAN JENSCH: You nodded affirmatively. Would  
12 you orally answer that?

13 THE WITNESS: That is true.

14 CHAIRMAN JENSCH: Very well.

15 BY MR. LAWLER:

16 Q Now, have you checked your calculation against the  
17 actual Hudson River catches during the five year period that  
18 I mentioned? That is, 1962 to 1966?

19 A Not specifically. I have compared the Hudson River  
20 catches during that period to the catches in the Atlantic,  
21 going the other way, but the comparison is made here -- the  
22 comparison to which you refer exactly has not been done.

23 Q Would you accept that the percentage change in the  
24 Hudson River catches during that period computed in the manner  
25 in which you have computed the percentage changes in this paper

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Reba 3

1 is a nine percent decrease?

2 CHAIRMAN JENSCH: How did you derive that? Would you  
3 tell him how you derived that fish figure?

4 MR. LAWLER: Yes, I took the catches from 1962  
5 to 1966 and applied the same calculations that Dr. Goodyear  
6 has applied in his paper.

7 THE WITNESS: Yes, I would accept that.

8 BY MR. LAWLER:

9 Q In view of this, does it not seem to you that changes  
10 over the short time periods you have looked at represent natural  
11 fluctuations?

12 MR. KARMAN: Represent what?

13 MR. LAWLER: Natural fluctuations.

14 CHAIRMAN JENSCH: What is a natural fluctuation?

15 Is there some cyclical repetition of some key chains or  
16 changes? I think the definition, if you could tell us what you  
17 have in mind, would be helpful.

18 MR. LAWLER: What I am suggesting to Dr. Goodyear  
19 is, in view of the percentage change that actually did occur  
20 in the Hudson for the period of time mentioned does not the  
21 change, or do not the changes that he has described represent  
22 a fluctuation, or fluctuations occurring in the Middle Atlantic  
23 Fishery which may very well not be correlated to the Hudson  
24 or the Chesapeake or the Delaware for that matter.

25 THE WITNESS: The answer is yes.

Al 15

Reba 4

1 I might point out that the change in the fishing  
2 intensity in the Hudson during the first part of the 1960's  
3 would change the catch to escapement ratio, so that the change  
4 from a strict percentage decreased 9 percent, by 9 percent  
5 may not be correlated with a 9 percent decrease in the spawning  
6 effort during the same period.

7 BY MR. LAWLER:

8 Q Are you aware of the sport catch in the Middle  
9 Atlantic from 1965 to 1970?

10 CHAIRMAN JENSCH: Can you give us a reference to  
11 the figures in the document? You are really asking for a  
12 conclusion, I think.

13 MR. LAWLER: Let me ask it this way.

14 BY MR. LAWLER:

15 Q Are you aware of the evidence that Mr. Clark sub-  
16 mitted in testimony in January in which he indicated that based  
17 on the 1965 and 1970 salt water angling surveys, the catch  
18 in the Middle Atlantic region increased from 2.8 million fish  
19 in 1965 to 9.9 million fish in 1970?

20 A Are you asking do I know ---

21 Q I am asking you are you aware of that fact?

22 A I am not aware that it is a fact. I am aware  
23 that it is ---

24 Q Are you aware ---

25 CHAIRMAN JENSCH: Let him finish.

A1 15

Reba 5

1 THE WITNESS: I am aware of the presence of that  
2 information, but I am not aware of the fact of it being a fact.

3 BY MR. LAWLER:

4 Q I didn't indicate that it was a fact. I asked if  
5 you were aware of the fact that that information has been  
6 entered into testimony. Your answer is yes. Fine.

7 A Yes.

8 (Laughter)

9 Q I have one or two questions on the comments this  
10 morning in response to Mr. Briggs' question on the regression  
11 analysis.

12 You suggested in response to Mr. Briggs' question  
13 that non-linear regression analysis was tried, and I think you  
14 said that it was not found to yield significantly better  
15 results. Is that correct?

16 A That is true.

17 Q How many non-linear regression forms were used?

18 A Only one. I am not really -- I tried different  
19 non-linear regressions on several data.

20 Q I am specifically referring to the Chesapeake catch  
21 and the Mid-Atlantic catch.

22 A I don't remember.

23 Q You wouldn't remember whether any of these if they  
24 yielded more than one yielded a positive intercept?

25 A The model, as I remember it, which was fitted, had

Al 15

1 an intercept of zero.

Reba 6

2 Q All right.

3 CHAIRMAN JENSCH: Did you finish?

4 THE WITNESS: Yes.

5 CHAIRMAN JENSCH: I wondered if that was responsive  
6 to his question? Does that mean that your question is answered?

7 MR. LAWLER: Pretty much. I had intended to ask  
8 Dr. Goodyear whether or not a non-linear regression form could  
9 not be formulated would not yield a zero intercept or a positive  
10 intercept.

11 BY MR. LAWLER:

12 Q Could you formulate one that would give you a positive  
13 intercept?

14 A Yes.

end Al 15

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1 CHAIRMAN JENSCH: While there is a pause, the way  
2 you did it, you think was a better way, is that your thought?

3 THE WITNESS: The fact that the regression didn't --  
4 moving to a non-linear regression did not increase the -- let  
5 me see how you say it -- the descriptiveness, if you would,  
6 of the regression line.

7 Let me try that again.

8 The fact that the non-linear regression analysis  
9 did not yield a better equation to fit the data than the  
10 linear regression did, then I didn't feel that it was justified  
11 to extrapolate to non-linear form.

12 CHAIRMAN JENSCH: The reason I asked that question was,  
13 I understood Dr. Lawler to say that you could conjure up a  
14 figure that would come out some other way, but the fact you  
15 did it the way you did it, was the fact that you think it  
16 was better than this intangible way of describing some other  
17 mechanism that might produce a different result.

18 You did it the way you thought was reasonable,  
19 is that correct?

20 THE WITNESS: Yes.

21 CHAIRMAN JENSCH: Thank you.

22 Proceed.

23 BY DR. LAWLER:

24 Q Let me ask this question, then, Dr. Goodyear.

25 Did you not indicate yesterday that your reason for

1 the rejection of this particular linear regression analysis was  
2 the fact that you obtained a negative intercept and you further  
3 indicated that obtaining a negative intercept didn't have any  
4 particular physical meaning to you, and that was the reason  
5 why you rejected it?

6 A. That was one of the reasons it was rejected.

7 Another is that no other data supported it.

8 Q. Now, going on to a series of questions that were asked  
9 yesterday primarily to elicit some information, do you have  
10 any evidence of the average weight of the fish caught in the  
11 commercial catches?

12 A. In the last few years, or throughout?

13 Q. At any time.

14 A. There is evidence from seining collections that uti-  
15 lize the same technique now as the commercial fishermen utilize  
16 which supplies the -- one estimate, anyway -- of the age  
17 distribution.

18 MR. TROSTEN: Mr. Karman, will you provide the  
19 evidence to which Dr. Goodyear referred?

20 DR. LAWLER: I would like to pursue this a bit.

21 BY DR. LAWLER:

22 Q. I am pursuing it to know where it is.

23 Your answer is in terms of the seining hauls that  
24 were made presumably for tagging studies?

25 A. Partly for tagging studies.

mm3

1 Q. Partly for what else?

2 A. Mostly to define what fish were there.

3 Schaefer did a study which was published in 1967.

4 Q. I am aware of Schaefer's seining hauls. I am  
5 specifically interested in knowing whether you know of any,  
6 because I don't know of any, data on the average weight or  
7 for that matter, the age distribution if it is done in some other  
8 form, or the length distribution of fish caught in the commer-  
9 cial catches, and that could be commercial catches in the  
10 Chesapeake, in the Delaware, or the Hudson, or the mid-Atlantic  
11 or anywhere else that you may know that this information is  
12 available?

13 CHAIRMAN JENSCH: What is the relevancy of the data?

14 Maybe this will assist in understanding the  
15 question. What is the relevancy of the request you are  
16 making?

17 DR. LAWLER: It is quite relevant, I think,  
18 Mr. Jensch. It is directed as determining the possibility  
19 of the contribution of the Chesapeake to the middle Atlantic  
20 region, not in terms of two-year olds, but in terms of  
21 four-year olds and five-year olds and six-year olds.

22 CHAIRMAN JENSCH: Well, he said there was some seine  
23 haul information, and he would look it up.

24 Do you want to stop now?

25 DR. LAWLER: No, this is strictly for our information.



mm4

1 I don't know of any, and I am asking Dr. Goodyear.

2 CHAIRMAN JENSCH: Maybe he will look up what he  
3 said he didn't know about, and send it to you.

4 DR. LAWLER: I understand that area.

5 THE WITNESS: The specific question that you are  
6 asking, I don't know right off hand of any specific tabulation  
7 of data which, through historical records, exist. There are  
8 intervals of time where data have been gathered concerning the  
9 composition of the stock that was present. That information  
10 is information I have used.

11 .BY DR. LAWLER:

12 Q Are you suggesting that there are certain  
13 investigators who have taken some samples of a commercial  
14 catch or catches and done an age or size or weight distribution?

15 A Stock, I said, not catches.

16 Although the techniques that were used to estimate  
17 the distribution, age distribution, of the stock were the  
18 same techniques that are used in the commercial fisheries.

19 Q I just want to make sure that we have not overlooked  
20 any information on the distribution of either weight, age, or  
21 length in the commercial catches.

22 Do you know of any?

23 A I don't know what you have used.

24 Q We haven't used any from commercial catch data.

25 The commercial catch data that we have is all in terms of

mm5

1 total pounds.

2 I don't know the associated numbers of the catch  
3 or weight of the catch or age distribution of the catch.

4 CHAIRMAN JENSCH: I think you are talking about two  
5 different things, as I understand it.

6 You are limiting it precisely to commercial. If  
7 the purpose of your inquiry is to find out distribution from  
8 Chesapeake or Hudson, and you would discern that from  
9 knowing the weight or age or length of the fish, he said there  
10 is some other form of collection that gives that kind of data.  
11 So when you keep coming back to commercial, he says, "There  
12 isn't any, but there are data that give you the specifics  
13 you are looking for in a different process of collection," as  
14 I understand it.

15 Is that correct, Dr. Goodyear?

16 THE WITNESS: Yes.

17 DR. LAWLER: I am not aware that there is none  
18 that he knows of in the commercial data. Is that your  
19 answer?

20 THE WITNESS: I said that.

21 BY DR. LAWLER:

22 Q Do you have an opinion on the population of the  
23 four-year-old striped bass in the Chesapeake Bay?

24 A I certainly have an opinion.

25 To what point did you refer?

mm6

1 Q. Have you indicated in your testimony previously  
2 that in your opinion the population in Chesapeake Bay ranges  
3 from 10 million to 30 million fish over two years old or  
4 older?

5 Can you give me any idea of the distribution of  
6 those fish by age?

7 A. With a few minutes work, I could.

8 CHAIRMAN JENSCH: Do you think this would be a good  
9 point to visit?

10 I notice that the attorney for Citizens Committee  
11 has arrived, and maybe we can talk about that.

end #16  
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12 Would you and Dr. Goodyear have a chance to visit?  
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1 DR. LAWLER: I am almost done, and I don't want to  
2 do anything with that information at the moment. If you  
3 would agree to give me your estimate of the breakdown of  
4 distribution by age in the Chesapeake Bay, I would appreciate  
5 it.

6 THE WITNESS: All right. I would like to point out  
7 one other thing. Yesterday we discussed, and I seem to have  
8 confused the matter a bit, about the percentage of four-year  
9 old fish that migrate, the greatest proportion of the total  
10 number of fish which leave the Chesapeake seems to be the  
11 three and four-year old fish. The greatest migratory -- let  
12 me get it right. The older the fish are, the more likely they  
13 are to become migratory, so that a five-year old fish would be  
14 more prone to leave the bay than a four-year old fish. But  
15 the total proportion of the stock that is migrating, which is  
16 composed of five-year old fish, is less because there are  
17 fewer five-year old fish.

18 BY DR. LAWLER:

19 Q That is correct, and that is precisely why I am  
20 asking you to give me your estimate of the distribution of  
21 the age of striped bass two years old and over in the  
22 Chesapeake Bay.

23 A I realize that.

24 Q Thank you. I have two or three more questions  
25 on that point.

1 CHAIRMAN JENSCH: Do you have some additional  
2 questions after that? I don't want to limit you in any way.

3 DR. LAWLER: This is the last set of questions.

4 BY DR. LAWLER:

5 Q Do you have estimates of the sport catch in  
6 Chesapeake Bay?

7 A There are estimates, yes.

8 Q Would you give me the estimates of the sport  
9 catch in Chesapeake Bay? You don't have to do it right now.  
10 I am asking you in connection with this other information.  
11 If you don't have it, you don't have to --

12 A I have it, but it represents a fairly extensive  
13 bit of work to unscramble it from the multitude of papers.

14 Q I don't even need it instantly. Could you send it  
15 to me?

16 CHAIRMAN JENSCH: Give him the paper and maybe he  
17 could unscramble it.

18 What is the relevancy to what he has said in his  
19 direct testimony? I think sometimes we get into discovery  
20 procedures because we like to get the information, but it  
21 counteracts something he has said --

22 MR. TROSTEN: It is relevant to the contribution of  
23 the Chesapeake and the Hudson to the Mid-Atlantic. We are  
24 not asking Dr. Goodyear to prepare a report or a special  
25 analysis. If he doesn't have an estimate, he can tell us the

1 data base he relied on to draw such an estimate, and that  
2 will be fine.

3 CHAIRMAN JENSCH: Maybe if you give him the data  
4 base to certain things, perhaps he can work it up. But if  
5 he or Mr. Carter --

6 Who made the estimate?

7 DR. LAWLER: Dr. Goodyear has indicated that in  
8 his opinion 1-1/2 percent of the Chesapeake population contri-  
9 butes to the Mid-Atlantic.

10 CHAIRMAN JENSCH: You are trying to refine it by  
11 their birthdays?

12 DR. LAWLER: That is correct. Dr. Goodyear has  
13 just indicated that that is quite a relevant point because  
14 he has just indicated that the major migration from Chesapeake  
15 Bay are three and four-year olds, and the major percentage  
16 are five years old and older.

17 DR. GEYER: You had asked whether there were data  
18 available on the sports catch and Dr. Goodyear had said yes,  
19 and I suppose the question now is: What are the sources,  
20 where are these data?

21 DR. LAWLER: That is all I am asking.

22 CHAIRMAN JENSCH: I thought you were asking for  
23 his opinion. If you just want the data base, maybe you could  
24 give it to him on a recess, or some time.

25 Do you have another question?

ty 4

1 DR. LAWLER: Similarly, do you have any data on the  
2 exploitation of fish in Chesapeake Bay?

3 THE WITNESS: All of those numbers can be derived  
4 from the recapture data from tagging studies.

5 BY DR. LAWLER:

6 Q I am asking you specifically if you have any data  
7 on these things. I know that derivations can be made from  
8 recapture studies, but I am going beyond that and asking  
9 you whether you have any information other than derivations  
10 from recapture studies which have already been entered into  
11 the testimony on the exploitation of fish in the Chesapeake  
12 Bay?

13 CHAIRMAN JENSCH: I don't think this was quite your  
14 question. I think this is the next question, but I thought he  
15 answered it by one answer.

16 THE WITNESS: Well, I --

17 DR. LAWLER: Mr. Jensch, I am not asking him for his  
18 opinion.

19 CHAIRMAN JENSCH: I understand. The questions now  
20 are asking for the data base. The original questions started  
21 with opinions, and he gave you a data base, and you said  
22 "Aside from that." First, he gave you the base, that it  
23 could be derived from capture studies. Do you want more data  
24 base if he can look it up?

DR. LAWLER: If he isn't aware of it, then fine. I

1 just want to know if there is any information.

2 CHAIRMAN JENSCH: There is no limitation on your  
3 questions at all. They are perfectly all right. I am saying  
4 if there is something he has to look up, maybe he can do it.

5 DR. LAWLER: That is fine.

6 THE WITNESS: The only other information besides  
7 the tagging studies and the rest of the sampling that has been  
8 done by people from Chesapeake Bay that I am aware of for the  
9 Chesapeake Bay is a discussion that Chadwick provides in  
10 assessing mortality rates in the California population. He  
11 derived a separate set of information from discussions with  
12 Mansueti.

13 DR. LAWLER: I would appreciate your reference.

14 THE WITNESS: All right.

15 DR. GEYER: Could you read the reference into the  
16 record? Do you have it there?

17 MR. KARMAN: I beg your pardon?

18 DR. GEYER: If he has the reference --

19 THE WITNESS: If you give me just a moment.

20 MR. TROSTEN: Mr. Chairman, we have some redirect  
21 we would like to go through now. The time that we set -- let  
22 me ask, how long, Mr. Roisman, do you think you estimate this  
23 portion of the hearing is going to last? Do you have any idea?

24 MR. ROISMAN: Which portion of the hearing?

25 MR. TROSTEN: The time that was established for this



1 was 2 o'clock to go into the radiological aspect of this.

2 Do you have anything very extensive that you want to take up  
3 now?

4 MR. ROISMAN: We are having a discussion as to when  
5 we are going to have the radiological hearing and what we are  
6 going to say at it. It won't take me more than two or three  
7 minutes to state what my position is.

8 CHAIRMAN JENSCH: Let me interrupt. We will  
9 provide for your redirect.

10 Have you concluded?

11 DR. LAWLER: Yes, sir, I have.

12 MR. TROSTEN: We have no further questions.

13 CHAIRMAN JENSCH: Hudson River?

14 MR. MACBETH: No questions.

15 MR. KARMAN: No questions.

16 CHAIRMAN JENSCH: At this time, let's recess and  
17 reconvene in this room at 2:25.

End #17 18 (Recess.)

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1 CHAIRMAN JENSCH: Please come to order.

1 18

Reba 1

2 It was indicated before the recess that we considered  
3 yesterday the necessity of trying to set up some sort of a  
4 schedule for the time when we would proceed with some remaining  
5 matters in this proceeding, among which were radiological  
6 safety matters.

7 The Board directed a letter to the parties on  
8 February 26th, or thereabouts, respecting this matter, and the  
9 Board will welcome statements from the parties as to their  
10 readiness to proceed in reference to the matters that the  
11 Board concluded should be within the range of the considerations  
12 for radiological safety.

13 I think those who were urging the presentation in  
14 this regard, are primarily the Intervenorors. If the Intervenorors  
15 will speak to some of these matters, we will be able to con-  
16 sider schedule problems. Who will speak on behalf of Inter-  
17 venors?

18 MR. ROISMAN: I will, Mr. Chairman.

19 CHAIRMAN JENSCH: Will you proceed, please?

20 MR. ROISMAN: Yes, sir. There are four issues  
21 involving radiological safety with which the Intervenorors con-  
22 tinue to be concerned as to whether or not further hearing with  
23 respect to those in the literal sense of the word, that is,  
24 actual cross-examination and receipt of oral testimony is  
25 concerned, that is not our position.

A1 18

Reba 2

1 In the document that we filed on the 6th of February  
2 of this year entitled, "Citizens Committee for Protection of  
3 the Environment's Response to Applicant's Motion Regarding  
4 Further Consideration of Radiological Health and Safety Issues",  
5 we noted that with regard to two of the items, steamline  
6 rupture analysis and thin walled valves, that essentially our  
7 contention was that at this stage the information available  
8 to us demonstrated that the Applicant had not met either  
9 design criteria or general safety criteria required by the AEC  
10 with regard to this plant, and offered in evidence, or suggested  
11 that there be included in evidence letters between the Staff  
12 and the Applicant which substantiated that conclusion.

13 At this point, our position with regard to those  
14 remains the same, and that is that with the receipt of those  
15 documents in evidence, the record at that point will then  
16 establish that the Applicant has not met certain design or  
17 safety criteria of the Commission, and that it needed to be done.

18 We are in a sense arguing that the Applicant doesn't  
19 have the burden of proof on those. The other two are the field  
20 densification problems and the reactor valve integrity. With  
21 regard to field densification we are virtually complete with  
22 our review of the hearing record in Point Beach number 2, in which  
23 the same issue was discussed and the same vendor, Westinghouse,  
24 was involved.

25 Our analysis of that would indicate that virtually

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Reba 3

1 no oral testimony at this point would be warranted, provided  
2 that the Staff position in Indian Point 2 is comparable to the  
3 Staff position in Point Beach, to wit, that they are accepting  
4 the Westinghouse approach of dealing with the fuel densification  
5 problem by reducing peaking factors.

6 That if that essentially remains, then we believe  
7 that the record in Point Beach number 2, with a few minor  
8 questions that would have to be asked of staff people because  
9 of the way the answers were given in the Point Beach transcript,  
10 that is, the answers were with reference to Point Beach number  
11 2, particularly, and we want to make it clear that those  
12 answers apply, as we think they do, equally to Indian Point  
13 Number 2.

14 Our submission will be virtually all documentary.  
15 Now I should explain that it will touch upon a point which has  
16 been sensitive in this hearing, that part of the documents  
17 which we would wish to introduce or have the Board consider  
18 would include, one, portions of the ECCS hearing that had dealt  
19 with the question of fuel densification, only very small por-  
20 tions, not even pages, but portions of a few pages.

21 Secondly, our position will be that the Applicant  
22 needs to provide this Board with the document which has been  
23 identified as a Westinghouse proprietary document dealing with  
24 the issue of fuel densification.

25 However, we will request that the Board make a

A1 18

Reba 4

1 resolution of the question as to whether or not that document  
2 is entitled to be classified as proprietary, and if not, that  
3 it then be received in evidence as a normal document.

4 If it is proprietary by this Board's ruling, then  
5 it would be received by the Board for in camera purposes, and  
6 our submissions making reference to it would have to be similarly  
7 held in a proprietary fashion.

8 At this point, there is no ruling, and therefore the  
9 document is only one which is claimed proprietary.

10 Those are two of what I guess I would call sensitive  
11 issues regarding the evidence in the proceeding.

12 CHAIRMAN JENSCH: May I interrupt?

13 MR. ROISMAN: Yes.

14 CHAIRMAN JENSCH: Is it your thought that that  
15 document is not proprietary?

16 MR. ROISMAN: It is our thought that it is not  
17 justifiably proprietary.

end A1 18

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1 CHAIRMAN JENSCH: On what ground, that the data  
2 are already available generally to the public?

3 MR. ROISMAN: No, just on the ground that there is  
4 no stated justification why the particular data in there  
5 deserves to be called proprietary.

6 In other words, it doesn't meet any of the normal  
7 standards. There is no evidence that it involves any trade  
8 secrets of the Westinghouse Corporation, and it would appear  
9 that it is something which maybe they are embarrassing.

10 In other words, we don't think they have sustained  
11 the initial burden of establishing that it should be pro-  
12 prietary, and as we understand the Commission's regulations  
13 with respect to that, they first designate a document as  
14 proprietary, then establish the prima facie matter that it  
15 is entitled to be so classified, and at that time, the justi-  
16 fication, if it appears to be one that we would rebut, we  
17 would rebut it.

18 At this point, we know of none, and cannot find  
19 one, obviously, in the document, itself.

20 No reference in the document immediately strikes  
21 one as falling within the proprietary category.

22 CHAIRMAN JENSCH: What is that document used in  
23 the Point Beach proceeding?

24 MR. ROISMAN: I don't know, because the Point Beach  
proceeding document that would have been proprietary, I don't

1 have an agreement to see, and the Point Beach document that  
2 was nonproprietary, the nonproprietary version of the proprie-  
3 tary railroad one seems to follow the general chapter headings  
4 and the substance of the one that is nonproprietary in the  
5 Indian Point 2.

6 But, as to details, the figures, I assume, are  
7 different, because the reactors are in a limited sense,  
8 different. We argued unsuccessfully that we thought the  
9 proceedings were sufficiently similar that as a practical  
10 matter, the same information would be relevant.

11 I do not know if that same proprietary document  
12 was used in Point Beach No. 2. I know there was a dispute  
13 as to whether or not the document was proprietary, whatever  
14 document it was that Westinghouse had, and that that has not  
15 yet been resolved to our knowledge by the Point Beach Hearing  
16 Board.

17 CHAIRMAN JENSCH: I presume we would have to make  
18 some analysis of whatever the document circumstances and if it  
19 is offered or made a part of this, or whatever, we may have to  
20 examine for a statement of justification.

21 MR. ROISMAN: We have received a copy of both  
22 documents, but I am not clear as to whether or not all parties,  
23 that is, all parties concerned with this issue, which would  
24 be the Staff and the Board, have also received copies.

25 CHAIRMAN JENSCH: We have not received anything.

1 MR. TROSTEN: I don't know which document Mr.  
2 Roisman is talking about, Mr. Chairman. He has never told me  
3 about it, so I have no way of knowing what he is referring to.

4 CHAIRMAN JENSCH: We are just outlining problems  
5 at the moment, and not analyzing the evidence, but the  
6 fuel densification situation, then; will await whatever the  
7 Staff point is going to be.

8 Staff counsel indicated he expected it within the  
9 reasonably near future. We will have to, then, see what that  
10 Staff report looks like, before we can probably do too much  
11 about planning of fuel densification.

12 Is that your view?

13 MR. ROISMAN: Yes, that is correct. We would be  
14 prepared within no more than a few weeks, unless the Staff  
15 position is substantially different than what it was in  
16 Point Beach, to make a submittal to the Board which would  
17 identify all that we would rely upon for purposes of taking  
18 our position on fuel densification.

19 That position is not any secret. Essentially, our  
20 view is that the fuel densification problem introduces a  
21 new uncertainty into the ECCS analysis such that the applicant  
22 cannot now demonstrate that it meets the interim criteria  
23 for emergency core cooling system, and that the attempt to  
24 play with the peaking factor, which is what Westinghouse  
25 proposes in the nonproprietary document, which we have seen;



1 is not an adequate solution to the problem created by fuel  
2 densification.

3 If the Staff position is what it was in Point Beach  
4 which is to accept the peaking factor approach, and recommend  
5 a limit on hours of operation to prevent fuel rod collapse,  
6 our position would be the same,

7 We are less concerned here with fuel rod collapse,  
8 although we think it is a problem, than we are with the ques-  
9 tion of, will the ECCS perform properly under the  
10 circumstances.

11 .Most of that would be in the form of a submittal  
12 which we would make, if you will, in the form of a motion --  
13 I don't know whether that is the real form of it -- but we will  
14 append portions of the relevant transcript from Point Beach  
15 No. 2, to the documents that are here, and request all of  
16 that be received in evidence in this proceeding, and identify  
17 those few questions that we would have of the Staff witnesses  
18 in order to get out of the Point Beach No. 2 Hearing,  
19 the same information; and have the Staff witness say, "This  
20 answer would be equally applicable to Indian Point No. 2."

21 Maybe we can do that by stimulation between the  
22 Regulatory Staff and the CCPE, that the witness, if he were  
23 on the stand, would have said the same thing with regard to  
24 Indian Point 2.

25 If that is so, our position, without knowing

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1 whether or not the applicant will have a rebuttal position on  
2 it, at this point would be that we would not need an oral  
3 hearing, and certainly if we did need one, it won't take more  
4 than an hour.

5 CHAIRMAN JENSCH: Well, not knowing what the Staff  
6 densification report will be, maybe they will also cover it,  
7 if they followed the Point Beach, as I understand your state-  
8 ment of what that is, they may say, by changing this reduced  
9 peaking factor, that would be accompanied by an analysis; and  
10 also the ECCS as you know, Board is operated under a very  
11 limited jurisdiction under the ECCS, and other rules, which  
12 require certain procedures before Boards. And we, in a sense,  
13 do not give the consideration to the validity of the criteria  
14 under Calvert Cliffs as modified or explained, or as provided  
15 by recent regulations.

16 We consider whether the proposed operation will  
17 comply with the criteria presently outstanding. So, those  
18 are problems that I know you have in mind, the extent to  
19 which a Board can act under these various matters.

20 I think in one sense, we can't do much planning  
21 until we see what the Staff report is. It may well be that  
22 it would be worthwhile having some sort of a conference after  
23 the Staff report is out, to perhaps, more specifically out-  
24 line what would be done with further radiological data, so  
25 that at that time, we can provide for some sort of a schedule

1 for the time of submission.

2 I imagine the applicant will want to answer the  
3 Staff densification report. I don't know. Is it likely you  
4 would?

5 MR. TROSTEN: I imagine we will have something  
6 further to say about that, Mr. Chairman.

7 I also have something I would like to say about  
8 the course of conduct that Mr. Roisman has proposed. Would  
9 now be an appropriate time?

end 19

CR 8370

1 CHAIRMAN JENSCH: I don't think he has finished.

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2 Will you go ahead?

Reba 1

3 MR. ROISMAN: Yes. Let me clarify that it is our  
4 understanding that the ruling of the Appeals Board with regard  
5 to the emergency core cooling system issue has also eliminated  
6 even the Calvert Cliffs type challenge to the emergency core  
7 cooling system interim criteria in any proceeding. Nonetheless  
8 I want to make clear that the burden of our position on fuel  
9 densification is not an attack on the criteria, but rather  
10 whether or not those are the criteria the Applicant in light  
11 of the uncertainties created by the fuel densification is now  
12 meeting.

13 So we should not be faced with that problem or issue.

14 Finally on the question of the reactor pressure  
15 vessel integrity, we had, as we indicated in earlier documents,  
16 we had only near the end of last year was the draft of the Dr.  
17 Wechsler paper on the integrity of pressure vessels and the  
18 probability of the failure of those vessels available to the  
19 public.

20 It was produced in, I believe, Kewanee, and we  
21 managed to get copies of it. We managed in communication with  
22 Dr. Wechsler and from general information, that he is expected  
23 to produce a final report in response to interest by AEC among  
24 others in his original document.

25 The draft itself demonstrates that there is some

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Reba 2

1 question about the probability of failure of pressure vessels.  
2 The documents which the Applicant produced in response to  
3 Mr. Briggs' questions indicate that in designing this pressure  
4 vessel, certain assumptions were made about the number of  
5 transients to which the vessel would be subjected, and then using  
6 that number of transients as the standard, the vessel was  
7 designed to withstand that number of transients with, I assume,  
8 some margin of safety built into it.

9 Dr. Wechsler's paper indicates that the analysis  
10 that go into that kind of a transient design approach do not  
11 provide the measure of conservatism that would be needed for  
12 something of the magnitude of a pressure vessel and the conse-  
13 quences if that vessel should rupture.

14 In addition, we know that the Oak Ridge Lab is  
15 conducting a heavy section steel technology study which in  
16 effect relates to the same thing Dr. Wechsler is talking about  
17 and again from discussions with their people, our technical  
18 people have indicated that the HSST program has never really  
19 been dovetailed into reactor operating experience, so that the  
20 HSST program, which has formed the basis of the confidence  
21 in the present design criteria for pressure vessels, has been  
22 to some extent limited, because it never really got down to  
23 what happens with reactors, but rather has dealt with a hypo-  
24 thetical, but not realistic reactors.

25 Now this particular reactor, the one at Indian Point

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Reba 3

1 number 2, is in a unique position, as the ACRS in its letter  
2 in 1970 with regard to this plant pointed out. This was the  
3 first of this new, large generation, high pressure, pressurized  
4 water reactors.

5 In their letter of November 24th, 1965, which is  
6 CCPE's Exhibit C in this proceeding, they indicated when they  
7 specified the need to evaluate the consequences and possibilities  
8 of reactor pressure vessel failure, that while at that moment  
9 in 1965 there was nothing to be particularly concerned about  
10 because of what they considered the low probability of such  
11 an accident, that the growth of the industry with the concomit-  
12 ant increase in number, size, power level and proximity of  
13 nuclear power reactors to large population centers will in the  
14 future make desirable, or even prudent, incorporating in  
15 many reactors the design approaches whose development is recom-  
16 mended above.

17 Because Indian Point 2 is not only this first  
18 generation of the new, large reactor that was under construction  
19 at that time, but also because of its proximity to the largest  
20 population center in the United States, namely New York City  
21 and environs, we feel that it is the plant which must be able  
22 to establish that the underlying criteria by which the pressure  
23 vessel was designed are valid, because it is, if you will, the  
24 upper limit.

25 This is the one, the test case. All the other

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Reba 4

1 reactors, presumably, of this design and type, if this one  
2 is all right, they will be all right, unless there was some  
3 basic errors in the way they were constructed in the first place.

4           Now what we would propose is that Dr. Wechsler and  
5 an HSST spokesman testify at these proceedings in subject areas  
6 which we would work out with them in advance of their testimony,  
7 and for that matter, work out with the other parties, to set  
8 before the Board the present state of knowledge with regard  
9 to these questions, how safe are the pressure vessels, can they  
10 withstand the transients, and examine those against the design  
11 of this plant as revealed in the documents which the Applicant  
12 made available in response to Mr. Briggs' questions as to how  
13 many transients the plants would be subjected to, and what  
14 designs were based upon those assumptions.

15           In addition, of course, we would want to examine  
16 the present state of knowledge regarding the real number of  
17 transients that one would anticipate, not the number of trans-  
18 ients which were anticipated for this size reactor in 1965  
19 or 1966 when the design criteria for the reactor were being  
20 established.

21           Now that part of it is very much in a state of  
22 flux, because of the fact that at this point Dr. Wechsler  
23 has not completed that paper, and I will confess with all  
24 candor that if that paper is not going to be completed within  
25 a few weeks, then I think the situation is going to change

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1 if that means that Dr. Wechsler does not feel that as a profes-  
2 sional matter that he can take a position on these issues be-  
3 cause he hasn't completed the analyses that he needs.

4 We tried to reach Dr. Wechsler over the last couple  
5 of days, but he has been tied up and has not been available  
6 and we have not been able to get in touch with him to find  
7 out something about his time schedule. If he is not going to  
8 be available, we would want to re-think and reconsider whether  
9 this is the appropriate time to get into those issues.

10 In effect, we are not dissuaded of the need to  
11 do so for this hearing, but we are unable without Dr. Wechsler's  
12 testimony to make a substantial presentation with regard to  
13 that issue.

14 CHAIRMAN JENSCH: The preliminary paper which you  
15 refer to is not adequate? Is that your thought?

16 MR. ROISMAN: It is my understanding that Dr.  
17 Wechsler's position with regard to the preliminary paper is  
18 that he is not prepared to just take it as his position now,  
19 and that therefore it, as a practical matter, would not be a  
20 worthwhile endeavor for us to simply request that that be put  
21 into the record.

22 I think Dr. Wechsler would quite properly file a  
23 disclaimer with regard to it. I understand the conclusions are  
24 essentially the same, but it is, of course, the support that  
25 is pertinent, how he reached it. That is what is to be the



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Reba 6

1 subject of the completed paper. It is our hope that the Staff  
2 will cooperate in this regard, and that so long as we are able  
3 to demonstrate that there are substantial reasons why Dr.  
4 Wechsler and the representative from Oak Ridge should speak to  
5 this subject that the Staff will make them available.

6 They, of course, would both be classified as AEC  
7 employees in the sense that they work for laboratories --  
8 Dr. Wechsler for the Ames Laboratory, that are funded by the  
9 Atomic Energy Commission, and this Board's subpoena power, of  
10 course, would reach those people, and I think that issue was  
11 resolved in Point Beach.

12 CHAIRMAN JENSCH: Have you concluded?

13 MR. ROISMAN: Yes.

14 CHAIRMAN JENSCH: Mr. Trosten?

15 MR. TROSTEN: I have interpreted your letter as a  
16 denial of our motion of January 31st to bar certain issues in  
17 the hearing.

18 CHAIRMAN JENSCH: That is correct.

19 MR. TROSTEN: I think it is incumbent upon the  
20 Board to enforce the *Commission's Rules* ~~Committee's rule~~ and require the Citizens  
21 Committee to state the specific contentions they wish to make.  
22 What Mr. Roisman has said today doesn't remotely begin to  
23 rise to the level of specificity of contentions that are  
24 absolutely and clearly required by the Commission's Regulations.

25 With regard to fuel densification, Mr. Roisman,

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Re 7

1 notwithstanding things that he has said over a period of several  
2 months now continues to hang back with an ever expanding  
3 period of 3 weeks for what reason? There is no reason why  
4 Mr. Roisman should not be required by this Board today to submit  
5 in detail his contentions within five days from now subject to  
6 any revision he feels he has to make when he sees the staff  
7 analysis.

8 With regard to the reactor pressure vessel, it is  
9 obvious that Mr. Roisman is not entitled to raise these con-  
10 tentions. He has not made a prima facie case. Everything he  
11 has said today constitutes an attack on the Commission's regul-  
12 ations. That was barred by the Commission ---

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CHAIRMAN JENSCH: Where was that?

MR. TROSTEN: The Commission said in its decision that it was necessary for a party to -- thank you, Mr. Karman.

It is the position of the Commission, that, and I am referring to the footnote, here, Mr. Chairman, to warrant inquiry, the evidence must be directed to the existence of special considerations involving a particular facility in issue; licensing boards in their discretion are empowered to exclude contentions or calculations which have no substantial or prima facie basis but which merely amounts to generalized attack upon the standards presently required by the regulations.

What Mr. Roisman is saying today, is a stale rehash of what he has been saying since 1970. That is, that Indian Point 2 being located near New York City makes it a special case.

CHAIRMAN JENSCH: May I see that copy?

Proceed.

MR. TROSTEN: With regard to other matters, steam and feed water break, and the thin wall valves, here Mr. Roisman has not specified what his contentions are. He said the applicant failed to sustain the burden of proof. These under the Commission's rules, are not proper issues, either.

What I propose is that Mr. Roisman be ordered by

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1 the Board before he gets out of the room, to submit his con-  
2 tention within five days of the present time, so that the  
3 Board can have a ruling as to what, if any, issues are properly  
4 before the Board in this proceeding.

5 We can also set a time for the hearing day, and  
6 this can be subject to extension depending upon the avail-  
7 ability of the Staff's fuel densification report.

8 But, I think it is high time, Mr. Chairman, that Mr.  
9 Roisman not simply drop in from time to time for this hearing  
10 as he has, since December, state what his contentions are  
11 that day, and state what the general schedule is that he plans  
12 to follow.

13 That is what I propose to the Board that we do.  
14 It is obvious from the Board's decision that the Board has  
15 overruled our motion, and we are proceeding from there. What  
16 I want to do, Mr. Chairman, to simply set up a schedule that  
17 is consistent with the Commission's regulations.

18 While I am standing, Mr. Chairman, I would like to  
19 take the opportunity to respond to this trivial matter.

20 CHAIRMAN JENSCH: Wait until we have that submitted  
21 by the movant.

22 MR. TROSTEN: Surely.

23 CHAIRMAN JENSCH: As I understand, the Citizens  
24 Committee has raised a steamline rupture and thin wall valves.  
25 He says, letters from the Staff demonstrate the noncompliance

1 with AEC regulations.

2 Is it your thought that if he repeated what the  
3 Staff said in those letters, that that would be a sufficient  
4 statement of specificity?

5 MR. TROSTEN: No, Mr. Chairman, I don't think so.

6 CHAIRMAN JENSCH: I don't have those letters before  
7 me, either. I think the Staff has served upon us, letters  
8 from time to time as they are sent out from the Staff; but  
9 I just didn't bring that fuel with me.

10 I have forgotten what the Staff --

11 MR. TROSTEN: We have the letters here, Mr.  
12 Chairman.

13 CHAIRMAN JENSCH: I wonder if I could see them. I  
14 think this question of specificity is something that the  
15 Commission has incorporated within its rules and in its  
16 self-appeal board decisions, and has been directing the licen-  
17 sing boards to see that there is specificity.

18 I wondered, if I understood the statement by  
19 the Citizens Committee, he felt that that indicated the non-  
20 compliance, and I think you might consider whether, if those  
21 statements by the Staff are such that if he repeated them,  
22 whether they would constitute sufficient specificity, and then  
23 that would take care of those two items.

24 MR. ROISMAN: Mr. Chairman, I might also say that  
25 we did summarize what was said in those. Mr. Trosten seems

1 to not find it adequate, but we do think it is adequate in  
2 the document that we presented on February 6, 1973, on Page  
3 3 of that document; we indicated that with regard to the feed  
4 water line, an applicant has not proven that due to the loca-  
5 tion of the main steam feed waterline, that pipe rupture of  
6 either of those lines cannot damage the auxillary feed water  
7 system.

8 I might say that those words are taken almost  
9 verbatim from the letter of the Staff which said, that they  
10 were uncertain as to whether or not, that was established.

11 With regard to the thin wall valve, the same state-  
12 ment, we indicate that the applicant has not sustained --  
13 this is on Page 4 of the same document -- the burden of proof  
14 that the wall thicknesses of valves important to nuclear safe  
15 safety meet applicable codes, and standards.

16 Again, the burden of the Staff letter which was  
17 sent to the applicant in June of 1972 was that the valves  
18 were -- that there was the possibility that in the Indian  
19 Point No. 2 had such valves; and they were asking the appli-  
20 cant to find out whether they had such valves.

21 The subsequent letter from the applicant of July  
22 21 -- we didn't get it until August 7th -- said that by  
23 August 31st, the applicant would have completed its analysis  
24 and set forth a mechanism by which the applicant proposed to  
25 locate the thin-walled valves and made clear that but for that

1 location, they also did not know whether or not they had thin-  
2 walled valves in the reactor, and that they would have to go  
3 through it.

4 Again, we think the combination of the two letters  
5 at that point demonstrate that the applicant did not know  
6 whether or not its walled thicknesses of its valves met the  
7 criteria.

8 I don't know what more specificity, although it is  
9 those letters and what is contained in those letters that for-  
10 forms the support for the contention, and we would be perfectly  
11 satisfied with the receipt of those into evidence, the ones  
12 that we have identified in this February 6th submittal, Pages  
13 3 and 4, and we would argue appropriately from that and sup-  
14 plement the proposed findings.

15 MR. TROSTEN: What Mr. Roisman is proposing is that  
16 he put himself on the distribution list for the letters that  
17 come out from the Office of Program Analysis, or whatever  
18 the office is, that periodically send out to applicants, re-  
19 reports of areas where work should be done; so that appropri-  
20 ate analysis can be done.

21 This is done all the time by the regulatory staff  
22 and the program for doing this has been expanded and properly  
23 so.

24 What he is suggesting is that he can simply sit  
25 back and take these reports as they come out and suggest that

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1 these will then become issues in the hearing anytime he  
2 chooses to do that. I submit that this is not in accordance  
3 with the Commission's regulations for the conduct of these  
4 contested hearings.

5 CHAIRMAN JENSCH: I think the question propounded  
6 to you was, if he came in with a separate paper and alleged  
7 that -- I want to use the right term here -- the steam lines,  
8 it is the contention of the Citizens Committee that the  
9 steam lines and feed water pipes do not comply with the codes  
10 and standards applicable thereto.

11 You would agree that that is a sufficient statement  
12 of specificity?

13 MR. TROSTEN: No, I would say it is not sufficient,  
14 Mr. Chairman, for the reasons I have already given.

15 CHAIRMAN JENSCH: What are those?

16 MR. TROSTEN: The reason is that he has not stated  
17 in anyway in which they are not sufficient. He has not  
18 stated any facts that indicate they are not sufficient. He  
19 is simply stating they are not sufficient.

20 I don't think that is proper.

21 CHAIRMAN JENSCH: I think the second aspect of it,  
22 I think the rulings of the Commission say that after you make  
23 a contention, that intervenor has to file, I think, an affi-  
24 davit saying what the support is for that, and as I inferred  
25 from his statement, he would file the Staff letter.



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1 Now, as to the first phase of it, is that a suffi-  
2 cient statement of specificity? I am having difficulty with  
3 your expression that you don't think that is enough.

4 What more did you feel that a person should do  
5 in setting forth specific language?

6 I do think the regulations of the Commission now  
7 are very positive on the requirements that are on the inter-  
8 venors. I think that I understood his argument, as I under-  
9 stood his argument; and I tried to make notes of it, I would  
10 have this impression, that if the applicant says that his  
11 pipes conform to codes and standards, and he says the appli-  
12 cant is <sup>not</sup> conforming to codes and standards, and he cites  
13 the Staff letter that you are just about on a trade-off,  
14 except for the fact that he has a Staff letter for specificity,  
15 or, I mean, for support.

16 Now, isn't that specificity adequate for his ~~inter-~~  
17 assertion?

18 MR. TROSTEN: I don't think so, Mr. Chairman. I  
19 don't think that submitting the Staff letter that asks a  
20 question is sufficient specificity.

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1 CHAIRMAN JENSCH: I don't know what the Staff  
2 letter says. I don't have it.

3 MR. TROSTEN: I don't have it with me, either.

4 CHAIRMAN JENSCH: It appears that there may be a  
5 problem about steam line rupture.

6 MR. KARMAN: In both cases, Mr. Chairman, they  
7 asked for an analysis. They asked for an analysis over a period  
8 of years. In the case of the steam and feed water line rupture  
9 they asked for an analysis more promptly. There is a provision  
10 in the Staff letter that suggests the possibility that one of the  
11 lines may go near the auxiliary feed water pumps.

12 The letter, as I say, I am sorry, but I don't  
13 appear to have a copy of the letter with me.

14 CHAIRMAN JENSCH: Let me ask you this way: Do  
15 you feel there is lack of specificity when a person relies upon a  
16 Staff report?

17 MR. TROSTEN: There is no Staff report.

18 CHAIRMAN JENSCH: Well, this letter is a Staff  
19 report, or it is an inquiry, or it is an assertion --

20 MR. TROSTEN: It is an inquiry.

21 CHAIRMAN JENSCH: You said there is a possibility  
22 of a break in the auxiliary feed water pipes.

23 MR. TROSTEN: Whatever you want to call it, it is  
24 a statement that directs attention to a particular point.

25 MR. KARMAN: Might I read from the Staff response

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1 to the particular motion here, and I feel that our position is  
2 still the same.

3 I said on this particular subject, "Again it must  
4 be reiterated that the very fact that the Regulatory Staff  
5 communicates with an Applicant regarding some experience at  
6 another reactor or requests certain information from the  
7 Applicant does not in and of itself automatically place these  
8 matters on the agenda of a hearing. In a hearing as  
9 protracted as Indian Point 2 there must arise, during the  
10 course of some matters, certain questions that require Staff  
11 questions and Applicant's answers and information."

12 That was our contention, that matters might  
13 arise at a different plant which conceivably could have a  
14 relationship to the different plants and the Staff will  
15 communicate with the Applicant and say "We have heard of some-  
16 thing out there. Will you look into it and see if there is  
17 applicability?"

18 I don't think that is a specificity of a contention  
19 by relying on a letter of that type.

20 MR. ROISMAN: Mr. Chairman?

21 CHAIRMAN JENSCH: Excuse me a moment.

22 As I understand the purpose of the Commission's  
23 regulation, it is that it is to focus the hearings on some  
24 specifics. I think there have been Appeal Board decisions  
25 that direct the Licensing Boards to be sure that the matter

1 was raised during the course of the hearing, and within the  
2 confines of the transcript if it is not shown that the matter  
3 was raised, it is required that there be a dismissal of that  
4 matter that may be raised later.

5 So in order to bring it within focus, I think that  
6 we would have to examine to see what those letters from the  
7 Staff said. I think Staff counsel is right, that the fact that  
8 the Staff sends letters during the course of reviews of  
9 reactors doesn't automatically place it on the agenda for hear-  
10 ing. It is necessary for the parties to raise it in the  
11 course of the hearing.

12 So I think that to that extent that we are still  
13 in the hearing, and the question is it has been raised.

14 Now, as I recall, in the decision by the Appeal  
15 Board, I think it was in the Point Beach, all that had been  
16 done during the course of the hearing there was that the parties  
17 contended that fuel densification problems were present and  
18 would lead to safety considerations. If I recall, what was  
19 said was in a general nature, and I didn't know whether  
20 the Appeal Board was saying that during the course of a  
21 hearing you don't get quite the requirement for specificity  
22 that the regulations require for an initial petition to  
23 intervene. I think I would have to examine the transcript of  
24 that Point Beach hearing again.

25 I had the impression from the way that the Appeal

1 Board handled that matter in the Point Beach proceeding was  
2 that a general contention of safety was adequate to require that  
3 evidence be adduced with reference to it.

4 That seemed to me to be some modification of the  
5 application of the regulation. It may be that, as Applicant's  
6 counsel has pointed out, if there were an original petition to  
7 intervene, maybe some more specificity would be required.  
8 Otherwise, the Applicant has not met the latest revision of  
9 this.

10 MR. TROSTEN: Mr. Chairman, I will call the  
11 Board's attention to the language of the Appeal Board as it  
12 appears on page 19 of the Point Beach decision dated --

13 CHAIRMAN JENSCH: Is that the one that reopened it?

14 MR. TROSTEN: Dated January 11.

15 MR. ROISMAN: No, it is not the one. ALAB 85  
16 stated an initial decision, and ALAB, I believe opened it.

17 MR. TROSTEN: This is ALAB 90, Mr. Chairman.

18 CHAIRMAN JENSCH: Do you have 86 with you?

19 MR. KARMAN: I think I have it here, Mr. Chairman.

20 MR. ROISMAN: It is in here.

21 MR. KARMAN: I have all the decisions here.

22 CHAIRMAN JENSCH: Fine.

23 MR. ROISMAN: I have 86, if you like. I will look  
24 for the portion.

25 CHAIRMAN JENSCH: If you would. My recollection is

1 that the order reopening it was based on the general  
2 contention that the matter had been raised, and I guess it was  
3 a different Appeal Board that handled the later aspects of  
4 that. Is that correct?

5 MR. TROSTEN: I think so, Mr. Chairman. I would  
6 accept that subject to check.

7 I am, in attempting to respond to your question, I  
8 am just giving you my quick reaction to this, and I am reading  
9 from the provision in ALAB 86, in which the Appeal Board  
10 said "The Licensing Board's memorandum adopt the same standard  
11 for reopening the hearing as it views to be appropriate for  
12 initiating a hearing to consider a suspension or determination  
13 of a license. That is, the demonstration that the petitioner  
14 has new information to present to the regulatory agency of  
15 which it is not aware and which is of substance and that such  
16 information is timely submitted. We need not discuss whether  
17 or not this standard is too stringent in the context of this  
18 proceeding inasmuch as we find its requirement either to be  
19 satisfied or not applicable."

20 CHAIRMAN JENSCH: Well, I think I would want to  
21 review that.

22 MR. TROSTEN: I think we would have to review it.  
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1 CHAIRMAN JENSCH: And study it a little more  
2 carefully. I want to look up the transcript itself and see  
3 what is commonly known now as the Cherry Rules. So I think  
4 I would want to examine the transcript. If he made an insertion  
5 and contention, maybe we can parallel the columns and see if  
6 what is said here is as specific as what was stated there, and  
7 it may be helpful.

8 I don't know. But I think my only point is this,  
9 that I just wonder whether the same standard applies during  
10 the course of a hearing. I think Applicant's counsel has  
11 correctly set forth what the rules say about the original  
12 petition, and I just don't know whether that is the same, be-  
13 cause I can imagine some different factual situation in the  
14 course of the hearing, as an absolute fantasy, and we were  
15 in some fantasy this morning, but supposing we go into the  
16 course of a hearing and the wall fell out, and you say, "Well,  
17 I think that" -- I mean the reactor vessel wall fell out, and  
18 you say "I think that is a safety hazard."

19 Specify what the cause is, and we are still finding  
20 ourselves out of the rubble. I don't know that they would  
21 expect the same specificity dusting themselves off as they would  
22 in the original petition. I don't know.

23 I think we ought to examine that.

24 MR. ROISMAN: Mr. Chairman, first of all I think  
25 the motion that the Board wanted to look at is in the Point

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1 Beach proceeding on transcript 4375, which is referenced in  
2 the ALAB 86 Decision, where that decision summarizes in a  
3 two phrase sentence the nature of the motion which was filed  
4 and intervenors requested that the names of three witnesses  
5 they wished to question with respect to that.

6 It does not make clear, although it certainly  
7 implies and I think my recollection is that this is accurate,  
8 that there was no extraordinary specification beyond saying  
9 we are concerned about fuel densification, and we are concerned  
10 about it at this plant.

11 But I don't remember that for sure. Anyway, that  
12 transcript page, at least, is where there was some discussion  
13 of the matter in Point Beach.

14 CHAIRMAN JENSCH: I think one reason that there may  
15 be a difference, before a petition to intervene, the Commission  
16 or its authorized or delegated group, has to decide whether  
17 it is worth while to crank up the wheels for a hearing.

18 The Commission is anxious to bring these things into  
19 focus and provide an opportunity for hearing. I think as an  
20 initiating factor, maybe there is a greater burden at that  
21 time. During the course of the hearing, it is already underway,  
22 and things arise that do involve perhaps safety implications.  
23 Maybe it is easier to be on with the hearing and bring what  
24 you have and go on with it.

25 For that reason, you might have a little different



A1 23

Reba 3

1 requirement of specificity. I don't know. I think we should  
2 all examine it more carefully, because I think this Board is  
3 certainly going to comply with the Commission's regulations  
4 and the Appeals Board decision.

5 If there is a difference, it may be inferrable from  
6 the Appeals Board decision, and I think we ought to examine  
7 that.

8 MR. ROISMAN: May I say two things on that, focussing  
9 on thin wall valves and the steamline break only, because I  
10 don't think that -- I think they are in a separate category.

11 First of all, as we are all aware from the statement  
12 of considerations that accompany the adoption of the rule that  
13 is now in Section 2.714 dealing with interventions and specific-  
14 ity, the motive was to prevent unnecessary hearing time being  
15 spent, long disjointed cross-examination on issues where nobody  
16 knew where anybody was going, and there was concern about that.

17 Here we are not proposing that any hearing time be  
18 taken. We are simply offering to have put in evidence two  
19 documents, letters between the Applicant and the Staff, and  
20 the responses by the Applicant to these letters.

21 We have identified those. There is no more. We  
22 claim that it is just as though in the initial Final Safety  
23 Analysis Report where the Applicant reached the section that  
24 dealt with valves meeting the design criteria, all they had  
25 said in the FSAR was "Our valves meet all the design criteria,

A1 23

Reba 4

1 period" and the staff has written a letter back to them and  
2 put this into their staff Safety Evaluation, "We don't know that  
3 you meet all those design criteria. We don't see anything here  
4 to show that you do, and we have found evidence that valves  
5 like yours have not in other reactors met design criteria, and  
6 we believe that it is a problem which is generic to the valve,  
7 and not generic to the particular plant. Will you please pro-  
8 vide the evidence?"

9       If that had happened, I don't think one would need  
10 to do any more than say, as in this issue it is now clear  
11 the Applicant hasn't met its burden of proving that the valve  
12 is in fact meeting design criteria. We have that occurring  
13 later in the hearing process, but that is not pertinent so long  
14 as we raise the timely, and we have, we feel, and I think the  
15 Board has accepted the proposition that we are not out of time  
16 in making these contentions.

17       Secondly, we are puzzled by the particular approach  
18 that Applicant has taken, because what they are saying is,  
19 "We are afraid to let the Board decide on the merits that what  
20 the Staff said in its letter does not cause a problem."

21       "We want you to deny the introduction of evidence  
22 of the letter in the first place and never look at it on the  
23 merits."

24       If when you lay the letter and the Applicant's response  
25 back to each other, if a reasonable person would not see a safety

1 23

Reba 5

1 problem, why don't they put them in?

2           The Applicant in its heart of hearts knows exactly  
3 what we are contending is correct, and that is that these are  
4 unique safety problems which are not yet resolved, and this  
5 reactor shouldn't be allowed to operate until they are resolved,  
6 or not allowed to operate at all if they cannot be resolved.

7           They are not an attempt on our part to read into  
8 the record every letter in which the Staff raises questions.  
9 We did not offer the report on the valve letter of December  
10 1, 1972, a document sent out to the Compliance Division in  
11 New Jersey, to which the Applicants responded sometime in  
12 February, I believe, indicating that there were problems in  
13 switches, and limit torque valves.

14           A recent letter came out with regard to another  
15 problem affecting valves. We have not raised that, either.  
16 We are not attempting to put in everything that is peripheral.  
17 What we read in that letter about steamlines was that there could  
18 be a rupture of the steamline and as a result of that rupture,  
19 either the water on the pipe could negate a safety system in  
20 the plant, and the Staff said, "We think this could be a problem."

21           They admitted in the letter that they did not  
22 know whether the plant had that problem, but they thought,  
23 it appears -- I think the Chairman used that word -- it appears  
24 that it might be there, and they want the Applicant to sub-  
25 stantiate it in order to prove that it meets design criteria

Al 23

Reba 6

1 Number 4, in 10 CFR part 50, which says that the plant must be  
2 designed in such a way that a rupture of lines in the plant  
3 will not negate any safety system.

4 We now have a letter which the Staff says you have  
5 not established that is true for your plant.

end Al 23

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1 CHAIRMAN JENSCH: Let me ask that. If the Staff  
2 says that, is that an assertion sufficient for support?

3 MR. TROSTEN: Mr. Chairman, there is absolutely  
4 no doubt that we must respond to the Staff's inquiry. We  
5 will respond to the Staff's inquiry. There is absolutely no  
6 question here about our demonstrating to the satisfaction of  
7 the Staff that we are satisfying all applicable criteria,  
8 and that there is no safety problem.

9 We are going to do that. The simple issue as Mr.  
10 Roisman knows, ~~is that~~ <sup>if not the</sup> this is the sort of thing that is appro-  
11 priate for this hearing process. He knows perfectly well that  
12 we are -- that we disagree there is a problem; that we are  
13 going to demonstrate to the complete satisfaction of the  
14 Staff that there is no problem, and so on.

15 My position, as I have stated before, is that he  
16 has said nothing that indicates this should rise to the level  
17 of a contested issue in this hearing.

18 CHAIRMAN JENSCH: Supposing we find, and I don't  
19 know whether Mr. Cherry was in the Point Beach hearing at  
20 this time or not, but whoever was attorney for the intervenor  
21 there, made language in words almost the same as the intervenor  
22 did there, and suppose the Board says, "Not enough specificity,"  
23 and it goes to the Appeal Board, and they say, Can you read  
24 ALAB 86? There is enough there, why isn't it enough for you  
25 to follow?"

ter-2

1 And, they reversed it.

2 I mean, the regulations are one thing, but the  
3 application and the interpretation of them is guided by the  
4 Appeal Board; and the Appeal Board said it was good for one  
5 case, and they may say it is good enough to this case.

6 I think we will have to examine that. But I think  
7 this, I think, rather than rely upon the transcript, the  
8 Citizens Committee can prepare a document, that these are our  
9 contentions, this is our support, and we can examine what the  
10 contention is, and what the support is.

11 Now, as to the --

12 MR. ROISMAN: Mr. Chairman, could I just say that  
13 I think we did that on these two, on the Pages 3 and 4, of  
14 our February 6th Submittal, and rather than run my clients'  
15 already enormous duplicating bill, up, we would merely repro-  
16 duce that again.

17 CHAIRMAN JENSCH: Maybe that would be good, to  
18 have it in one place.

19 MR. ROISMAN: This is our response to the applicant --

20 CHAIRMAN JENSCH: February 6th?

21 MR. ROISMAN: Yes.

22 CHAIRMAN JENSCH: Well, I think the presentation  
23 is more in the nature of argument there. I think that you  
24 could state what your contention is. Maybe it would involve  
25 largely the same thing.

1           Maybe it will come down to a page and a half or  
2 something, and if you do rely -- I don't know whether you  
3 do, or maybe you have additional support -- as to what your  
4 support is for your contention; you could see rocks those and  
5 add those letters as support, and we will examine it in the  
6 light of that presentation.

7           MR. TROSTEN: You did not set a date?

8           CHAIRMAN JENSCH: Not yet. Now, as to the fuel  
9 densification, I don't know whether there are transcript ref-  
10 erences similar in this proceeding as in the Point Beach, but  
11 certianly, we have been sharing, or getting, written communi-  
12 cations from the intervenors about fuel densification.

13           Now, maybe that could be included in the statement  
14 of contentions for this third item, and if you have some  
15 support from Point Beach records, or whatever else, maybe we  
16 will take a look at that.

17           And -- reactor pressure vessel, that situation is  
18 somewhat complicated in this proceeding because the Board  
19 itself is very much interested in that subject. That doesn't  
20 preclude a statement by an intervenor as to what his conten-  
21 tion is, and attach such support as he has, about it.

22           I don't suggest that it is adequate at all. I  
23 don't know whether Mr. Wexler would support it at all, but if  
24 the Wexler Preliminary Redraft is available, if that is your  
25 support, maybe that should be added, or some such.

ter-4

1 I have not seen the report, but I don't know that  
2 the support intended by the rules of the Commission are that  
3 the support necessarily means that that person would testify.  
4 I don't know.

5 I think that is kind of a matter of interpretation.  
6 If there are reasonable data that such an event would occur,  
7 maybe John Jones would support it if Richard Smith didn't. I  
8 don't know.

9 I think those are matters that, perhaps, should be  
10 resolved. But, I do think the Citizens Committee should file  
11 a statement of contentions and add such support as it has,  
12 for its contentions.

13 Now, as to time, let me see. I think that we get  
14 into -- they got into some time schedule problems in Point  
15 Beach, didn't they? As I recall, they were going to have the  
16 hearing over at a certain date, and they changed that, or some-  
17 thing. They said -- I think they said, they would have to wait  
18 wait for the Staff.

19 The Staff, I guess, came in and said, they could  
20 not be ready on that date, and so, when the Staff asked for  
21 the time, there was further consideration, I guess, given to  
22 the schedule.

23 I wonder if we should give some consideration to  
24 that.

MR. KARMAN: The Staff would like to go on record



ter-5

1 as trying to get the radiological record finished as early  
2 as possible.

3 CHAIRMAN JENSCH: The parade on that will form at  
4 the outside door. It is going to be a long parade. We will  
5 all join it.

6 MR. TROSTEN: The Chairman can now set the  
7 schedule. ~~we~~ <sup>we</sup> have been unable to secure a date from the  
8 Staff as to when the densification report will be <sup>ready</sup> ready?

9 MR. KARMAN: I have no definite date, Mr. Trosten.

10 MR. ROISMAN: May I suggest to do it a time certain  
11 after the Staff submits it. We know Mr. Karman wants to do  
12 it as far as he can. I would suggest that, attempting to be  
13 as conservative, or liberal -- but anyhow, two weeks after  
14 the Staff makes that submittal.

15 Mr. Karman was kind enough to share his notes with  
16 me, before, and he tells me it is expected to be pretty  
17 much in the timeframe as the filing with regard to fuel densi-  
18 fication and Staff reports on several of these other issues;  
19 thin-wall valves, and steam line breaks, also.

end 24

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1 CHAIRMAN JENSCH: Let me ask you. do you have  
2 any objection to that suggested schedule?

3 MR. TROSTEN: I believe Mr. Roisman said two  
4 weeks after the Staff's submittal was in.

5 Did you say two weeks, then, the hearing  
6 would start?

7 MR. ROISMAN: No, contentions, and the week after  
8 that, if there is a hearing.

9 MR. TROSTEN: Contentions after the Staff  
10 submittal is in?

11 MR. ROISMAN: Two weeks after the Staff's  
12 submittal, and one week later for the hearing.

13 MR. TROSTEN: Two things strike me, Mr. Chairman,  
14 that we ought to do.

15 First of all, I think I am agreeable, and I  
16 think under the circumstances it is the only way we can do  
17 it, is to set the time for the hearing on the basis of when  
18 the Staff's Fuel Densification Report comes in, assuming  
19 there is to be a hearing.

20 I would like to have Mr. Roisman's contentions  
21 with respect to everything that he has received up to now, and  
22 allow him to supplement his contentions with regard to whatever  
23 is in the Staff's report.

24 I think this is the only reasonable way to  
25 proceed. Mr. Roisman has had our Fuel Densification Report and

mm2 1 he is fully aware of what is going on in Point Beach.

2 MR. KARMAN: There has been a Generic Staff Fuel  
3 Densification Report submitted, Mr. Chairman.

4 MR. TROSTEN: It seems to me Mr. Roisman ought to  
5 be able to state his contentions with regard to everything,  
6 and he can have seven days or two weeks after the Staff's  
7 report is in to specify the supplemental specifications with  
8 regard to the fuel densification.

9 CHAIRMAN JENSCH: Do you have any objection to  
10 that?

11 MR. ROISMAN: I do, Mr. Chairman.

12 It assumes our client is willing to pay  
13 additional money to do the same thing twice. The Staff went  
14 through the same song and ritual, and that Board and Appeal  
15 Board confirmed that the Staff was the key to all this.

16 We need to see what the Staff is going to do.  
17 There is no need for us to make our contentions based upon  
18 the Point Beach decisions if the Staff tells the Applicant  
19 that it is rejecting the peaking factor approach to this entire  
20 thing.

21 We assume the Applicant is then going to have to  
22 change its entire position. It is pointless for us to waste  
23 our time going through what is now only halfway completed.  
24 Nor, do I find it particularly persuasive argument from the  
25 Staff who has spent several months with all its resources

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1 doing a Fuel Densification Report that came out in November  
2 and now in March still hasn't figured out what to do with  
3 Indian Point number 2, telling us that we should have  
4 figured out what to do with Indian Point number 2 in that time  
5 schedule, or the Applicant, which had the Fuel Densification  
6 Report in its hands since November, and knew about the  
7 problem because it was another Westinghouse reactor, Ginna,  
8 where they had a fuel rod collapse in the first place, and  
9 still didn't get its massive resources together and put out  
10 its reports until January, saying to us, "You ought to do it on  
11 this time schedule."

12 We think as a reasonable time schedule, and it  
13 won't delay anybody a substantial period to delay two weeks  
14 after the Staff's report is in, to submit our contentions once  
15 and for all. We will be ready to go to hearing a week  
16 later.

17 Mr. Trosten has suggested we should have two  
18 weeks to define our contentions after, or refine them.

19 I am not going to burden the record what the  
20 client has incurred in their bank account, but I can assure  
21 you that it makes the bankrupt Con Edison Company look like  
22 a real rich man by comparison.

23 MR. TROSTEN: Mr. Chairman, let me clarify one  
24 point. First of all, there are three issues that have nothing  
25 to do with fuel densification.

CHAIRMAN JENSCH: That is right.

I thought the Intervenor could file his contentions on the three within a week, and then when the Staff report comes out, take two weeks to submit what your contentions are on fuel densification.

MR. ROISMAN: We have no problem on the thin wall valve and the steamline break. We feel we already filed our contentions on the sixth of February.

The problem of the reactor pressure vessel falls into a different category. As I explained before, this is really dependent a great deal on Dr. Wechsler. I am not going to tell you that we have an expert who is prepared to specify contentions. It is Dr. Wechsler's concerns that we think deserve consideration in this hearing.

If at the time, namely two weeks after the Staff has filed its Fuel Densification Report, we do not have anything from Dr. Wechsler, namely his report is not completed, we will simply advise the record that as to the citizens' committee, we will not be making any further contentions with regard to a hearing on that matter and let it drop.

But if we do it now, we are not going to be able to say anything at this point, Mr. Chairman, but we do not feel there is a basis for us to be prejudiced as a result of that.

CHAIRMAN JENSCH: Do you have the preliminary report by Wechsler?

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Reba 1

1 MR. ROISMAN: I do, but I must say that our  
2 technical people have told me they cannot in good conscience  
3 create contentions out of that report when Dr. Wechsler has  
4 told them that is not the report he supports anymore. Their  
5 confidence in Wechsler, the man, and not in a report which he  
6 called a draft. The Staff would be quite right to say, "This  
7 is just a draft of the man's ideas, they don't make reasonable  
8 contentions at all."

9 As long as we are going to wait for fuel densification  
10 until two weeks after the Staff, or whatever, and we are per-  
11 fectly willing to admit in candor that without Wechsler -- maybe  
12 the Applicant can persuad Dr. Wechsler to hold up his report,  
13 and therefore avoid this.

14 CHAIRMAN JENSCH: The Board has some concern about  
15 reactor pressure vessels.

16 MR. ROISMAN: I know, but I don't know whether ours  
17 are the same.

18 CHAIRMAN JENSCH: I am not able to say, either, but  
19 it has that additional feature.

20 I agree you have had some oral conversation, as I  
21 understand your statement, that lends doubt whether the initial  
22 report by Wechsler is final. Only the basis of the written  
23 evidence, I take it, there are possibilities of contentions.

24 I think, as you look at it, as I understand it,  
25 you feel that those raise support for your contentions, and I

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Reba 2

1 think that they have to be analyzed on the basis of what you  
2 have before you now.

3 I don't suggest you should do it or what you should  
4 do, but if you attach Wechsler's report and some contentions  
5 within the scope of it, and what the evidentiary matter may  
6 prove itself to be may be entirely different. I don't know.

7 MR. ROISMAN: If that is the position of the Board,  
8 may we request two weeks?

9 CHAIRMAN JENSCH: Two weeks. How long did you say?  
10 Did you say ten days or three weeks?

11 MR. KARMAN: Well, as of last Friday, Mr. Chairman,  
12 it was hoped that it could have been completed within two  
13 weeks, which would be another week from maybe tomorrow.

14 Now if we finish today, and I get back to the office  
15 tomorrow and I aim to see some of our people, I could probably  
16 get a better line on this.

17 CHAIRMAN JENSCH: If that is your best information,  
18 it should be out in another week.

19 MR. KARMAN: As of the moment. Somewhere within  
20 that time span. I cannot commit us, though, Mr. Chairman. We  
21 have been through this too many times. If it were my work,  
22 I would guaranty it would be a week.

23 CHAIRMAN JENSCH: Did you have something further  
24 to develop on the environmental?

25 MR. TROSTEN: We have a further piece of testimony

Al 26 1 or a further report dealing with the multi-plant effects,

Reba 3 2 Mr. Chairman, that we intend to submit to the Board.

3 CHAIRMAN JENSCH: What was your timing on that?

4 MR. TROSTEN: Within ten days to two weeks. It might  
5 be less. What we have to do is, we have to reconsider it in  
6 light of what has transpired today. We have it largely developed.

7 CHAIRMAN JENSCH: Well, and you expect to go critical  
8 on the 1st of April?

9 MR. TROSTEN: No, I didn't say the 1st, Mr. Chairman.  
10 It is in April. I might be able to get -- I am sure I could  
11 get a more precise statement.

12 CHAIRMAN JENSCH: I don't think that is necessary.

13 My only thought was, I think if we can schedule one final  
14 session of everything, radiological, environmental and once and  
15 for all, and my thought was that you would need some time and  
16 they would need some time.

17 Let's get enough synchronizing between you and the  
18 Intervenors and see if we can't set a time that will give people  
19 time enough to repair and time for a hearing, and we are going  
20 to set a hearing now and then back it up. How would that be?

21 MR. TROSTEN: I think it would be helpful if we  
22 could set a time now.

23 CHAIRMAN JENSCH: Today is the 8th. A couple of  
24 weeks is the 22nd. We have a hearing in Pittsburgh the first  
25 week of April.



A126

Reba 4

1           What would you think about the 10th of April for  
2 a hearing, and we will back it up from there?

3           MR. TROSTEN: That would be satisfactory, Mr. Chair-  
4 man.

5           CHAIRMAN JENSCH: All right, I will back it up.  
6 Let's be lenient with the Staff and say that the Staff Report  
7 probably won't be out on the 16th. I don't want to criticize  
8 the Staff, but supposing it is out by the 22nd?

9           MR. KARMAN: Mr. Chairman, I certainly would exert  
10 every effort.

11          CHAIRMAN JENSCH: We will grant that. That is  
12 another one of our premises. Everybody is exerting our best  
13 effort.

14          MR. KARMAN: I am perennially optimistic, and I  
15 hope it will be out by then, if not before.

16          CHAIRMAN JENSCH: All right. If the Intervenor  
17 gets his contentions, except for fuel densification by the  
18 22nd, you get your report out by the 22nd, we will have by March  
19 30th a statement from the Intervenor as to what his contentions  
20 are on fuel densification. Will that give you an adequate  
21 time to review everything?

22          MR. TROSTEN: Intervenor has his statement of con-  
23 tentions on all matters by the 22nd except for fuel densification.

24          CHAIRMAN JENSCH: Yes, and by the 30th for fuel  
25 densification if the Staff report is out on the 22nd.

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Reba 5

1 On the basis of that the Staff Report is out on the  
2 22nd, we will convene the hearing on April 10th.

3 MR. ROISMAN: You have given us 8 days and the massive  
4 law firm ten.

5 MR. TROSTEN: I object to that.

6 MR. ROISMAN: Be quiet, Mr. Trosten.

7 If we don't get a Point Beach decision, it isn't  
8 right that we do it all in eight days. If they take essentially  
9 the same position that they did in Point Beach, then in eight  
10 days ---

11 CHAIRMAN JENSCH: Wouldn't you guess they would?

12 MR. ROISMAN: I would have, but I would have expected  
13 that they had their report out sometime ago. The delay that  
14 has taken place suggests that as a result of the Point Beach  
15 hearing they are concerned that their position is not defensive.

16 MR. KARMAN: I can authoritatively answer you in  
17 the negative, that as a result of the Point Beach hearing there  
18 *is not any* ~~is any~~ problem.

19 MR. ROISMAN: But you can't answer me as to whether  
20 or not they are taking the same position. That is the only  
21 one I care about.

22 MR. KARMAN: No.

23 CHAIRMAN JENSCH: Let's set April 30th as the  
24 date for hearing ---

25 MR. TROSTEN: March 30th?

A1 26

Reba 6

1 CHAIRMAN JENSCH: March 30th, for the fuel densifi-  
2 cation. We will see what the problems are.

3 MR. ROISMAN: If their position is substantially  
4 different, I hope the Board will consider with favor a request  
5 for an extension, and perhaps hearing time.

6 CHAIRMAN JENSCH: If you think you have to file  
7 a motion, we will consider what the parties say about that.  
8 Is that agreeable?

9 MR. TROSTEN: This is acceptable, Mr. Chairman.  
10 We may have to ask the Board for appropriate prehearing orders  
11 with regard to statements of proposed cross-examination, state-  
12 ments of evidence and documents and what not, but I think we  
13 can approach the Board on that later.

14 MR. KARMAN: April 10th is the hearing date.

15 CHAIRMAN JENSCH: Is Washington a convenient place?

16 MR. TROSTEN: Yes.

17 CHAIRMAN JENSCH: Did I say April 10th?

18 MR. TROSTEN: Yes.

19 CHAIRMAN JENSCH: April 9th, starting on Monday.

20 MR. TROSTEN: That would be fine.

21 MR. ROISMAN: Did you change it to the 9th?

22 CHAIRMAN JENSCH: Yes. Then that will give us a  
23 whole week. Although I notice that that Friday is the 13th.

24 MR. ROISMAN: Assuming the Staff's document comes  
25 in on the 24th. Is it the sense of what the Board is saying

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Reba 7

1 that our time would be moved two days further?

2 CHAIRMAN JENSCH: I think it would have to be.

3 MR. ROISMAN: You are talking about eight days  
4 after the Staff submittal, and you are anticipating that  
5 it will be by the 22nd?

6 CHAIRMAN JENSCH: Yes.

7 MR. KARMAN: Suppose it comes out on the 19th?

8 MR. ROISMAN: Then I gather we get the extra days.

9 MR. TROSTEN: You have set a schedule, and it is  
10 in essence eight days later. Is that what you have done?

11 CHAIRMAN JENSCH: If we stay with the 9th, do you  
12 want to turn that screw that hard?

13 MR. TROSTEN: I think we might as well have a date  
14 certain, Mr. Chairman.

15 CHAIRMAN JENSCH: I think so, too, but we gave  
16 the 30th, and that was in order to get ready for the 9th.  
17 If we don't quite need that amount of time, maybe they can  
18 squeeze out a drop or two of time here that won't be prejudicial.  
19 Wouldn't you be agreeable to that?

20 MR. TROSTEN: If the Chairman thinks that is what  
21 ought to be done, Mr. Chairman, we will abide by it.

22 CHAIRMAN JENSCH: That is very gracious of you,  
23 but I would still like to have your own expression without  
24 feeling that you are getting the turn on your neck either.

25 Let's see what we can do on that basis.

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Reba 8

1 All right, we have a motion filed here by the Citi-  
2 zens Committee. The Board has read it very hurriedly, and it  
3 was given to us during the recess. The Board has been wondering  
4 what happens to the xerox machine, that copies aren't exchanged.

5 Is it a burden, or is there some other purpose for  
6 withholding the exchange?

7 MR. TROSTEN: Mr. Chairman, do you want me to  
8 respond substantively to this document? I will be glad to do  
9 so. I have a couple of preliminary observations to make about  
10 it, and I will be very glad to respond substantively.

11 CHAIRMAN JENSCH: I think before we do that, we will  
12 hear from the movant. We haven't given the Reporter a recess.  
13 Let's recess now to reconvene in this room at 3:45.

14 (Recess)

end Al 15

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1 CHAIRMAN JENSCH: Please come to order.

2 Mr. Carter, will you endeavor to locate the other  
3 attorneys, please?

4 The Board will hear the presentation of a motion for  
5 suspension. We have read it.

6 Is there any part you would like to stress or empha-  
7 size?

8 MR. ROISMAN: No, Mr. Chairman. I think there is no  
9 doubt that we have been substantially prejudiced in the two  
10 instances we stated, and we hope the Board will look at the  
11 letters which we have referenced in the document, all of which  
12 are now in this proceeding, which demonstrate that first  
13 with regard to the special nuclear material license and now with  
14 regard to the technical specifications dealing with the  
15 currently outstanding operating license, that is, loading and  
16 subcritical testing license, that we were not served with the  
17 document until at least a week after the Regulatory Staff had  
18 already taken the action, and as the Chair is well aware, as  
19 a practical matter, our changes of having anything to say about  
20 either of those matters is virtually eliminated.

21 On the special nuclear material, that was ruled on on  
22 the 8th of December, and we were not given any relief in that  
23 matter. We have made reference to that letter.

24 In addition, we don't know yet what Mr. O'Leary  
25 will do with the letter we filed yesterday that was a response

ty 2

1 to the Applicant's application for the changes in the currently  
2 outstanding operating license as we note.

3 Mr. O'Leary on the 22nd of February acted on that  
4 request favorably without ever having heard from us.

5 We would note that both matters deal with the same  
6 issue. They deal with fuel densification.

7 First, the Applicant's request to possess the  
8 depressurized rods and then its request to load them. It is  
9 no secret that our opposition existed, even if the Applicant  
10 should have misinterpreted page 5450 in the transcript of  
11 the proceeding as authorizing a distribution of document  
12 that passed through the Staff and Applicant on when, as and if  
13 basis. They certainly could not have misunderstood that  
14 when we have been on record for some time when we have been  
15 having great questions with respect to fuel densification and  
16 Applicant taking steps to try to resolve the problem until this  
17 hearing Board has decided whether the proposed regulation is  
18 an appropriate one.

19 We cannot see that there is any justification for  
20 Applicant's conduct in this case. We think that this is just  
21 the type of situation that the Commission provided for suspen-  
22 sion of attorneys or alternatively for censure of attorneys, that  
23 if this is not done, that there would simply be further encourage-  
24 ment to counsel in other cases, as well as in this, to push  
25 the Board's orders as far as they can in the direction they

1 would have wished them to go, secure in the belief that the  
2 worst that will happen is that some day a hearing like this will  
3 be held, and they will say, as they did this morning, "Well,  
4 now that you have said it to us, we will serve it on a  
5 simultaneous basis."

6 The whole purport in the record at page 4450 was  
7 that we wanted the information in time to do something about  
8 it, that it wasn't to make up a scrap of communications  
9 between the Applicant and the Staff. We think there is no  
10 other recourse but for this Board to indicate in the strongest  
11 measure possible that Applicant's counsel has violated this  
12 Board's order and has violated the purposes of that order.

13 Thank you.

14 CHAIRMAN JENSCH: Let me ask Staff counsel: Is  
15 it the view of the counsel for the Atomic Energy Commission that  
16 Intervenors have no right to be considered in transactions  
17 of the kind set forth in this motion?

18 MR. KARMAN: That Intervenors have no right, no.

19 CHAIRMAN JENSCH: Is it your view that they do have  
20 an interest that should be --

21 MR. KARMAN: I am not sure that this is a matter,  
22 that every aspect of these things are matters for the hearing,  
23 but I certainly would not take the position that they are  
24 part of the hearing, and I would under no circumstances do any-  
25 thing to keep any matters from their knowledge.



1 CHAIRMAN JENSCH: That is, do you feel --

2 MR. KARMAN: I thought we had come to some kind of  
3 an understanding, and of course that is why I am, you know, I  
4 am somewhat at a loss here that the Intervenor was being given  
5 some of this information. I have not -- I say that the  
6 Regulatory Staff has not made a practice of furnishing the  
7 Intervenor with copies of correspondence back and forth, because  
8 the Applicant had indicated on some basis, some regular  
9 basis, that he was going to be ~~delinquent~~ *delinquent*.

10 CHAIRMAN JENSCH: Is it the view of the General  
11 Counsel's Office, of which you are a member, that the  
12 Intervenor, when they have requested correspondence  
13 and this representation in the motion is correct, and the  
14 Applicant has indicated that communications would be sent  
15 to them, is it the view of the Counsel's office of the AEC  
16 that they should at least have opportunity for comment or  
17 participation, although it may not be necessarily part of this  
18 hearing?

19 There may be separate licensing proceedings involved.  
20 I don't know.

21 MR. KARMAN: Ordinarily, and I am not saying that  
22 ordinarily they should be getting copies, but if the  
23 Intervenor has requested copies of letters, I would certainly  
24 agree with you, yes, that he should receive copies, the same  
25 way as any member of the public can receive them. They are

ty 5

1 in the Public Document Room.

2 CHAIRMAN JENSCH: Well, I suppose it is a question  
3 of how soon.

4 MR. KARMAN: These are public documents. They are  
5 in the Public Document Room within a day or so within the  
6 time they are sent, if I am not mistaken.

7 CHAIRMAN JENSCH: I don't know what the time schedule  
8 is there.

9 MR. KARMAN: So under no circumstance has there been  
10 any effort to hide these letters. If the Intervenor requests  
11 it, certainly he is entitled to a copy.

12 CHAIRMAN JENSCH: Well, do you know of any reason  
13 why an Applicant should withhold transmittal of letters when  
14 they have been requested?

15 MR. KARMAN: Of course not, Mr. Chairman. I mean  
16 this is for the Applicant to speak to. I know of no reason why  
17 he should.

18 CHAIRMAN JENSCH: At least the General Counsel's  
19 office hasn't taken any position that Intervenors have requested  
20 and have been given some understanding that they would receive  
21 it. There is no opposition in the General Counsel's office to  
22 the Intervenors getting those letters?

End #27 23 MR. KARMAN: None that I know of.

24

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CHAIRMAN JENSCH: Applicant?

MR. TROSTEN: Yes.

Reba 1

Mr. Chairman, Mr. Roisman has been guilty of a willful and gross mis representation to this Board, and I am including what he just said now.

Mr. Roisman, as he knows perfectly well, has never, from May 18th when the Chairman made this request up to and including this moment, ever asked me or any member of our firm to have material sent to him on a current basis.

He knows that, and he has deliberately misrepresented this to this Board. We have been, since June 9th, sending Mr. Roisman copies <sup>of things</sup> ~~of things~~ on a monthly basis. We have been doing this with absolutely no statement from Mr. Roisman that there was anything wrong with what we were doing.

We did it for months in this fashion. Mr. Roisman received these, and he never made the slightest statement to us that this was unsatisfactory.

We did receive in October or November, there was a statement, a very grossly abusive and intemperate letter which Mr. Roisman sent in to the head of the Materials Licensing Branch accusing us at that time of violating the Board order.

At no time, either before or after the sending of that letter did Mr. Roisman ever pick up the telephone and ask me to send him copies of these things personally. He has never asked me to do this.

A1 28

Reba 2

1 Mr. Roisman on Monday of this week called a member  
2 of my firm and threatened to file this motion unless we were  
3 provided these things to them on a current basis. I in the  
4 mistaken belief that Mr. Roisman might  
5 have been confused, called Mr. Roisman on the 7th and offered  
6 to send him these documents on a current basis, because I inter-  
7 preted his ~~rejection~~ <sup>objection</sup> as a request for the first time to have  
8 these things sent to him.

9 Mr. Roisman again threatened to file the motion and  
10 thereafter filed the motion. I regard this as grossly unpro-  
11 fessional, grossly uncivil attack on my integrity and the  
12 integrity of my firm. I think Mr. Roisman is the one who should  
13 be censured for even daring to file a document like this, when  
14 it is a gross and willful misrepresentation to the Board as  
15 to the state of this situation.

16 We have as I indicated in the copy of the letter  
17 given to the Board this morning, offered on the basis of  
18 what I interpreted for the first time to be a request from Mr.  
19 Roisman to send these documents to him currently. We in no  
20 way regard what we have done in the past as a violation of  
21 the Board order. No one has told us it. I sent a copy of  
22 my letter to Mr. ~~Whitwick~~ <sup>Chetwick</sup> of the Board, and the Board did not  
23 tell me it was a violation of the Order, and neither did Mr.  
24 Roisman.

25 If it were not so grossly uncivil a thing for Mr.

Al 28.

Reba 3

1 Roisman to have done, I would dismiss it. I think it is a  
2 very offensive thing for an attorney to do before a Board of  
3 the Atomic Energy Commission, or before any court, and that  
4 is my general reaction to this, Mr. Chairman.

5 CHAIRMAN JENSCH: Would you like to respond to  
6 that?

7 MR. ROISMAN: Only to quote from the transcript  
8 of May 18, 1972, page 5442, lines 8 through 12:

9 "We were speaking. At that time we have had this  
10 problem," meaning not getting documents in another hearing in  
11 which the Chairman was the Chairman. I was referring to Vermont  
12 Yankee. "At that time, the Chairman directed the Staff and  
13 the Applicant to provide the Intervenors with this correspondence  
14 between Applicant and Staff as it is served on the two of them.  
15 I would request that the Chair direct that that be done again  
16 now in this proceeding."

17 Now that has been on the record since the 18th of  
18 May. When we wrote our letters to the Nuclear Materials Branch  
19 we made clear in that letter that we felt we should be getting  
20 these on a timely basis. Moreover, it would be an absurd  
21 interpretation of the colloquy in the ten pages of the transcript  
22 to ask that we have the letter sent to us after the actual  
23 request.

24 The Chairman noted that one of the purposes served  
25 by the communications of this order to expedite the proceedings

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Reba 4

1 by having the parties be able to know what is going on before  
2 it takes place, and that appears in the Chairman's statement  
3 at the bottom of page 5447, and I quote, "as a party and es-  
4 pecially a representative party from the Federal agency, they  
5 do receive many documents in the course and performance of  
6 their duties, some of which may be directly relating to  
7 proceedings then pending. I think really it is an aid in  
8 expediting the proceeding. It seems advisable for Applicant to  
9 make general distribution of those documents which will be placed  
10 ultimately in the public record.

11 "I think it will help move the case long to do that,  
12 do you not agree?"

13 The question was addressed to Mr. Trosten. He said,  
14 "We will endeavor to keep Mr. Roisman informed, Mr. Chairman."

15 By informing us two weeks after the Staff takes  
16 the action requested, that Applicant requested the action  
17 a month ago, is not in our understanding of either consistent  
18 with our explicit request that it be done at the same time that  
19 it be served upon the Staff, nor that it would fulfill what  
20 the Chairman had in mind of expediting the proceeding.

21 MR. TROSTEN: Mr. Chairman, I would like to make  
22 two final remarks about this. Number 1, apparently Mr. Roisman  
23 interprets a kick in the face as a request to have something  
24 done. I am sorry. I did not interpret his gesture in that  
25 fashion.

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Reba 5

1 But apparently by Mr. Roisman's lights that is  
2 the way he makes his requests. On the substance of the matter,  
3 there is a more fundamental matter at issue. Mr. Roisman  
4 has repeatedly said in this proceeding, number 1, that his  
5 client did not oppose the fuel loading license, number 2, that  
6 he is raising his contentions only with regard to the full  
7 power license, and without regard to the testing license.

8 This has been his position constantly. We have  
9 absolutely no basis on the basis of anything Mr. Roisman did  
10 not say, or his letter to Mr. <sup>Chidwick</sup> to know that he was  
11 requesting that this be done, because he has consistently said  
12 that the contentions he wishes to raise do not pertain to the  
13 testing licenses or the fuel loading and subcritical licenses.

14 Now, I don't know exactly what Mr. Roisman has  
15 in mind. Apparently he feels that other human beings are  
16 supposed to interpret his desires by simply reading his abusive  
17 letters that are written to agencies of the Federal Government.  
18 Perhaps some people can do that.

19 I did not do it that way, and there has never been,  
20 and there has not been up to this time, a request made to me  
21 by Mr. Roisman to serve him currently. Had he made such a  
22 request on the 19th of May or any of those days up until the  
23 present time, we would have complied.

24 CHAIRMAN JENSCH: All right. It does appear that  
there has been some confusion between the parties. The Board

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Reba 6

1 will give consideration to the motion and the response that  
2 has been made to it.

3 You have some redirect evidence?

4 MR. TROSTEN: Yes.

5 MR. ROISMAN: If we are completed with the radiological  
6 portion, could I be excused?

7 CHAIRMAN JENSCH: Yes.

8 (Mr. Roisman was excused.)

9 end

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1 MR. TROSTEN: Mr. Chairman, I have some redirect  
2 examination I would like to direct to Dr. Lawler, first.  
3 Whereupon,

4 JOHN P. LAWLER  
5 was recalled, and having been previously duly sworn, was  
6 examined, and testified further as follows:

7 THE WITNESS: Give me a moment.

8 CHAIRMAN JENSCH: I am sorry Mr. Roisman is gone,  
9 but I will ask Mr. Macbeth to convey this to him. What  
10 happens if the Staff report doesn't come out on the 22nd?

11 MR. KARMAN: I am not feeling well.

12 CHAIRMAN JENSCH: The applicant is ready, will you  
13 proceed?

14 REDIRECT EXAMINATION

15 BY MR. TROSTEN:

16 Q Dr. Lawler, I would like to ask you a few questions  
17 with regard to Dr. Goodyear's testimony entitled "Compensation  
18 in Striped Bass Populations," which is Document No. 7, I be-  
19 lieve, of the Staff.

20 Dr. Lawler, is your view of compensation dependent  
21 on the assumption that the population of striped bass is at  
22 equilibrium in the Hudson River?

23 A No. The answer to that is, no. Most definitely  
24 not. My view of equilibrium, or my use of equilibrium was  
25 simply to create a framework within which we could conveniently

1 run the analysis that we provided. We could equally well have  
2 done this with a growth situation or a declining situation, and  
3 and incorporated the compensatory mechanisms that we used in  
4 either of those cases.

5 There is no dependence of our view of compensation  
6 on the assumption that the population is at equilibrium.

7 Q Dr. Lawler, with regard to Page 4 of Dr. Goodyear's  
8 testimony, is the growth of the striped bass population as  
9 depicted in Figure 3 of Dr. Goodyear's testimony, inconsistent  
10 with your view of compensation?

11 A No, again, most definitely not. Figure 3 repre-  
12 sents a growing situation. We can reproduce that growing  
13 situation in our model, if we reproduce it without introducing  
14 the compensation mechanism, that growing situation will  
15 continue to grow.

16 Figures 1 and 2, in Dr. Goodyear's testimony which  
17 were employed in his commentary represented equilibrium  
18 conditions, but nevertheless, they illustrate precisely the  
19 same concept.

20 In figures 1 and 2, we show that for the case of  
21 no compensation at some point in time, the system will event-  
22 ually either crash or grow without bound. For the particular  
23 set of random variables, or random numbers that were generated  
24 in the figures given, we found a case where the system grew  
25 without bound after, oh, somewhat over 100 years.

1           If we had run a whole series of such cases, we  
2 might just as readily have found situations where crashes  
3 occurred in 20 years, or 30 years, or 40 years, or growth  
4 without bound occurred in those same time periods.

5           Let me just review one <sup>thought</sup> though I had here.

6           Yes, the final point is the fact that growth at  
7 <sup>least</sup> ~~least~~ as indicated by the commercial catch statistics, which  
8 is what is indicated in Figure 3, the fact that growth may  
9 have occurred over the past 30 or 40 years, simply does not  
10 contradict the notion of compensation we have included in  
11 the model..

12           As I said, we can reproduce the growth situation in  
13 the model with the compensatory mechanism.

14           CHAIRMAN JENSCH: May I understand that last  
15 statement? You said you could do it. Are you planning to do  
16 it so we can see that? Was that your thought?

17           THE WITNESS: Yes. I was not particularly planning  
18 on doing it, but if you want me to --

19           CHAIRMAN JENSCH: It is your statement that by  
20 doing it, you would coincide with Dr. Goodyear's presentation,  
21 or what would it do? Would it illustrate your point of some  
22 marked difference between you and Dr. Goodyear? Which would  
23 it do?

24           THE WITNESS: It might illustrate that point, but  
25 I don't really feel that I have to do it. What I am trying to

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1 say, is that the compensatory mechanism incorporated in our  
2 model just doesn't depend on whether the model represents a  
3 population that is growing, or represents a population that  
4 is declining.

5 Dr. McFadden indicated that on Monday, that the  
6 very -- well, he essentially concluded the same thing. He  
7 indicated that the density independent mechanism which I  
8 concluded the fishing control was, would not be sufficient to  
9 control the population, and indicated, and I am fairly certain  
10 you used the word "must" in his testimony, that a compensatory  
11 mechanism must exist.

12 And, what he was referring to there is that if  
13 that is done, you will just grow this system without bound.

14 CHAIRMAN JENSCH: My statement was not a request.  
15 It was merely an inquiry. I don't mean to ask you to prepare  
16 it. I just wondered whether you indicated you would do it to  
17 illustrate your point about it. I am not requesting it.

18 Thank you.

19 THE WITNESS: One final point I might mention,  
20 and I did mention this much earlier on in the testimony, that  
21 the problem in using the model without compensation is that  
22 we went far beyond the estimate of reduction in the first year.  
23 We tried to consider the impact of the plant on reduction  
24 in the first year and then see what that did in years, and  
25 years to come.

1 This incorporated the notion of feedback into actual  
2 quantitative steps that were taken in the model, and unless  
3 that feedback were a nonlinear type mechanism, rather than  
4 a linear mechanism, which is the difference between density  
5 independence and density dependence; we cannot keep the  
6 population under control.

7 It would just continue to grow. My point all along  
8 is that simply is not representative of any physical or bio-  
9 logical system. They don't grow without bound.

10 If you only look at the behavior in the first year  
11 and do not attempt quantitatively to come full circle, and  
12 see what occurs over a series of years, and this is, in fact,  
13 the models that both the Staff and the intervenors used, have  
14 not gone through the cycle, at least in a quantitative fashion;  
15 you don't get into trouble.

16 Let us put it that way.

17 But, what I am saying is that in reality, such a  
18 cycle does exist, and in investigating the behavior of that  
19 cycle, we found that we could not develop a model which is  
20 simply an analytical framework that tries to represent a situ-  
21 ation in nature that would, in fact, represent reasonable,  
22 natural occurrences, without introducing the compensatory  
23 mechanism.

24 Again, I will repeat, that this applies whether  
25 we are dealing with a declining or a growing situation. It

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1 has nothing to do with the assumption of equilibrium. That  
2 was just the convenient part about it.

3 CHAIRMAN JENSCH: Proceed, applicant.

4 MR. TROSTEN: Thank you.

5 BY MR. TROSTEN:

6 Q Dr. Lawler, with respect to your testimony on  
7 economic evaluation of the impact of Indian Point 2 operation  
8 on the Middle Atlantic Fishery -- excuse me.

9 Let me rephrase that question.

10 Dr. Lawler, Mr. Clark's criticism, yesterday, of  
11 your analysis of his Stage 3 reduction estimates, in view of  
12 that do you wish to change your rebuttal testimony in any way?

13 A No, sir, I don't. I read Mr. Clark's comments of  
14 yesterday, and I disagree that I misunderstood his calculations,  
15 and I stand on my opinion as stated in the rebuttal testimony  
16 of February 20, 1972, with respect to this particular issue  
17 of the correct calculation of the losses in Mr. Clark's  
18 Stage 3.

19 CHAIRMAN JENSCH: You said 1872, did you mean 1973?

20 THE WITNESS: February 20, 1973, I am sorry.

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25

BY MR. TROSTEN:

1 Q Dr. Lawler, do you have any comments with regard to  
2 Mr. Russell J. Griemsmann's testimony on distribution of life  
3 stages of striped bass near Indian Point and mortality of  
4 striped bass, dated February 19, 1973?

5 A Yes. I do.

6 On page 2 of Mr. Griemsmann's paper, I would say  
7 that on pages 1 through 3, and the first part of page 3, Mr.

8 Griemsmann appears to be talking about the life stages of striped bass.

1 halves of the river. I was only concerned with the concentra-  
2 tion of eggs and larvae in what I term the upper east quadrant  
3 of the river by comparison to the river as a whole, and  
4 that did not require a determination on my part as to whether  
5 there was or was not a significant difference between halves  
6 of the river.

7 So I guess what I am saying is that if Mr. Griemsmann's  
8 testimony purports to rebut the F-1 factors that I have  
9 presented, his notions in my mind are irrelevant to the  
10 particular analysis that I presented.

11 MR. TROSTEN: I have no further redirect of Dr.  
12 Lawler.

13 CHAIRMAN JENSCH: Any further questions of the  
14 witness?

15 MR. MACBETH: May I have just a moment? I think I  
16 may have a few.

17 CHAIRMAN JENSCH: Is this the only redirect evidence  
18 you have?

19 MR. TROSTEN: I have just a few questions for Mr.  
20 Woodbury.

XXXXXX

21 RECROSS-EXAMINATION

22 BY MR. MACBETH:

23 Q On page 2 of Mr. Griemsmann's testimony, he said that  
24 Quirk, Lawler and Matusky in creating a model of the Hudson  
25 River about Indian Point developed formulae to develop con-



1 concentrations of striped bass' early life stages. My study is  
2 the same formulae for the sake of later comparisons. The  
3 two forms being employed here are the QL&M half river formula,  
4 and the upper quadrant concentration formula.

5 Mr. Griemsmann then later states that all the tests  
6 in that comparison with only one exception yield significant  
7 differences.

8 You don't take that testimony to indicate that Mr.  
9 Griemsmann paired the upper reach quadrant to the other upper  
10 quadrant of the river?

11 A He certainly doesn't say that, Mr. Macbeth. He  
12 says all tests with the exception of one showed no significant  
13 differences in concentrations between the halves of the river.  
14 At least I can't find any commentary that he makes on the  
15 upper quadrant versus any other particular value.

16 MR. MACBETH: I have no further questions.

17 I would like to say I would like to submit a further  
18 statement from Mr. Griemsmann to clarify the point. I think  
19 there is no other way of doing it sensibly.

20 CHAIRMAN JENSCH: All right.

21 MR. KARMAN: I may have two short ones, Mr.  
22 Chairman. Bear with us for about 30 seconds.

23 CHAIRMAN JENSCH: There is no hurry, take your time.

24 BY MR. KARMAN:

25 Q Dr. Lawler, do you believe that increasing fishing

1 effort increases the exploitation rate?

2 A Increasing the fishing effort increases the  
3 exploitation?

4 Q Yes.

5 A It may.

6 Q Do you believe that commercial fishermen will continue  
7 to fish with the same intensity with reduced catches when the  
8 stock is down?

9 A The same answer. They may, or they may not.

10 MR. KARMAN: That is all I have, Mr. Chairman.

11 CHAIRMAN JENSCH: If there are no further questions,  
12 thank you, Dr. Lawler. You are excused.

13 (Witness excused.)

14 MR. TROSTEN: Just a few questions of Mr. Woodbury.

XXXXXXX

15 Whereupon,

16 HARRY L. WOODBURY

17 was recalled and, having been previously duly sworn, was  
18 examined and testified further as follows:

19 REDIRECT EXAMINATION

20 BY MR. TROSTEN:

21 Q What have been the views expressed to Con Edison up  
22 to the present time by federal and state agencies about the  
23 feasibility and the advisability of the fish hatchery to replace  
24 striped bass which may be lost due to operation of the Indian  
25 Point 1 and 2 power plants?

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1 CHAIRMAN JENSCH: Was that done in writing or orally?

2 MR. TROSTEN: Either one.

3 CHAIRMAN JENSCH: I think in writing so I could  
4 see the document. If you go into the oral questions of  
5 circumstances --

6 MR. TROSTEN: We will have to inquire, Mr.  
7 Chairman.

8 CHAIRMAN JENSCH: I think it will be better for the  
9 record. Let's see the letters. I think sometimes qualifi-  
10 cations are a little more complete than a recollection in all  
11 honesty may be able to provide.

12 Do you not agree, Mr. Woodbury?

13 THE WITNESS: Yes, sir. Much of the answer, I  
14 think, to Mr. Trosten's question, however, is not a matter  
15 of exchange of letters, but rather of communications at the  
16 time of meetings of the Hudson River Policy Committee at which  
17 I was in attendance.

18 CHAIRMAN JENSCH: If there is no objection, proceed.

19 THE WITNESS: For some time, the Hudson River Policy  
20 Committee, which you recall is composed of representatives of  
21 the state and the federal fishery agencies, has taken the  
22 position that until there was a need shown to replace the  
23 striped bass in the river, that any study of how to do it was  
24 pointless, and they saw no point in being a part of it.

25 The record of success of the plantings of striped

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1 bass, I think, was rather meager until recently, and except  
2 for the tremendous success that was experienced in the San  
3 Joaquin and the Sacramento, where a whole bass fishery was  
4 developed through transplant, there wasn't much else done for a  
5 long time, successfully done for a long time, but of late  
6 there have been some seven or eight striped bass hatcheries  
7 operated with increasing success, principally in freshwater  
8 stocking, however.

9 More recently, the Policy Committee advises me that  
10 they have become aware that Dr. <sup>SHELL</sup> ~~Snell~~ of Auburn University  
11 in Auburn, Alabama, has successfully planted striped bass in  
12 Mobile Bay, and has able to demonstrate survivability,  
13 although they have not been able to demonstrate the degree of  
14 survivability, and more recently Dr. Barkaloo in Florida attempted  
15 to stock the <sup>Choctawhatchee</sup> ~~Choctowahatchee~~. This is a river, the mouth of  
16 which is in Florida, and which had good bass fishing up in  
17 the early 1930s, and then the bass fishery gradually declined  
18 until in the late, or in the mid-'40s, there was no longer any  
19 striped bass fishery in this river.

20 In 1968, Dr. Barkaloo stocked the river with about a  
21 million and a half striped bass fingerlings from 1-1/2  
22 inches to 6 inches long, and in 1971 in a fish census that was  
23 conducted, found <sup>1200</sup> ~~200~~ of these fish had been harvested by  
24 sports fishermen.

25 Again, this is an indication of another estuarine

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1 area where striped bass survivability is indicated, but  
2 again, the degree to which it has been successful has not  
3 yet been measured.

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1 On the basis of this later information, and calls  
2 of the express interest of the Federal Power Commission in one  
3 case, and the Atomic Energy Staff, in another case, the  
4 Hudson River Policy Committee has agreed that it would be a  
5 good idea to make a study of the feasibility of the stocking  
6 of striped bass in the Hudson River, pointing out that the  
7 principal need for study is on the question of ~~survivorability~~ *survivability*  
8 that is, can bass which have been planted successfully,  
9 survive and influence the population.

10 So, I have agreed to present to them, at their  
11 next meeting, a proposed organization for such a study. That  
12 is for their consideration.

13 BY MR. TROSTEN:

14 Q If this proves to be an advisable device, would  
15 *Com. Edison* ~~Comm Edison~~ be willing to replace striped bass that are lost  
16 through the operation of the ones-through cooling system?

17 A I would like to comment on the use of the term,  
18 "hatchery." What we are talking about is the planting of  
19 young bass in the river, and whether the hatchery would be  
20 operated on the river or the fish would be hatched someplace  
21 else, and brought to the river is a matter which we would look  
22 to as a part of this study.

23 But, if there is an indication that striped bass  
24 can be successfully planted in the river, and if this will  
enhance the fishery and mitigate losses as a result of power

ter-2

1 plant operations, yes, sir, we certainly would intend to  
2 undertake such an effort, and of course, this would require  
3 the approval of the State authorities who control such matters.

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Al 31

Reba 1

1 Q Mr. Woodbury, yesterday, the Chairman raised the  
2 question as to the research program and why Con Edison had  
3 not acquired certain information earlier. Do you have any  
4 comments to offer in this respect?

5 A As the Board is aware, public attitudes change  
6 and public policies change, and public objectives change,  
7 and these changes are reflected in legislation and in subsequent  
8 rules and regulations and policies and this has been the case  
9 in a point of ecological considerations in the licensing of  
10 Indian Point 2.

11 When this Board met to consider the construction licenses  
12 for Indian Point 2, there was no NEPA. There was no statement  
13 of the public policy with respect to fisheries and that sort of  
14 of thing. So the studies that were undertaken in the earlier  
15 days were directed to the public attitudes as Con Edison under-  
16 stood them at that time.

17 We have endeavored to try to stay ahead of public attitudes  
18 to foresee these attitudes, as we saw them emerging, not to  
19 wait for laws to be passed, but as soon as there became a public  
20 awareness or desire for some change, we tried to develop the  
21 data necessary so that we could make timely decisions with  
22 respect to accommodating new and emerging public attitudes.

23 When we first came before this Board, the Corps of Engin-  
24 eers was concerned with navigation matters, and our application  
25 to the Corps of Engineers in 1965 for this project had to do



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Reba 2

1 with the effect on navigation. Applications that you make  
2 to the Corps of Engineers are no longer satisfied with just  
3 a discussion of the effect on navigation.

4 Neither are applications to the Atomic Energy Commission  
5 any longer satisfied with questions of safety, and so as these  
6 water quality standards emerge, as the new state standards  
7 came out in 1969, as Con Edison became aware of the intense  
8 concern of some of the folks in the Hudson Valley about the  
9 impingement problem at Indian Point, we undertook in 1969  
10 a seven year study, and we are pursuing that with all the  
11 haste that we can pursue it.

12 In any research project, there are some things that you  
13 can do simultaneously, and there are some things you have to do  
14 successively. I think the presentation which was made in the  
15 McFadden-Woodbury testimony that shows how many operations are  
16 going ahead successively and how many are going ahead sequentially  
17 clearly indicate that we are traveling such as many paths as  
18 are possible on a simultaneous basis.

19 We don't have any control, naturally, of how rapidly public  
20 attitudes emerge, how rapidly the U. S. Congress passes laws.  
21 It is difficult for the research end of our society sometimes  
22 to keep up with public attitudes. But I wish to assure the  
23 Board that Con Edison's effort in the study which we have under-  
24 way at Indian Point and studies which we are participating  
25 with other utilities on the river is designed to fulfill our

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Reba 3

1 responsibility as we see it under NEPA as rapidly as it could  
2 be fulfilled, and for no other reason, sir.

3 CHAIRMAN JENSCH: May I interrupt?

4 THE WITNESS: Yes, sir.

5 CHAIRMAN JENSCH: Certainly there was no intention  
6 to criticize you or Con Edison. I think there isn't a person  
7 in this room that doesn't recognize that the National Environ-  
8 mental Policy Act has thrust new responsibilities upon many  
9 sectors of our society, and we are all adjusting to those  
10 changes.

11 I think my inquiries yesterday and my statements were  
12 directed primarily to the fact that when we hear there are  
13 going to be more data procured from a program now underway, or  
14 about to be undertaken with reference to meteorological matters,  
15 for instance, I have had to puzzle, in view of the previous  
16 expressions from your representatives that they were going to  
17 get these data.

18 Now maybe I misunderstood, or don't have a proper recol-  
19 lection, but when we are trying to find out where the wind is  
20 blowing up and down the Hudson River Valley and what the tem-  
21 peratures are and the humidity and so forth, I have a recollec-  
22 tion that your program was very comprehensive from the beginning,  
23 but the more we hear it is the same claim, that you want more  
24 data.

25 Maybe it isn't because you haven't sought to get it.

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Reba 4

1 Maybe you interpret your responsibilities as being of  
2 a more expansive character today. We started with a kind of  
3 a shock in one of these hearings. Some of the meteorological  
4 data for Indian Point number 1 was destroyed.

5 As I understand it, the gentleman who undertook the work  
6 died, and when he died, his records were disposed of, or some  
7 such, and they were no longer available. We had to start over  
8 again.

9 After that, there were lots of studies undertaken, and  
10 I have been amazed that some of the statements about your  
11 programs here seem like carbon copies of what were going to be  
12 your programs earlier in these several hearings, and I have  
13 been amazed that the data haven't been developed without  
14 criticism of Con Edison management, I am sure they are anxious  
15 to see them developed ---

16 THE WITNESS: I may have confused in my mind your  
17 comments relating to the meteorology with your other comments  
18 pertaining to the aquatic biota.

19 CHAIRMAN JENSCH: As to that, I think there is some-  
20 thing about a fish kill, even before NEPA showed up on the  
21 scene, and again my source of reference here is the New York  
22 Times, and there were some truckloads of something hauled,  
23 if they hadn't gone to that place, if they had just dumped  
24 them someplace else, it probably never would have made the  
25 Times.

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1 So there was a fish kill problem from the beginning,

Reba 5

2 whether NEPA said you had to worry about it or not.

3 THE WITNESS: That is for sure, and we solved that  
4 problem, sir.

5 CHAIRMAN JENSCH: You went to a different dump?

6 THE WITNESS: We don't take the fish to the dump,  
7 the fish taken to the dump in 1964 were large striped bass  
8 and other large fish. There are pictures of them at the Hudson  
9 River Fishermen display every time they have a meeting anywhere.

10 These old 1964 pictures, you see them, but they were  
11 taken in 1964. They were not taken today.

12 MR. MACBETH: I object, Mr. Chairman.

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1 CHAIRMAN JENSCH: Well, I think we appreciate the  
2 problem you described, and I am sure, if I may use the term,  
3 I think that it will happen in many cases before the Atomic  
4 Energy Commission that a constructed plant has a little  
5 different problem than a plant that is just starting, today.

6 I think that there has to be a recognition of the  
7 kinds of adjustments that are required in that change to a  
8 different physical situation.

9 MR. WOODBURY: All I want to convey to you, sir,  
10 in the statement, is that this study which we have outlined  
11 for you, in Mr. McFadden's testimony, we have been talking  
12 about for two and a quarter years.

13 It is a consistent study, the objective of which  
14 has not changed. We have added to it without changing the  
15 end date, added on it as new worries have come up, but without  
16 changing the end date, without seeking any additional time;  
17 but by the expenditure of additional monies.

18 CHAIRMAN JENSCH: I think my inquiry was somewhat  
19 along the line of your statement, that it is a pretty ambitious  
20 program, and under the circumstances that you are faced with,  
21 and everybody is faced with, you want to get on with power,  
22 Hudson River wants to save the fish, and there has got to be  
23 some balancing of the objectives to give proper recognition  
24 to the very proper concerns of those parties.

25 And, I think that there might be some wonder as to

1 whether you are over in esoterical realms for data that really  
2 will be interesting to have, but will they lend themselves to  
3 a determination of a practical judgment of the situation that  
4 confronts you, and confronts the intervenors, and the other  
5 interested people.

6 It would be wonderful to get a lot of these things,  
7 and I certainly think Dr. McFadden has laid it out to the Nth  
8 degree. Can you weight with all that?

9 MR. WOODBURY: May I comment on that, sir?

10 CHAIRMAN JENSCH: Please do.

11 MR. WOODBURY: A large portion of the analysis that  
12 the Atomic Energy Commission was able to do, and the inter-  
13 venors were able to do in connection with the Indian Point  
14 analysis of theirs, and their recommendations, was to direct  
15 our probe of an earlier study, the purpose of which was not  
16 to apply it to Indian Point, but in the earlier study, they  
17 found useful data, data which they have applied to the Indian  
18 Point case.

19 If that data had not been gotten, their evaluation  
20 with respect to the entrainment that they had would not have  
21 been possible. The statement that was made this morning by  
22 Dr. Goodyear, in which he said that the conclusion, his con-  
23 clusion with respect to the impact of the Pittsburgh Plant  
24 on the San Joaquin-Sacramento River systems, that there was  
25 no significant adverse effect on the bass population as a

1 result of the operation of that plant. I think I generally  
2 paraphrased what he said.

3 It was not something that he conjured up out of  
4 his own mind. This was the result of a three-year study that  
5 was done out there. That is how he can make these statements,  
6 and the other studies which I talked about this morning, if  
7 we don't try to find out something about this environment,  
8 we are always going to be in the dark, and everybody is going  
9 to be in the dark; and somebody needs to start so that we  
10 can do what the NEPA law has asked us to do; and find some  
11 rational basis for balancing public interest in environmental  
12 concerns, and economic concerns, and social concerns, and  
13 the rest of it.

14 CHAIRMAN JENSCH: As I understand it, Indian Point  
15 No. 1, started along about 1960?

16 MR. WOODBURY: 1962, sir.

17 CHAIRMAN JENSCH: 1962? There were certain programs  
18 for development of data at that time. Now, as I understand  
19 Dr. Goodyear's presentation, he said: "Look at the extensive  
20 study in the San Joaquin River, and the Sacramento combination.  
21 There was not much of a material change; and I don't think he  
22 used these words, but if you spend 15 years, you are not going  
23 to get much more data than you have really, quite generally  
24 available to you, now.

25 There are a lot of interesting things you can get

1 developed, but from a practical point of view, I take his  
2 statement, you may as well buy the bullet now. I think that  
3 is the way the balance is between the Staff and the applicant.

4 Is there anything further we can do?

5 MR. TROSTEN: Two things, Mr. Chairman. First, I  
6 would like to just provide information that Mr. Briggs had  
7 asked for, and we might as well provide it for the record,  
8 now.

9 He had asked whether the hydrostatic testing had  
10 taken place, and the head has been off the reactor vessel, so  
11 hydrostatic tests of the primary system have not been conducted  
12 as of the present time. This is in response to his question.

13 CHAIRMAN JENSCH: All right.

14 MR. TROSTEN: Just one other point, Mr. Chairman;  
15 and that is, with respect to the visit that I understand that  
16 the Board would like to make --

17 CHAIRMAN JENSCH: Yes, we would, and we talked  
18 about that. Our primary endeavor or objective is to be there  
19 when you are running the pumps, and as many pumps as you can  
20 run. We don't ask you to run any specific number of pumps,  
21 but we would like to be there anytime a greater number or all  
22 of your pumps will be running..

23 So, in one sense, we would be guided by what you  
24 say.

Now, it isn't necessary that we be there before



1 April 9th, unless it could be conveniently arranged, and we  
2 could so indicate that. It could be after that time.

3 MR. WOODBURY: Mr. Chairman, we would be delighted  
4 to have you come at anytime. The pumps are the circulating  
5 water pumps for Indian Point 2?

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Reba 1

1 CHAIRMAN JENSCH: Yes.

2 THE WITNESS: These pumps are all operational at  
3 this time. We are operating two of them in a test configuration.  
4 The others can be started up for the purpose of Board visits.

5 We would not normally run them, except for testing purposes.  
6 So I think the Board can just indicate when it is most convenient  
7 for them and we will be able to accomodate them, sir.

8 CHAIRMAN JENSCH: How would April 5th sound as a  
9 tentative -- and let this be known on the record for all parties  
10 whose attorneys are here so that further notice need not be  
11 transmitted to them, and no notice will be given unless there  
12 is a change either at the request of the Applicant or some  
13 other party?

14 MR. MACBETH: Could we then set a time on the 5th?

15 CHAIRMAN JENSCH: Yes, we are going to do that.  
16 What time would be convenient? 9 o'clock on the 5th? Wait  
17 a minute. Excuse me. 1:30 we will spend the afternoon, if  
18 we could, there. Would that be agreeable?

19 THE WITNESS: May I just explore an alternate,  
20 and then we will come back to the fifth? I have a speaking  
21 appointment at Cornell on that day, to talk to the students  
22 and to the graduates about fish on the Hudson River.

23 CHAIRMAN JENSCH: We will change it.

24 THE WITNESS: But I could send an alternate for  
25 that. The 6th will be more convenient for me.

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Reba 2

1 CHAIRMAN JENSCH: We will make it the 6th, at 1:30.  
2 Is that all right.

3 THE WITNESS: Fine.

4 CHAIRMAN JENSCH: All right. Let's make it 1:30  
5 on the 6th.

6 THE WITNESS: We would hope that while you are there,  
7 you would have an opportunity to visit the Biological Labora-  
8 tory and talk to some of the scientists that are working there  
9 and see what the work is that is going on on the river.

10 CHAIRMAN JENSCH: We plan to spend all afternoon,  
11 and maybe we could easily include that. I am sure it would be  
12 very helpful to us to be able to do that. It is understood  
13 that the Board will not undertake this viewing of the pump  
14 operations and the visit to the biological laboratory without  
15 the opportunity given to all parties or their representatives  
16 to be present with us.

17 MR. KARMAN: I plan to be there, Mr. Chairman.

18 MR. MACBETH: I do, too, Mr. Chairman.

19 CHAIRMAN JENSCH: We will not have any conversations  
20 with the Applicant without the presence of such of the parties  
21 that are there.

22 MR. MACBETH: I appreciate it.

23 There is one brief matter I would like to comment  
24 on, Mr. Chairman.

25 MR. TROSTEN: We will send you a letter, Mr. Chairman,

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Reba 3

1 specifying the place where we gather and that sort of thing.

2 MR. KARMAN: Copies to us.

3 MR. GEYER: It will be sent to all parties.

4 (Laughter)

5 MR. MACBETH: I would like to respond to a rather  
6 exciting document entitled, "Response Positions of HRFA On  
7 Research Program Proposed by Con Edison."

8 I am very largely painted as the William Kuntzler  
9 of the Atomic Energy Commission. There is a constant reference  
10 to Mr. MacBeth's position and Mr. MacBeth's document. That  
11 hasn't been the typical style of the LeBoef, Lamb firm and I  
12 wanted to make it clear that the position I presented was the  
13 position of my clients, and if any suggestion has been made  
14 that I was for the first time representing myself instead of  
15 my clients, I would like to make it clear that that is not so.

16 Further, I did state that I sent the entire document  
17 to counsel for the Applicants, and there was no scurrilous  
18 attack on page 11 or 12 that they did not receive, and finally  
19 I will send them a citation from their brief on the Scenic  
20 Hudson case so that they can locate the quotation I referred to.

21 I hope that will be helpful to them.

22 CHAIRMAN JENSCH: I am sure it will be, if I can  
23 answer in their behalf. Is there any other matter we can take  
24 up?

25 MR. TROSTEN: No, Mr. Chairman.

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Reba 4

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

2 CHAIRMAN JENSCH: We do not have an opportunity to  
3 indicate to you just where the place will be, but let us plan,  
4 we will reconvene at 9 o'clock on April 9th at a place to be  
5 designated later by a formal order which will be transmitted  
6 to all parties and published in the Federal Register.

7 We will recess, at a place later to be designated  
8 on April 9, 1973, at 9:00 a.m.

9 (Whereupon, at 4:50 p.m., the hearing recessed,  
10 to reconvene at 9:00 a.m., Monday, April 9, 1973, at a place  
11 designated.)

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