

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

ORIGINAL

-----x
GENERAL PUBLIC UTILITIES CORPORATION, :
JERSEY CENTRAL POWER & LIGHT COMPANY, :
METROPOLITAN EDISON COMPANY and :
PENNSYLVANIA ELECTRIC COMPANY, :

Plaintiffs, :

-against-

: 80 CIV. 1683
(R.O.)

THE BABCOCK & WILCOX COMPANY and :
J. RAY McDERMOTT & CO., INC., :

Defendants. , :

-----x

Continued deposition of THE BABCOCK
& WILCOX COMPANY, by BERT M. DUNN, taken
by Plaintiffs, pursuant to adjournment,
at the offices of Kaye, Scholer, Fierman,
Hays & Handler, Esqs., 425 Park Avenue,
New York, New York, on Monday, March 23,
1981, at 9:55 o'clock in the forenoon,
before Joseph R. Danyo, a Certified
Shorthand Reporter and Notary Public within
and for the State of New York.



DOYLE REPORTING, INC.
CERTIFIED STENOGRAPHIC REPORTERS

369 LEXINGTON AVENUE
NEW YORK, N.Y. 10017

TELEPHONE 212 - 367-8220

8306290953 810323
PDR ADOCK 05000289
T PDR

A p p e a r a n c e s :

KAYE, SCHOLER, FIERMAN, HAYS & HANDLER, ESQS.
Attorneys for Plaintiffs
425 Park Avenue
New York, New York

By: RICHARD C. SELTZER, ESQ.
-and-
ANDREW MacDONALD, ESQ.,

of Counsel

DAVIS POLK & WARDWELL, ESQS.
Attorneys for Defendants
One Chase Manhattan Plaza
New York, New York

By: ROBERT B. FISKE, ESQ.
-and-
RODMAN W. BENEDICT, ESQ.,

of Counsel

* * *

1

2

B E R T M. D U N N, resumed, having

3

been previously duly sworn, was examined

4

and testified further as follows:

5

MR. SELTZER: I would like to remind
you, Mr. Dunn, that your testimony today,
of course, continues to be under oath.

8

Are you aware of that?

9

THE WITNESS: Yes.

10

MR. SELTZER: I would like to mark
as GPU Exhibit 101, a memorandum from Allen
Womack to Mr. Dunn dated April 6, 1979,
4:15 p.m., subject, "Loss of Feedwater
Plus Relief Valve Failure."

15

(Memorandum dated April 6, 1979,
4:15 p.m. from Mr. Womack to Mr. Dunn,
subject "Loss of Feedwater Plus Relief
Valve Failure" marked GPU Exhibit No. 101
for identification, as of this date.)

20

EXAMINATION (Cont'd.)

21

BY MR. SELTZER:

22

Q Is GPU Exhibit 101 a copy of a

23

memorandum which you received from Allen Womack
on or about April 6, 1979 in the regular course
of business?

25

Dunn

1

2

A I don't recall receiving it. I have no reason to doubt that I would have.

3

4

Q In the upper right-hand corner is the notation "Instruction No. 202." Do you see that?

6

7

A Yes.

8

Q What does that refer to?

9

A I can't be positive but at this particular time, there was a record keeping system which differed from our historical system at B&W in order to keep track of events and instructions and results during the course of the recovery effort from Three Mile Island. I would assume that that instruction number was reported in that system.

16

17

Q Who maintained those files?

18

A I don't know.

19

Q Where did you send materials that

20

were to be filed pursuant to that system?

21

A The filing was coordinated by other individuals, people who were essentially assigned to Allen's job 24 hours a day, and I would talk to those individuals to find out about response numbers or whether a response number was necessary,

22

23

24

25

Dunn

1

2

et cetera.

3

4

5

Q When you say "response number," do you mean instruction number or are you referring to a different filing system?

6

7

8

9

A No, I think it was all kept in the same filing system. I don't know if it was a response number or instruction number or it would have a different title.

10

11

12

Q What is a response number?

A If there was a response that we would write to an instruction.

13

14

15

16

17

18

Q Last week we marked two exhibits that related to notes of activities on the day of the accident. I believe at the top it indicated the routing to a B&W attorney who had the same name as a golfer. Who was that that it was routed to?

19

20

A Byron Nelson is one individual we identified. I don't know that it is a routing.

21

22

23

Q Let me show you a copy of GPU Exhibit 97, the last page, and ask you whether that is your handwriting?

24

25

A That appears to be my handwriting.

Q Could you read that, please?

Dunn

1
2 A "Get notes from Allen's meeting Wednesday
3 to Brian Nelson."

4 Q Do you believe that means that you
5 intended to get the notes from a Wednesday
6 meeting and send them to Mr. Nelson?

7 A Yes.

8 Q Let me show you GPU Exhibit 96 and
9 ask you if the notation at the top looks like
10 "Lou, one copy to Byron Nelson"?

11 A Yes, it does.

12 Q What day of the week was the Three
13 Mile Island accident, if you can recall? I show
14 you GPU Exhibit 96 which says "3-28-79 Bob Jones'
15 notes of Wednesday a.m. Womack meeting." Do you
16 see that?

17 A Yes, I see that. It would indicate that
18 the meeting was on Wednesday, and the accident was
19 the same day as that meeting.

20 Q What kind of documents or notes
21 were you asked to send to Byron or Brian Nelson,
22 whichever his name is?

23 A I don't know whether I was asked to send
24 notes to him or whether I volunteered them, but
25 the notes I was thinking about were Bob Jones' notes.

Dunn

1

2

Q Are you saying you don't think you

3

had any request to send notes to Mr. Nelson?

4

A No, I said I didn't know.

5

Q Had you had any prior dealings with

6

Mr. Nelson before the Three Mile Island accident?

7

A Not that I recall.

8

Q Do you have any information about

9

whether Nelson was collecting notes or anything

10

else written regarding the accident?

11

A Yes.

12

Q What is your understanding of what

13

he was collecting?

14

A When he met with me --

15

MR. FISKE: I think we had better

16

maybe rephrase the question.

17

MR. SELTZER: I will be very clear

18

so it doesn't impinge on the attorney-client

19

privilege.

20

MR. FISKE: Yes. I don't think

21

Mr. Dunn should have to testify to anything

22

that results from a communication with

23

Mr. Nelson. That is my only point.

24

MR. SELTZER: If Nelson asked him

25

to send papers, I would like to inquire

Dunn

1
2 what papers, particularly if they are not
3 papers created specifically for Mr. Nelson.
4 If people are sending him notes created
5 for other purposes, and Mr. Nelson is the
6 repository of them, I know we wouldn't
7 claim the attorney-client privilege for
8 those papers.

9 I am just trying to check all the
10 materials that were sent to Nelson, if
11 they are not attorney-client privileged,
12 the ones that we know about.

13 MR. FISKE: I understand what you
14 are trying to find out. I think we ought
15 to do it in a way that doesn't involve the
16 attorney-client privilege.

17 Q All I am trying to find out is
18 did Mr. Nelson, to your knowledge, collect other
19 writings that were created on or about the day of
20 the accident and which were not created just
21 for the purposes of attorneys?

22 MR. FISKE: I think you have got
23 two questions built in there. I don't
24 know whether Mr. Dunn can answer either
25 one or both of them. Maybe you ought to

Dunn

start with the first part of it.

Q I think you already told me you believed Mr. Nelson was collecting other writings regarding the accident, is that right?

A When I answered previously, I didn't really relate to the word "writing." I guess I had better have a conference with Bob on this just to be sure.

(Discussion off the record between the witness and his counsel.)

MR. FISKE: Just so we can cut through this, our position is going to be conversations between Mr. Nelson and Mr. Dunn were in the context of an attorney-client relationship. Mr. Nelson was acting as a lawyer for B&W in what he was doing. I would not object if you wanted to ask Mr. Dunn if he knows whether or not Mr. Nelson received any writings from anyone other than Mr. Dunn. He can answer that question.

I think when we hear the answer, then we can go on to something else.

Q What is the answer?

Dunn

1

2

A I don't know whether Nelson received writings from anybody else besides myself.

3

4

5

6

Q Did you supply anything to Brian Nelson other than a copy of Jones' notes of the Wednesday meeting in Allen Womack's office?

7

A I'm not sure.

8

9

10

Q Do you believe you gave him a copy of the notes which have been marked as GPU Exhibit 977

11

12

A That would be the only other possibility and I don't recall one way or the other.

13

14

15

16

Q Do you have any belief that others were asked to submit notes or memoranda that they had created or had in their possession regarding the accident?

17

A Yes.

18

19

Q What is your belief?

A I don't believe I can testify to that.

20

21

22

23

24

25

MR. SELTZER: Will you permit him to answer just yes or no whether he believes that Brian Nelson was receiving or had requested that others submit similar writings to Brian Nelson?

MR. FISKE: Yes, I thought he

Dunn

answered that already.

Q Except we are up to a very similar point where you said you didn't believe you could answer. With your counsel's permission, can you answer the last question?

MR. FISKE: I do object to Mr. Dunn testifying to any communication that he had with Mr. Nelson but I previously said we would not object to Mr. Dunn stating whether he knows whether Mr. Nelson collected any writings from anybody other than himself.

A I still can't answer the question.

Q Why can't you?

A Because the basis for the previous answer of yes, the answer on the belief, was provided me during the interaction with Mr. Nelson.

MR. SELTZER: Since we are merely trying to establish the existence of nonwork product, nonattorney-client privileged documents in Mr. Nelson's possession, could you unfetter the witness so that at least he can disclose what papers he believes may be in Nelson's

Dunn

file of that type?

I think even if he heard it from Nelson, I don't want to call Nelson to find out what files he assembled of a nonprivileged type, if Mr. Dunn knows what files Mr. Nelson has of nonprivileged material.

MR. FISKE: I don't think Mr. Dunn knows whether Mr. Nelson has any other writings, let alone what the circumstances might have been under which those other hypothetical writings may have been generated.

I think what you are really asking Mr. Dunn now is in the context of a communication between himself and Mr. Nelson.

MR. SELTZER: That is exactly right, except I just want to find out did Nelson say that "Your notes on the meeting are just one drop in the bucket. I have got thousands of memos like this, Mr. Dunn, from everybody in the company."

If he said something like that, I

Dunn

would like to find out about it. I don't think there is anything privileged about that.

MR. FISKE: I don't think I am going to let Mr. Dunn answer questions relating to his conversations with Mr. Nelson.

MR. SELTZER: I am not inquiring as to the substance of the conversations. I just want to find out whether Nelson has other nonprivileged documents. I can't see the prejudice to you in permitting this.

MR. FISKE: It seems to me there is a very simple way to find that out without getting into Mr. Dunn's communications with Mr. Nelson. It doesn't have to involve calling Mr. Nelson as a witness either.

I will be glad to discuss with you some way in which we can accommodate you on that, but I don't think we should have Mr. Dunn testifying on his conversations with Mr. Nelson or his understanding based on those conversations. It seems to me

Dunn

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

that opens up a whole problem area. If you ask him what is your understanding and his understanding is based on something that he learns in a privileged communication, basically you are opening up the communication.

MR. SELTZER: I will stipulate it is not a waiver of the privilege as to any other part of the communication.

MR. FISKE: I understand that, but I am going to still object.

MR. SELTZER: And instruct him not to answer?

MR. FISKE: Yes, on the grounds of privilege.

Q Have you talked with anybody else in the company who has said that they sent any other writing to Mr. Nelson?

A No.

Q Have you talked with Bob Jones about the fact that you sent Jones' memo to Nelson?

A It was Jones' notes, not his memo. No, I don't believe I talked that over with Bob.

Dunn

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

Q Do you know whether Bob Jones sent anything to Nelson?

A No, I do not.

Q After the accident, how soon did you meet with Nelson?

A The best I can do for you is a few days.

Q After the first meeting with him following the accident, did you meet with him again?

A I don't recall any such meeting.

Q In GPU Exhibit 101, Allen Womack asks you to "assemble a team of analysts to work in a directed and urgent fashion," et cetera.

Do you see that?

A Yes.

Q Had Womack previously made such a request to you or was this memo the first you had heard of this?

A I don't know.

Q The event which Allen Womack is asking your team to analyze is a "loss of main feedwater coupled with failure of the relief valve in the open position following its actuation by the normal pressure pulse."

Dunn

That sequence is the initiating sequence in the Three Mile Island accident, is that right?

A It is part of the initiating sequence at the Three Mile Island accident. Within the Three Mile Island accident initiating sequence, there is a specific reason for the loss of main feedwater.

Q Loss of main feedwater can be caused by a large variety of events, right?

A I would expect that there is more than one.

Q Did you assemble the team of analysts?

A Yes.

Q Were you the captain of the team? Were you heading the team?

A I think that it would be better to say that I was on top of the team or that the team reported to me but that the team was under the direct charge of other individuals.

Q The plays were being called from the sidelines?

MR. FISKE: I suggest that you rephrase.

Dunn

1

2

Q What do you mean you were on top of the team?

3

4

A There were a number of "teams" in existence at that time, a number of jobs we were trying to accomplish simultaneously and to a greater or lesser extent on each job, I was in charge of all of them.

5

6

7

8

9

Q Who was on the team of analysts to work on the job described in GPU Exhibit 101?

10

11

A The main analyst involved was Mr. Bill Bloomfield.

12

13

Q Who else was on the team?

14

A At this time, I don't recall specifically. Many people doing many things. The team existed but its members also had other responsibilities. I could give confusing testimony by speculation.

15

16

17

18

Q What unit was Bloomfield in at that time?

19

20

A He was in my unit.

21

Q What specifically was the analysis that Bloomfield and the other teammates were working on?

22

23

24

A I would think that that was characterized reasonably fully by the sentence in Allen's

25

Dunn

memo, a loss of main feedwater coupled with failure in an open position of the PORV," and we did two analyses at that time, one with one high pressure injection pump operating and one with two high pressure injection pumps operating, and I believe we also did one with no high pressure injection pump operating.

Q That would be three analyses?

A Right. The last one might not be exactly in that time frame.

Q What codes did you use for this analysis?

A We utilized a CRAFT code.

Q CRAFT-2?

A Yes.

Q How long did it take to run these analyses?

A I don't recall.

Q Approximately.

A I think we were able to achieve these results reasonably rapidly, so I would say four or five days.

Q What, if anything, was different about these analyses from analyses that had been

Dunn

performed prior to the Three Mile Island accident?
I will withdraw that.

At the time that Al Womack made this request to you, April 6, 1979, could you have gone back into work files of your ECCS Analysis Unit and found all three of the analyses which you have just said Bloomfield and others on this special team performed?

A I don't believe so.

Q What was there that was different about the special team's analyses that had not been performed before the Three Mile Island accident?

A They were computerized evaluations of a particular accident which we had previously considered to be bounded by other accidents.

Q Had you previously analyzed this break size with no high pressure injection pumps operating?

A No. That was a new analysis which would not be considered to be bounded by our previous works.

Q For the analyses that were done with one high pressure injection pump operating

2 and for the analysis with two high pressure
3 injection pumps operating, did the analyses of
4 the special team show any results which were in
5 any respect different from the bounding analyses
6 done before the Three Mile Island accident?

7 A Your question was were the two analyses
8 mentioned in Allen's memo, Exhibit 101, which
9 were loss of main feedwater with a stuck open
10 PORV and with one or two high pressure injection
11 pumps operating, did the analyses show anything
12 different from the previously performed
13 calculations?

14 MR. FISKE: The question was did
15 it show different results.

16 MR. SELTZER: That's right.

17 A The results were different. They did
18 not show results different from our expectations
19 for those type of events, but the details in the
20 evaluations were different.

21 Q In what respect were the details
22 different?

23 A The system fluid inventories did not
24 deplete remarkably. The pressurizer filled with
25 water which would not generally be the case,

Dunn

1
2 because the previous work was performed for
3 accidents within the piping as opposed to
4 accidents in the pressurizer.

5 That was pretty much it.

6 Q The bounding analyses that you
7 had done before the Three Mile Island accident
8 showed the smallest breaks occurring in piping
9 which was part of the reactor coolant system,
10 right?

11 A The bounding analysis that I talked about
12 earlier placed the accidents or the breaks in the
13 main reactor coolant system piping, yes.

14 Q For all of those breaks, the
15 response of the system was to show a drop in
16 pressurizer water level, isn't that right?

17 A Yes.

18 Q A rise in pressurizer water level
19 following the loss of coolant accident is
20 uniquely associated with a break in the steam
21 space at the top of the pressurizer, isn't that
22 right?

23 A I would say that is generally true but I
24 wouldn't pass on it as a law.

25 Q As you sit here today, do you know

Dunn

of any exceptions to that rule?

A Yes.

Q It is a fact, isn't it, to the best of your knowledge B&W had never analyzed a break at the top of the pressurizer prior to the Three Mile Island accident?

A Can I have that again?

Q I will rephrase it. It is a fact, isn't it, to the best of your knowledge, prior to the Three Mile Island accident, B&W had never analyzed a break located specifically at the top of the pressurizer?

A No, I don't believe that is true.

Q When had B&W specifically studied a break located at the top of the pressurizer?

A I have been led to understand that a study like that or in some fashion similar had been performed in approximately 1973.

Q Have you ever seen that study?

A I'm not sure.

Q You said you thought there was a loss of coolant accident break location other than the top of the pressurizer that could lead to rise in pressurizer water level. Where would that

Dunn

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

break be?

A It is more on the order of a break size dependency than a break location dependency. I believe the break could be anywhere within the reactor coolant system piping except the upper regions of the hot leg.

Q What size break causes a rise in pressurizer water level?

A That would be plant dependent for the 177 plants. It would be on the order of .01, perhaps as large as .02 square feet.

Q What are the mechanics of that break size that would cause a rise in pressurizer water level?

A The break is insufficient in size to relieve core decay heat energy directly. As a result, the steam generator, through a process of solid or two-phase natural circulation, is used to relieve excess energy.

 However, excess mass is being lost during the same time. The result is that the reactor coolant system depletes liquid inventory, builds steam inventory during the early phase of the accident. This steam at some time collects

Dunn

1
2 in the upper regions of the hot legs and blocks
3 natural circulation, removing momentarily the steam
4 generators as an energy removal mechanism,
5 resulting in a repressurization for a period of
6 time until a mode of operation termed boiler
7 condensor can be established.

8 During the repressurization, the
9 steam collecting in the upper regions of the
10 system would form a back pressure causing water
11 to surge into the pressurizer resulting in a
12 rising water level.

13 Q When for the first time did you
14 become aware of that phenomenon?

15 A The first time we demonstrated the
16 phenomenon was after Three Mile Island. Awareness
17 of the phenomenon predates Three Mile Island,
18 awareness of it as a possibility.

19 Q Who brought it to your attention,
20 directly or indirectly?

21 A It was contained in the report that Carlyle
22 Michelson gave us, and I am not sure whether that
23 was what brought it to our attention or not.

24 Q You got Carlyle Michelson's report
25 before the Three Mile Island accident, right?

Dunn

1

2

A Yes.

3

4

Q Did you see his report when it was
in its handwritten form?

5

A No.

6

Q Who gave you his report?

7

A Who gave me? Bob Jones.

8

Q How did Jones get it? Do you know?

9

A Bob received it from Project Management,
from Mr. Bob Liehtle.

11

Q Did Liehtle ask Jones to do anything

12

in response to Michelson's report as you have
heard it?

13

14

A As I have heard it, which was from Bob
Jones, we were asked to respond to the report.

15

16

Q In the transient that you have

17

described which is a break -- did you say .1 or

18

.01?

19

A .01.

20

Q -- .01 to .02 square feet, at some

21

point in the transient, there is a

22

repressurization of the reactor coolant system,

23

is that right?

24

A Yes.

25

Q That means that pressure is rising

Dunn

1
2 in the reactor coolant system?

3 A Yes.

4 Q As a result of that rising
5 pressure, water level is forced up in the
6 pressurizer?

7 A Yes.

8 Q So there is a point while the loss
9 of coolant accident is still in progress that
10 pressure in the reactor coolant system is
11 rising and pressurizer water level is rising,
12 is that right?

13 A Yes.

14 Q Did you know that, before the Three
15 Mile Island accident, the procedures drafted by
16 B&W for use in its simulator called for
17 termination of high pressure injection when the
18 operators detected both a rise in reactor coolant
19 system pressure and a rise in pressurizer water
20 level?

21 A No.

22 Q From the analyses which your unit
23 has done, what would happen if high pressure
24 injection were terminated at that point in the
25 transient?

1

Dunn

2

A The answer would be --

3

MR. FISKE: I am not sure I see the
relevance of this.

4

5

MR. SELTZER: If you don't see the
relevance of terminating high pressure
injection in response to a rise in
pressurizer water level as relates to the
Three Mile Island accident, then I don't
think words could help.

6

7

8

9

10

11

MR. FISKE: If it relates to the
Three Mile Island accident, it is obviously
relevant, but as I understand, you are
asking Mr. Dunn now about an analysis of
some other type of accident.

12

13

14

15

16

17

18

19

MR. SELTZER: No. I am trying to
find out what B&W knew about the transients
involving pressurizer water level rising
prior to the Three Mile Island accident.

20

21

22

23

24

25

Mr. Dunn has said that Michelson's
letter came in prior to the Three Mile
Island accident. Liehtle asked Jones to
follow up on it and get a response back.
Jones gave the report to Mr. Dunn and
Mr. Dunn says he thinks that is when he

Dunn

1
2 learned of that particular transient,
3 producing rising pressurizer water level,
4 and I am trying to pursue the extent of
5 B&W's analysis of this transient.

6 MR. FISKE: I don't have any
7 objection if you ask him that question.
8 In other words, what analysis did they make
9 back at that time. But I understood your
10 question to be something which is basically
11 asking for his opinion today.

12 MR. SELTZER: No. I think if you
13 hear the question, it is based on the
14 analyses which his unit has done of this
15 type of transient.

16 Q What would be the effect of
17 terminating high pressure injection at the time
18 that reactor coolant system pressure rose and
19 pressurizer water level is rising?

20 MR. FISKE: If the question is did
21 Mr. Dunn's unit analyze what the effect
22 would be of terminating HPI in this
23 particular transient, I have no objection.

24 MR. SELTZER: Maybe bounded by
25 other analyses they had done prior to that

Dunn

time.

MR. FISKE: My only point is that I think Mr. Dunn can properly answer if his answer is based on an analysis of this that he did at that time as opposed to some analysis you are asking him to make now.

Q I am just asking what your knowledge was from analyses performed prior to the Three Mile Island accident. I will say, limited to the analyses you did prior to the Three Mile Island accident, what would be the effect of terminating high pressure injection based on pressure rising in the reactor coolant system and water level rising in the pressurizer during the transient involving a break of a hundredth to two-hundredths of a square foot?

MR. FISKE: I have no objection to Mr. Dunn answering that if in fact they made that analysis at that time.

A Answering given the state of knowledge in B&W or my state of knowledge between the time of the Michelson memorandum or letter and March 28, 1979, we would have to review -- excuse

Dunn

1
2 me. We had reviewed it, and I would have to know
3 about any follow-on actions that might be
4 accomplished by the operator to answer your
5 question.

6 Q What follow-on actions would you need
7 to know?

8 MR. FISKE: Again, it seems to me
9 the only proper question is what analysis
10 was made back at that time.

11 MR. SELTZER: Right. He is
12 answering that. He says he needs to know
13 follow-on actions.

14 MR. FISKE: You mean what different
15 sets of follow actions were analyzed at
16 that time? That is really what you are
17 asking him. That would be the only proper
18 question. Whether they made an analysis
19 based on different types of hypothetical
20 follow-on actions.

21 MR. SELTZER: They may have done
22 analyses previously of the use of high
23 pressure injection to counteract loss of
24 coolant accident. If they have done
25 those analyses previously and had that

Dunn

1
2 analysis to apply to this situation which
3 Carlyle Michelson was bringing to their
4 attention, I want to know that also, if it
5 is an analysis done before the Three Mile
6 Island accident.

7 MR. FISKE: Just so we understand
8 each other, my point is that the only thing
9 that Mr. Dunn can properly answer, if he
10 can answer it, is whether they did in fact
11 make the analysis that you are asking
12 about now, not whether they had the
13 ingredients to make that analysis which
14 you are now asking him to make today.

15 MR. SELTZER: You are making him
16 look silly. You are making B&W look
17 silly.

18 MR. FISKE: That is an improper
19 statement.

20 MR. SELTZER: I think you are being
21 improper, if you will pardon me. I think
22 B&W and this man sure as heck know what the
23 implications are of terminating high
24 pressure injection during the loss of
25 coolant accident. I am sure that they

Dunn

knew it before the Three Mile Island accident.

I am just trying to find out the extent of their knowledge.

MR. FISKE: You have asked him about a very specific situation. I think --

MR. SELTZER: I think it is a subset of a lot of other things. Since it is just one example from a universe that he is very familiar with, and that was thoroughly analyzed before the Three Mile Island accident, we are not off into any Alice in Wonderland area here. This is fact. I am trying to find out what the fact of their knowledge was before the Three Mile Island accident.

MR. FISKE: That is fine. That is exactly what I am saying. Either they made this analysis or they didn't. If they made it, Mr. Dunn can testify about it.

MR. SELTZER: I will be thrilled either way. If B&W didn't know what the effect of HPI was during that type of loss of coolant accident, I will be just

Dunn

thrilled.

MR. FISKE: The object is not to thrill you. The object is to have proper questions at a deposition.

(The record was read back as follows by the reporter: "Question: What follow actions would you need to know?")

Q Do you want to make any statement based on your conference with counsel?

MR. FISKE: No, I think it is appropriate to proceed.

MR. SELTZER: I would point out in his answer he said he had reviewed it. I think it is very pernicious for you to have diverted us for a quarter of an hour about whether you are going to permit the witness to answer questions on what he had reviewed or not reviewed between the receipt of the Michelson report and the Three-Mile Island accident.

MR. FISKE: I would be very happy for him to tell you what it is he had reviewed.

Q What are the follow-on actions you

Dunn

1

2

need to know about?

3

4

5

A Whether or not the operator would have restarted high pressure injection when the conditions would obviously permit such action.

6

7

8

Q If high pressure injection were not reinitiated, what did your analysis show or predict would be the result?

9

10

11

12

13

14

15

16

17

A When I indicated "reviewed" before, the record would read as if I were making an admission that we had reviewed the consequences of this type of accident in conjunction with the termination of high pressure injection. That is not strictly correct. We reviewed the consequences of this accident and determined that this accident was, in our opinion, bounded by the previous licensing basis.

18

19

I think that means that I don't have a basis for answering your question now.

20

21

22

23

24

25

Q Let me see if I can supply a basis. From your ECCS analysis done before the accident, is a 0.01 square foot to 0.02 square foot pipe break a loss of coolant accident which is within the range calling for response by the high pressure injection system?

Dunn

1

2 A Yes.

3 Q That means according to your Three
4 Mile Island accident analyses that the initiation
5 and continued operation of high pressure
6 injection is required to cool the core effectively
7 in conformance with 10 CFR, Section 50.46, isn't
8 that right?

9 A Yes, I believe so.

10 Q According to your analyses done
11 before the Three Mile Island accident, if high
12 pressure injection were not supplied in response
13 to that specific size of loss of coolant accident,
14 there would not be effective mitigation of the
15 accident and effective core coolant, isn't that
16 right?

17 MR. FISKE: I think you have two
18 questions in there.

19 MR. SELTZER: Linking mitigation to
20 the accident and effective core coolant?

21 MR. FISKE: Yes.

22 MR. SELTZER: I think he used those
23 phrases in a conjunctive fashion in prior
24 testimony.

25 MR. FISKE: I don't know whether he

Dunn

1
2 did or didn't but I think they are two
3 separate things.

4 Could we have the question again.

5 (Record was read back.)

6 A Analysis supplied previous to March 28,
7 1979 assumed that at least one high pressure
8 injection system was operating during the course
9 of the transient. It further assumes slightly
10 larger breaks because these breaks had been
11 identified as the most challenging breaks to
12 the ECCS system.

13 We did not have an analysis in
14 place which could identify the minimum required
15 emergency core cooling system function or floor
16 rate with breaks size as an independent variable.

17 Q From your prior analysis, isn't it
18 a fact that you believed that maintenance of high
19 pressure injection flow from at least one high
20 pressure injection pump was necessary to
21 effectively cool the core following a hundredth
22 to two-hundredth of a square foot pipe break?

23 A I would believe that there would be times
24 during the accident in which some flow from the
25 high pressure injection system was necessary. I

Dunn

1
2 would believe that these break sizes were
3 sufficiently small that flow would not have to
4 be continuous.

5 Q From the analyses that you had
6 done before the accident, did you have information
7 that high pressure injection would be needed after
8 the point at which the hundredth to two-hundredth
9 square foot break would produce repressurization
10 of the reactor coolant system?

11 A That would have been the extrapolation we
12 would make.

13 Q So the answer is yes?

14 A Yes.

15 Q It is that repressurization which
16 produces the rise in pressurizing water level,
17 right?

18 A In that particular case, yes.

19 Q How far in advance of the Three Mile
20 Island accident did you get a copy of Carlyle
21 Michelson's report? Let me withdraw that and
22 try to take it in smaller steps.

23 The report that we are referring
24 to is one that has a title, as best you can
25 recall it, "Decay Heat Removal During A Very

Dunn

Small Break LOCA For A B&W 205-Fuel-Assembly PWR,"
right?

A I don't recall the title.

Q Is that generally --

A That sounds similar.

Q Did you receive a copy of that in
its typed-up form sometime after January 1978?

A On the copies of the Michelson report that
I have seen, there are dates for reception stamped
on it. I would go by those dates.

Q Do you recall that one of the items
which Carlyle Michelson stated in his report was
that a full pressurizer may convince the operator
to trip the high pressure injection pumps?

MR. FISKE: Could we have the
report? Could we show that to Mr. Dunn?

MR. SELTZER: I am asking him first
without showing it to him. He may have
some recollection of it.

A I recall that at least Michelson got close
to that fact, if not identifying it as specifically
as you mentioned it. I said fact. Let me correct
that to statement.

Q You were not a stranger to

Dunn

1
2 inappropriate termination of high pressure
3 injection following rise in pressurizing water
4 level, were you?

5 MR. FISKE: You mean as of the
6 time he saw the Michelson report?

7 MR. SELTZER: Right.

8 A That is true.

9 Q In fact, you had been very concerned
10 about the termination of high pressure injection
11 following rise in pressurizing water level when
12 that had been reported to you from the
13 Davis-Besse transient in 1977, right?

14 A I would rather say I was concerned about
15 the inappropriate termination of high pressure
16 injection and not so concerned about whether that
17 occurred because of high pressure water level or
18 some other mechanism.

19 Q The catalyst for your concern had
20 been the Davis-Besse transient, right?

21 A That's correct.

22 Q And the catalyst for your concern
23 in the Davis-Besse transient was that they
24 terminated it following a rise in pressurizer
25 water level, isn't that true?

Dunn

1

2

A Yes.

3

4

5

6

Q You knew that they had terminated it at Davis-Besse in response to rising pressurizer water level or that had been reported to you, right?

7

8

9

10

11

12

A I would like to back off on that one a little bit. I'm not sure whether the reason for termination at Davis-Besse was clearly reported as such or whether we assumed that that was the instigator in the operators to terminate high pressure injection.

13

14

Q Do you remember that you wrote a memo to Jim Taylor on February 9, 1978?

15

A Yes.

16

17

18

19

20

Q In that memo, GPU Exhibit 78, isn't it correct that you told Taylor, during the accident the operator terminated high pressure injection due to an apparent system recovery indicated by high level within the pressurizer?

21

A Yes, that seems to be a quote.

22

23

24

25

Q When you saw in Michelson's report that he was also onto the possibility that the operator might terminate high pressure injection in response to pressurizer water level, did you

Dunn

1
2 have any sense of deja vu?

3 MR. FISKE: I understand what you
4 are getting at but I think you can probably
5 rephrase the question.

6 Q Do you know what deja vu means?

7 MR. FISKE: I am not sure --
8 withdrawn.

9 A I believe that it refers to the feeling
10 that you have been somewhere before.

11 Q Exactly. Did you have that feeling
12 when you read Michelson's statement about the
13 possibility that the full pressurizer may convince
14 the operator to trip the high pressure injection
15 pumps?

16 A No.

17 Q Did you have any association with
18 your previously expressed concern over
19 inappropriate termination of high pressure
20 injection?

21 A Yes.

22 Q What was the connection that you
23 made when you read Carlyle Michelson's memo?

24 A I don't think it was reading the memo. I
25 was being briefed on the memo or the letter by

Dunn

Bob Jones. We recognized it as similar to our concerns which had occurred earlier. We agreed with him.

Q What do you mean "we agreed with him"?

A We said yes, the condition of the pressurizer should not be a condition for termination of high pressure injection.

Q Did you also agree with Carlyle Michelson that the condition of the pressurizer might convince operators to terminate high pressure injection?

A At that time, it appeared that that had happened at least once.

Q Did you agree with him that it may convince operators in the future to terminate high pressure injection?

A No.

Q Did you envision it as you discussed it with Bob Jones as a possibility?

A We felt that we had caused to be issued instructions which would not make it a possibility.

Q When you say "we" believed, who is the "we"?

1

Dunn

2

A Bob and I.

3

Q When you say "we had caused to be

4

issued instructions," what instructions are you

5

referring to?

6

A The recipe or the prescription contained

7

in my February 16th memo.

8

Q At the time that you and Bob Jones

9

were discussing the Carlyle Michelson report,

10

this was before the Three Mile Island accident,

11

right?

12

A Yes.

13

Q Did you and Bob discuss with one

14

another then the fact that you believed your

15

recipe had been sent on?

16

A I don't specifically recall such a

17

discussion so I had better stick to my position

18

on it. I believed I had caused such a recipe to

19

be sent out or to have been sent out in the

20

normal course of business.

21

Q If I asked you this just three

22

minutes ago, if I have, just remind me that I

23

have. Are you saying then when you read

24

Michelson's statement that a full pressurizer may

25

convince the operator to trip the high pressure

Dunn

1
2 injection pump and watch for a subsequent loss
3 of level, are you saying when you read that you
4 didn't believe that it was likely that the
5 operator would trip high pressure injection in
6 response to a full pressurizer because you
7 believed he would have received your February 1978
8 recipe?

9 A I believe we had covered the situation
10 and that either my instructions were going to be
11 issued or had been issued or that they were
12 essentially already in place.

13 Q So was it your belief at the time
14 you read Michelson's statement which we just
15 quoted that either your instructions had been sent
16 out or that similar instructions were already
17 in place and that therefore the operator would
18 not be convinced by a full pressurizer to
19 terminate high pressure injection?

20 MR. FISKE: Could I have the
21 question again.

22 (Record was read back.)

23 A Or that they were going to be sent out
24 very reasonably soon.

25 Q So it was because you believed that

Dunn

1
2 either your instructions had been sent out or
3 that they were going to be sent out very soon or
4 that very similar instructions were already in
5 the hands of operators that it was therefore not
6 likely that an operator would be convinced by a
7 full pressurizer to terminate high pressure
8 injection? Was that your view at the time you
9 read Michelson's statement on page 26?

10 A Yes.

11 MR. SELTZER: I would like to mark
12 as GPU Exhibit 102, a typed copy of the
13 Michelson report entitled "Decay Heat
14 Removal During A Very Small Break LOCA
15 For A B&W 205-Fuel-Assembly PWR," January
16 1978.

17 (Typewritten document entitled
18 "Decay Heat Removal During A Very Small
19 Break LOCA For A B&W 205-Fuel-Assembly
20 PWR, C. Michelson, January 1978" marked
21 GPU Exhibit No. 102 for identification,
22 as of this date.)

23 Q Is GPU Exhibit 102 a copy of
24 Carlyle Michelson's report or letter to which
25 you have been referring in your recent testimony?

2

A It seems to be similar. It is not the copy that I have been referring to. It may be identical.

4

5

Q Would you turn to the page that

6

is numbered 26 in the upper right-hand corner.

7

Do you see the second full paragraph beginning,

8

"The full pressurizer"?

9

A Yes.

10

Q Does that contain the statement that

11

we were referring to earlier, namely, "A full

12

pressurizer may convince the operator to trip

13

the high pressure injection pump and look for a

14

subsequent loss of level"?

15

A Yes.

16

Q In discussing Michelson's report with

17

Bob Jones, did Jones say anything to you about

18

this quoted statement on page 26?

19

A I don't know whether Jones had been

20

referring to this particular sentence or section

21

of the report or to other sentences or sections

22

of the report which we had, but he did mention that

23

Michelson had drawn a connection between

24

pressurizer level and termination of high pressure

25

injection.

2 Q Was Jones' statement to the effect
3 that Michelson had drawn a relationship such that
4 Michelson was predicting a rise in pressurizer
5 water level may induce an operator to terminate
6 high pressure injection? Is that the substance
7 of what Jones said to you?

8 A I believe so.

9 Q As best you can recall, what did
10 Jones say to you, in words or substance, about this
11 particular point being raised in Michelson's
12 report?

13 A In substance, it was that Michelson had
14 pretty much uncovered the same concern we had
15 relative to management of high pressure injection,
16 that Michelson saw it in relationship to pressurizer
17 level whereas we saw it a little more globally
18 than that.

19 Q You already testified that you had
20 talked with Bob Jones about your instructions for
21 operating high pressure injection which you also
22 called your recipe. Did Jones say anything to you
23 about your instructions or recipe in connection
24 with Carlyle Michelson's expressed concern over
25 termination of high pressure injection?

2 A That is what I was trying to be careful
3 with earlier. I don't recall whether he did or
4 did not.

5 Q After he said to you, in substance,
6 "Carlyle Michelson is on to the same thing that
7 we were on to," namely, he spotted the proclivity
8 for terminating high pressure injection in
9 response to a rise in pressurizer water level,
10 what, if anything else, did Jones say to you about
11 Michelson having spotted this?

12 A I think I would like to take out of the
13 answer the word "proclivity," but further than
14 that, I do not know that we discussed it very
15 much. At any rate, I do not recall.

16 Q What, as best you can recall, did
17 you say to Bob Jones about Carlyle Michelson
18 having spotted this same concern that you had
19 identified earlier?

20 A I do not believe I can recall that either.

21 Q Did you say anything like, "He is
22 not going to get the Nobel Prize for this, we
23 already discovered that"?

24 MR. FISKE: I think he is being
25 facetious.

2 A To be facetious back, I might have.

3 MR. FISKE: This is not a time to be
4 facetious.

5 Q Did you say to Jones that "This is
6 something that we were on to, had known about
7 before Michelson wrote it up"?

8 A I don't know whether I said that or not.

9 Q Do you believe that you did?

10 MR. FISKE: Again, if you are talking
11 about a recollection, that is all right.

12 MR. SELTZER: Right.

13 A No, I do not recall.

14 (Recess taken.)

15 BY MR. SELTZER:

16 Q When you say Michelson's report
17 in which he was concerned about termination of
18 high pressure injection in response to a full
19 or rising pressurizer, did you take any steps
20 to try to determine whether your instructions had
21 been sent out yet?

22 A No.

23 Q Did you talk to anyone about whether
24 your instructions had been sent out?

25 A Not that I recall.

2

Q Did you send a follow-up memo to

3

anyone to see if your instructions had been sent

4

out?

5

A Not that I recall.

6

Q Before the Three Mile Island

7

accident, did you have any conversations with

8

anybody in Training to tell them about the

9

analysis that had been done of a particular small

10

break which showed rising reactor coolant system

11

pressure and rise in pressurizer level while the

12

loss of coolant accident was still in progress?

13

MR. FISKE: I think there may have

14

been a little confusion here and I am happy

15

to have Mr. Dunn clarify it, if it needs

16

clarification, but my notes indicate that

17

he did not say that they had made an

18

analysis of that. He said that they first

19

demonstrated it after the Three Mile

20

Island accident.

21

He was aware of it as a possibility

22

before Three Mile Island. And it was

23

brought to his attention possibly, among

24

other places, by the Michelson report.

25

There was testimony about analyses of

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

various sizes of small breaks in reference to bounding analyses but either they made the analysis or they didn't, and I will be happy to have him answer. But there may be a little confusion in the record.

Q What was there in Michelson's report that had brought to your attention the fact that a break of the one-hundredth to two-hundredths of a square foot size would result in repressurization of the reactor coolant system and rise in pressurizer water level?

Since you have got the report in front of you, could you show us where in the report that is demonstrated?

A First off, I am not sure that Michelson's report relates to the size. The testimony I gave relative to the size was based on work following Three Mile Island. In reviewing this particular report today, it would seem that it is at least mentioned in Section 3.2 titled "Transition from Natural Circulation to Pool Boiling."

Q Was that statement by Carlyle Michelson, namely, that there would be pressurization in the reactor coolant system and

2 rising pressurizer water level consistent with
3 the understanding that you had then of responses
4 in the reactor coolant system?

5 (Record was read back.)

6 Q I will withdraw that question.

7 When Michelson brought to your
8 attention through his report the fact that breaks
9 of this one-hundredth to two-hundredth square foot
10 size could lead to rising reactor coolant system
11 pressure and rise in pressurizer water level, was
12 he bringing certain analyses together that you
13 had previously not seen brought together before?

14 MR. FISKE: I object to the form
15 of the question. I think you started with
16 a reference to the break of a specific
17 size which Mr. Dunn said was not referred
18 to, I believe.

19 THE WITNESS: Now I would like a
20 repeat of the question.

21 (Record was read back.)

22 A As mentioned by my attorney, I do not know
23 that Michelson dwells on the particular break size.
24 Additionally --

25 Q I will modify it to say breaks of

2 about that size.

3 A Additionally, it does not in my mind appear
4 clear today that the Michelson paper connects the
5 repressurization with rising pressurizer level and,
6 third, our conclusion on the Michelson report
7 was that there was nothing new or unusual about it
8 and that it was consistent when it wasn't wrong
9 with our analysis base line for the 205 plants.

10 Q Let me focus on what your attorney
11 has helpfully contributed to the dialogue. He
12 reminded me that you did not testify that you had
13 done any analysis which showed rising pressurizer
14 water level and rising reactor coolant system
15 pressure in response to certain size small breaks
16 prior to the Three Mile Island accident but merely
17 you testified that it had been brought to your
18 attention before the Three Mile Island accident.

19 Am I correctly rephrasing your
20 earlier testimony?

21 A My earlier testimony allowed that this was
22 one of the things which could have brought that to
23 my attention or would have brought that to my
24 attention, but that I did not really recall when
25 we became aware of this type of an event.

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

Q You pointed out where Michelson discusses system behavior in response to small size breaks. What other sources of information did you have before the Three Mile Island accident regarding small breaks leading to rising reactor coolant system pressure and pressurizer water level?

A We had our general state of knowledge about the mechanisms involved in small break loss of coolant accident developed from rather extensive computer analysis generally performed at larger breaks.

Q Did any of that general knowledge include the knowledge that there were breaks which would produce rising pressurizer water level and increasing reactor coolant system pressure?

A I don't believe any of those specific accidents had that as a result but that would not mean that such a result is inconsistent with our methods or understanding.

Q I am not looking for whether things are merely consistent or inconsistent with prior understanding. I am asking now whether you

2 actually discovered or knew that there were breaks
3 which would create rising RCS pressure and rising
4 pressurizer water level before you got Michelson's
5 report?

6 A I testified previously that the first time
7 that we had demonstrated such an accident was
8 after Three Mile Island. I also testified that
9 Michelson's paper alludes to the possibility of
10 these events and that it may have been the first
11 indication. I don't recall whether it was or not.

12 Q Whether it was or not, it is your
13 testimony that prior to the Three Mile Island
14 accident, you were aware of break sizes which would
15 lead to rising reactor coolant system pressure and
16 rising pressurizer water level, is that correct?

17 A We were aware of the possibility.

18 Q When you say "aware of the
19 possibility," do you mean --

20 MR. FISKE: I think it might be
21 helpful if the "we" could be clarified.
22 You are throwing this word "we" around.

23 MR. SELTZER: Don't accuse me of
24 throwing it around.

25 MR. FISKE: I don't know whether it

2

started in a question or answer, but it

3

has been batted back and forth a couple of

4

times. I think it might be clearer to talk

5

of Mr. Dunn personally first.

6

MR. SELTZER: I assume he means the

7

B&W Company and any branch -- I assume it

8

is the people that he converses with on

9

ECCS analysis.

10

Let me clear it up.

11

Q You have testified about what

12

could happen. Isn't it a fact that before the

13

Three Mile Island accident, you had an

14

understanding that you formed from things you

15

read, things you heard, that for a particular

16

range of small break loss of coolant accidents,

17

there would result in B&W type plants a rising

18

reactor coolant system pressure and a rising

19

pressurizer water level at sometime during the

20

transient? Isn't that right?

21

A The word "we" refers to key ECCS analysis

22

personnel, myself, Bob Jones, lead engineers in

23

the analytical function of ECCS. Prior to Three

24

Mile Island, our expectations were as follows for

25

accidents in this size range.

2 Q Which size range?

3 A Let's put it in terms of numbers. .01 to
4 .02.

5 Q Square feet?

6 A Square feet. The real definition would be
7 associated with energy flow within the system.
8 First, it was possible that mechanisms would set
9 up within the primary system to create a
10 repressurization for some period of time.

11 Second, that we did not expect
12 those mechanisms to set up.

13 Third, that if they did set up, they
14 would correct themselves within a finite period of
15 time and there would not be any challenge to
16 the coolant of the core if a repressurization
17 event occurred.

18 Q You have said that those were the
19 expectations of the key personnel in the ECCS
20 Analysis Unit prior to the Three Mile Island
21 accident, is that right?

22 A Yes.

23 Q You said "We didn't expect those
24 mechanisms to set up." Why didn't you expect --
25 "those mechanisms" refers to repressurization, is

2 that right?

3 A No.

4 Q What does it refer to?

5 A It refers to the fluid mechanics which
6 allow repressurization to occur.

7 Q Why didn't you think that you were
8 going to get the steam blocks in the hot and cold
9 legs that would lead to the repressurization?

10 A The 177 plants spray the auxiliary feedwater
11 into the steam generator at a very high location.
12 We visualized that at the time that sufficient
13 steam had been accumulated in the upper regions
14 of the hot legs to block natural circulation.
15 The inventory at that time would already be
16 conducive to the boiler condensor mode of operation
17 and although we would stop liquid overflow, they
18 would still be exchanging heat to the steam
19 generator. Thus, the mechanism for energy transfer
20 would change but not the energy transfer process.

21 Q You did analyses of this break size
22 after the Three Mile Island accident, right?

23 A Yes.

24 Q What, if anything, did those analyses
25 show regarding whether these mechanisms could set

2 up, as you call it?

3 MR. FISKE: You are talking of the
4 177 plant?

5 MR. SELTZER: No, I am talking of
6 the steam block in the hot leg, as he just
7 testified to.

8 A Those analyses again showed that it was
9 possible to undergo a repressurization event and
10 that with the present computer simulation
11 techniques and a given physical description of
12 the plant to the computer, a repressurization would
13 be computed.

14 Q So your post-TMI accident analyses
15 showed that you could have a mechanism by which
16 a one-hundredth to two-hundredth square foot pipe
17 break would lead to system repressurization?

18 A To answer the question in terms of the
19 plant, we have to deal with the subject of the
20 state of the art in phase separation. I would
21 say that those analyses indicated that if such an
22 event were of critical importance, then it would
23 have to be dealt with as a real possibility.

24 Q Are you saying that the post-TMI
25 accident analyses showed that repressurization

2 was a real possibility and that it would take
3 further analysis to determine whether it would
4 occur and under what circumstances it would occur?

5 A No.

6 Q Then you lost me.

7 A What I am saying that those analyses showed
8 was that with the existing state of the art
9 primarily in terms of phase separation, also in
10 terms of the degree of the accuracy with which
11 we model certain heat sources, it was not possible
12 to show that they did not exist, a repressurization
13 did not exist, and thus the repressurization would
14 have to be dealt with, if it was important.

15 Q Now you testified that among the
16 expectations of the ECCS Analysis Group before
17 the accident was the expectation that even if this
18 mechanism did set up and there was repressurization,
19 there would be no challenge to the coolant of the
20 core?

21 A Yes.

22 Q That expectation rested on the
23 continued use of high pressure injection following
24 repressurization, isn't that right? In other words,
25 coolant of the core following repressurization

2 required continued operation of the high pressure
3 injection system, isn't that correct?

4 A No, I don't believe so.

5 Q Are you saying that if high pressure
6 injection were terminated at the point of
7 repressurization, were not reactivated, that the
8 core would remain effectively cooled?

9 A No. You used the word "continuous."

10 Q That is then the key phrase. When
11 you said in your expectation there was no challenge
12 to the coolant of the core if repressurization
13 occurred, isn't it a fact that you were assuming
14 that there would be no termination without
15 reactivation of the high pressure injection system
16 at the point of repressurization? Didn't you make
17 that assumption either explicitly or implicitly?

18 A We had in our evaluations the assumption
19 that if the critical breaks, those that
20 challenged the ECCS system the most, the high
21 pressure injection flow from one system would be
22 continuous from the point of the initial
23 activation of the ECCS systems.

24 Q Prior to the Three Mile Island
25 accident, did you ever tell anyone in Training

2 that you had discovered or learned of a small
3 break loss of coolant accident in which reactor
4 coolant system pressure rose at the same time that
5 the pressurizer water level went up?

6 A Prior to Three Mile Island, we had allowed
7 that condition as a possibility.

8 Q Your counsel would probably want
9 to know who is the "we."

10 A I had allowed that condition as a
11 possibility. I had not considered it a
12 probability. I recall I had not made any such
13 communication to people in Training.

14 Q Carlyle Michelson's report, which
15 documented that possibility, did not spur you to
16 communicate that state of fact or that phenomenon
17 to anyone in Training?

18 A No.

19 Q Prior to the Three Mile Island
20 accident, did you communicate that possibility or
21 that state of fact to anybody who was responsible
22 for drafting procedures for operating B&W nuclear
23 plants?

24 A Not that I recall.

25 (Luncheon recess - 12:30 p.m.)

(AFTERNOON SESSION)

(Date: March 23, 1981)

(Time noted: 2:30 p.m.)

B E R T M. D U N N, resumed, having been previously duly sworn, was examined and testified further as follows:

MR. SELTZER: I would like to mark as GPU Exhibit 103, a letter from James Taylor to R. J. Mattson of the NRC dated April 30, 1979, subject "Babcock & Wilcox Company's Commitments." There are a number of attachments to the exhibit.

(Letter dated April 30, 1979 from James Taylor to R. J. Mattson of the Nuclear Regulatory Commission re "Babcock & Wilcox Company's Commitments" with attachments marked GPU Exhibit No. 103 for identification, as of this date.)

EXAMINATION (Cont'd.)

BY MR. SELTZER:

Q In the lower left-hand corner of the first page, a bcc is indicated for, among others, B. M. Dunn. If you need to, would you take a minute to look through GPU Exhibit 103 and

1
2 confirm whether this appears to be a copy of
3 correspondence which you received on or shortly
4 after April 30, 1979?

5 A It is.

6 Q Were you aware that in April 1979
7 B&W made various commitments to the NRC to perform
8 additional analyses?

9 A Yes.

10 Q In the next to the last line of the
11 first paragraph of Mr. Taylor's transmittal letter,
12 he refers to "very significant work effort required
13 in connection with the small break guidelines and
14 procedures."

15 Were you involved in that very
16 significant work effort?

17 A I believe so.

18 Q Would you turn to Attachment 1.
19 The first page of text in Attachment 1 is entitled
20 "B&W Analytical Commitments Responsive to NRC
21 Staff Safety Concerns Identified in 'NRR Status
22 Report on Feedwater Transients in B&W Plants' of
23 April 25, 1979." The first commitment is
24 described as "A. Perform calculations, worst-case
25 break without auxiliary feedwater for 30 minutes."

1

2

Did you work on that commitment?

3

A The commitment was worked on by ECCS

4

Analysis.

5

Q Was that under your supervision?

6

A Probably not directly.

7

Q In the analyses that you had done

8

before the Three Mile Island accident, had ECCS

9

Analysis analyzed transients involving loss of

10

main feedwater?

11

A Yes.

12

Q To your knowledge, before the

13

accident, the loss of main feedwater was an

14

anticipated operating occurrence, isn't that

15

right?

16

A I do not know.

17

Q From the work that ECCS Analysis

18

was doing, did you expect that during the life of

19

B&W nuclear plants each plant would be subjected

20

to a loss of main feedwater?

21

MR. FISKE: I wouldn't have any

22

objection to that if you asked him did he

23

assume that for the purposes of their

24

analysis.

25

MR. SELTZER: I will ask that as a

1
2 preliminary question.

3 Q Did you assume in your pre-TMI
4 analyses that B&W plants would experience a loss
5 of main feedwater during their operating life?

6 A No.

7 Q Before the Three Mile Island
8 accident, had you seen any reports that showed
9 the frequency of particular transients on B&W
10 plants?

11 A I don't recall any at this time.

12 Q Had you seen any studies of the
13 expected frequency of transients occurring at
14 B&W plants?

15 A Again, I don't recall any at this time.

16 Q To the best of your recollection,
17 your study of transients was unaided by any
18 studies on the frequency with which particular
19 transients would occur?

20 A I don't think I testified positively that
21 it was expected transients were ever dealt with
22 in ECCS Analysis. By and large, we dealt in the
23 licensing basis, with the design basis of the plant,
24 and that was specified to us in a number of cases
25 in a number of ways and most frequently we would

2 take the most limiting assumption.

3 Q How was that design basis conveyed
4 to you?

5 A In some cases, it was the historical
6 exchange with the NRC. In other cases, it is
7 explicitly documented in the rules and regulations
8 such as 10 CFR 50.46, Appendix K.

9 Q Since the Three Mile Island
10 accident, have you ever expressed to anyone you
11 felt there was excessive emphasis before the
12 accident on studying the design basis accidents
13 rather than on more probable types of accidents?

14 A Only relative to generation of operator
15 guidelines.

16 Q What did you say relative to the
17 generation of operator guidelines?

18 A That guidelines should be based on
19 realistic circumstances with realistic expectations
20 for performance of systems and should utilize to
21 the maximum possible, with options in mind, the
22 hardware that is actually in existence in a plant.

23 Q To whom did you express that?

24 A It is a growing expression, and to the
25 people involved in the generation of the small

2 break operator guidelines, to the people
3 associated with the ATOG programs.

4 Q Since the Three Mile Island
5 accident, have you seen a development at B&W of
6 guidelines based on realistic circumstances with
7 realistic expectations for performance of systems?

8 A Yes.

9 Q To the best of your knowledge, did
10 any such guidelines for operation of the plant
11 following small break LOCA's exist before the
12 Three Mile Island accident?

13 A I do not know.

14 Q When you say the guidelines should
15 be based on realistic circumstances, what do you
16 mean by the phrase "realistic circumstances"?

17 A There are a number of items contained
18 within the evaluation for the licensing basis that
19 are rather unlikely. Although some of these
20 should perhaps be treated as options within
21 guidelines, some of them are best not treated at
22 all.

23 Q You are talking of operating
24 guidelines?

25 A Yes.

2 Q Why did you feel they should not
3 be covered at all?

4 A The operator guidelines, the operational
5 guidelines, should attempt to create the best
6 accident follow-on activities possible with the
7 equipment as it exists that day. It would be
8 possible to be precluded from taking the best
9 actions if you allowed some of the licensing
10 basis assumptions to play too meaningful a role.

11 Q Could you give me a good example
12 of what you are referring to?

13 A I can tell you about an assumption that I
14 don't believe should be used in the operating
15 guidelines. I don't know that I can extract the
16 implications. I would not recommend the
17 utilization of a 20 percent decay heat factor in
18 constructing operator guidelines.

19 Q Is the 20 percent decay heat factor
20 something that comes from design basis analysis?

21 A Yes.

22 Q Had it been incorporated in earlier
23 operating procedures before the development of
24 the small break guidelines?

25 A I don't know.

2 Q When you were working on the small
3 break guidelines, to what extent did you review
4 any of the prior procedures drafted by B&W?

5 MR. FISKE: I think I object to the
6 form of the question.

7 A Within the task force assigned to generate
8 the operating guidelines, there was represented
9 people who had cognizance of those procedures.
10 The task group itself did not delve heavily into
11 previously existing procedures.

12 Q From time to time during your work
13 with the group that was developing the new small
14 break guidelines, did you see portions of the
15 earlier procedures created by B&W?

16 MR. FISKE: Same objection as to
17 form.

18 A I don't recall whether we did or not.

19 Q At the time you were working on the
20 additional calculations requested by the NRC in
21 the aftermath of Three Mile Island, you knew, did
22 you not, that the auxiliary feedwater system in
23 B&W's 177 plants other than Davis-Besse were not
24 safety grade systems, did you not?

25 A Yes.

2

Q Had you ever in your unit analyzed worst-case breaks where there was a loss auxiliary feedwater?

4

5

A Would you give me a time frame, please.

6

Q During the time you were Manager of ECCS Analysis.

7

8

A Yes.

9

Q What additional work was done to perform the calculations described in I-A on the third page of GPU Exhibit 103?

10

11

12

A This is one of the analyses I had in mind in response to your question.

13

14

MR. FISKE: I think he meant, and

15

I was assuming he meant, had this analysis been done before.

16

17

THE WITNESS: That is why I asked

18

for a time frame.

19

Q What I was asking is what, if anything, was being added by this I-A calculation that hadn't been done in calculations before the Three Mile Island accident?

20

21

22

23

MR. FISKE: Would it be helpful

24

to go back and ask the earlier question

25

putting it in the time frame before the

2

Three Mile Island Accident?

3

I think there was a misunderstanding.

4

Q Before the Three Mile Island

5

accident, had you performed worst-case break

6

calculations without auxiliary feedwater?

7

A I'm not sure.

8

Q Isn't it a fact that B&W I on GPU 103

9

assumed auxiliary feedwater was available?

10

A The license base available for these plants

11

assumed availability of auxiliary feedwater.

12

Q Is it also correct that ECCS Analysis

13

assumed that auxiliary feedwater was available in

14

its calculations done before the Three Mile Island

15

accident? Are you saying, in other words, that

16

because the licensing basis assumed it was

17

available, ECCS Analysis assumed it would be

18

available?

19

A For the most part. We may have considered

20

it and I don't recall considering it today.

21

Q Prior to the Three Mile Island

22

accident, did you ever question the basis for

23

assuming that a nonsafety grade system would be

24

available during any loss of coolant accident?

25

A Yes.

2 Q With whom did you raise such
3 question?

4 A At least once with my boss.

5 Q Which boss?

6 A Mr. Charles Parks.

7 Q When was that? Would it have to be
8 prior to 1975?

9 A Yes, it would be prior to 1975. Sometime
10 between 1975 and 1974.

11 Q What was the context in which you
12 raised that question?

13 A In the context of whether or not we were
14 performing the appropriate analyses.

15 Q Were you raising a basic concern
16 which you had about whether analyzing ECCS matters
17 solely in terms of the design basis accident was
18 an appropriate way to proceed?

19 A No.

20 Q What was your concern, as you
21 expressed it?

22 A In most all other areas, the design basis
23 for the ECCS systems performance considered only
24 safety grade equipment. I didn't understand why
25 it didn't here.

2

Q Did Mr. Parks have any satisfactory response, as far as you were concerned?

3

4

MR. FISKE: I think I object to the form of that question. I don't object if you ask him what his response was.

5

6

7

Q What was his response?

8

A That the question had historical precedents at all plants in the United States that the first-round commercial plants of any vendor were in a similar situation and that we would continue to license on that basis.

9

10

11

12

13

Q Had you put your question in writing?

14

A I don't remember. I don't think so.

15

Q It is a fact, isn't it, that you

16

have discussed with others your perception that

17

before the Three Mile Island accident, B&W had

18

been designing nuclear plants with NRC

19

licensability in mind rather than focusing

20

primarily on designing the plants for safety?

21

Isn't that a fact?

22

A No, I do not believe so.

23

Q Haven't you told others at B&W

24

that you believed there was excessive focus on

25

designing B&W plants to meet NRC licensing

2 criteria?

3 A I do not believe I have expressed that.

4 Q Have you ever heard anyone else
5 express that or seen that expressed in writing?

6 A I do not know.

7 Q Did you ever express the view to
8 anyone that prior to the Three Mile Island
9 accident, you did not believe that B&W had the
10 proper attitude towards safety?

11 MR. FISKE: Could I hear the question
12 again.

13 (Record was read back.)

14 Q In other words, the expression can
15 be to anyone at any time but what I want to focus
16 on is did you ever say that the attitude of B&W
17 as it existed prior to the Three Mile Island
18 accident was such that there wasn't a sufficient
19 concern for safety?

20 MR. FISKE: The question is whether
21 there was an attitude that there was not
22 a sufficient concern for safety?

23 MR. SELTZER: Did he ever express
24 the view to anyone that B&W's attitude
25 toward safety as it existed prior to the

2

Three Mile Island accident was not as good
as it should have been.

3

4

A I wrote words to that extent at one time
but I did not mean them in the confining sense
you have used them.

5

6

7

Q What confining sense do you
understand I am using them?

8

9

A You are specifying B&W.

10

11

Q Did you ever talk about that subject
with anyone?

12

MR. FISKE: The subject of what?

13

14

Q B&W's attitude toward safety as it
existed before the Three Mile Island accident.

15

A Yes.

16

Q With whom did you discuss it?

17

18

A Excuse me. I talked about the attitude
toward safety that I had indicated at one time
which I did not mean to be limited to B&W. I have
not talked to anybody with the specific constraint
of the limitation to being at B&W.

19

20

21

22

Q Do you have any personal experience
with the ECCS Analysis work done at Combustion
Engineering?

23

24

25

A Yes.

2

Q Have you met with people from

3

Combustion Engineering to discuss ECCS Analysis

4

problems?

5

A No.

6

Q Have you met with people from

7

Westinghouse to discuss ECCS Analysis problems?

8

A Yes.

9

Q Who?

10

A Vince Esposito.

11

Q What is Vince's position?

12

A I'm not sure I can give you a title but

13

I think it is similar to mine.

14

Q Did you think that Vince didn't have

15

a good enough attitude towards safety?

16

MR. FISKE: I object to that, the

17

form of that question.

18

MR. SELTZER: I am trying to find

19

out what the basis was for Mr. Dunn's

20

statement two minutes ago that he wasn't

21

limiting his view regarding an insufficient

22

attitude towards safety just to B&W. I am

23

trying to find out whom else he believed

24

didn't have a sufficient attitude towards

25

safety.

2

Q Do you believe Westinghouse didn't

3

have a sufficient attitude towards safety?

4

MR. FISKE: I don't know -- you put

5

the word "sufficient" into the question.

6

I will let him answer it just so that we

7

can get on with this line of inquiry but I

8

object to the form of the question because

9

I don't think he said that.

10

A How long has the word "sufficient" been in

11

prior discussion? I thought we started out

12

questioning the attitude towards safety.

13

Q Why don't we get out GPU Exhibit 12

14

where you wrote to Allen Womack and said something

15

about the attitude towards safety.

16

Let me suggest for openers, since

17

this is your handwriting, in some places where

18

your calligraphy may not be so clear that it would

19

help if you read your memo for the record starting

20

with the box at the top.

21

A "To: A. E. Womack. From" --

22

Q To whom?

23

A Excuse me. "E. A. Womack. From: B. M.

24

Dunn. Customer: Us. Confidential," hand stamped

25

on the memo. "Subject: Ideas from TMI. Received

June 7, 1979," and a set of initials. I do not know what they mean.

"You asked for our 5 lessons from TMI. I've had such a list but have not been totally happy with it as there seems to be very many items 4 and 5 all of about equal importance."

Q Is that 4 and 5 or 4 times 5?

A That is "and."

"In short, this is how I see it today. Items 1, 2 and 3 are very solid in my mind.

"1," it is written as "Are" but it is meant to be "Our overall attitude toward safety, design philosophy is not conducive to abnormal conditions. ACRS 'ACRCS and the NRC cannot make the system safe.' With our present attitude, I would fault middle to top management most, I don't think we can either. I believe a fundamental change in approach is needed and I don't think it must cost a lot. We don't need high faluting codes and procedures as much as we need to fix the RCP's running case. I'm not against you on that one. I just want to move slower. In short, then, we need positive actions to create an

1
2 atmosphere in which LOCA and safety analysis are
3 taken very seriously. We need to make safety
4 a commercial issue, i.e., worth money and
5 saleable. I still do not perceive a feeling
6 of guilt in B&W over TMI and I think there should
7 be one.

8 "2. I believe we need positive single
9 entity ownership of ECCS systems and RP systems
10 as we have now for the ICS. This organization
11 should be oriented toward system function so that
12 the necessary compromises tend to side on safety
13 rather than cost. I believe right now we choose
14 cost over performance in our safety hardware.

15 "3. I don't believe that our operators
16 are as ignorant of physical laws as is portrayed.
17 I believe we should be doing a lot more in
18 education so that they can respond to the
19 off normal situation, the one we haven't thought
20 about, with logic and a high probability of
21 success. This means education in the basics of
22 water, heat exchanger, steam, pumps, etc.

23 "4. A less complicated, independent decay
24 heat cooling system designed for positive
25 performance 5 minutes after trip is required.

1
2 This could be as simple as RCS vents or as
3 complicated as a high pressure decay heat system.
4 I prefer the open system, however, it is easily
5 controlled and managed because the fluid involved
6 is stable. I believe the continued reliance on
7 unstable pressurized water is not best for
8 emergencies.

9 "5. NRC should not be put on line during
10 the early crisis stage of an accident. Rather
11 the vendors should and they should have a highly
12 trained team in place to make all decisions.
13 Management, you and I should not be involved or in
14 control except at that team's request.

15 "6. (I know this is cheating) Accident
16 follow-up instrumentation needs drastic
17 improvement in both quality and quantity."

18 Q Whose handwriting appears below
19 that?

20 A I do not recognize it.

21 Q Have you seen that handwriting on
22 this document before?

23 A I have seen that handwriting on copies of
24 this document before.

25 Q Have you discussed that handwriting

2 with any nonlawyer?

3 A No.

4 Q Do you have any idea whose
5 handwriting that is?

6 A That would be privileged.

7 MR. FISKE: I don't think you can
8 qualify him as a handwriting expert by
9 asking him does he have any idea.

10 MR. SELTZER: Since I want to find
11 out eventually what the thoughts are behind
12 the person who wrote it, if he has some
13 idea who wrote it, I think that would be
14 constructive.

15 Q Do you have a good idea who wrote it?

16 MR. FISKE: I object to that.

17 Q Do you recognize the handwriting
18 at the bottom of the page?

19 A No.

20 Q You are not familiar with that
21 cursive style from any memos that you have seen
22 at B&W?

23 A I do not make a study of recognizing
24 people's handwriting.

25 Q I just asked if you recognize it.

2 A I said no.

3 Q When you said on the front page
4 that the customer is "Us," do you normally write
5 after customer the name of some client of B&W
6 for other memoranda?

7 MR. FISKE: I object to that unless
8 he can generalize like that.

9 MR. SELTZER: Fine.

10 A I think we can generalize. If a unique
11 customer can be identified, it is normally the
12 procedure at B&W to write the customer there.

13 Q Why did you write "Us" on the
14 customer line of GPU Exhibit 12?

15 A I don't recall.

16 Q By "Us," did you mean B&W?

17 A In this circumstance, yes.

18 Q In the first sentence, you said to
19 Allen Womack, "You asked for our 5 lessons from
20 TMI." Who else besides yourself was asked to
21 submit lessons learned from TMI to Allen Womack?

22 A The request went to all unit managers
23 within the Plant Design Section.

24 Q Did you send your lesson-learned
25 memo to anybody in addition to Allen?

2 A No, I did not.

3 Q Did you see copies of any of the
' 4 other unit managers' lessons learned?

5 A Not to my knowledge.

6 Q Did you ask any of your unit
7 managers to submit their ideas of lessons learned
8 from TMI?

9 A No, I did not.

10 Q Have you seen anyone else's TMI
11 lessons-learned memos?

12 A Not any B&W papers.

13 Q Have you seen any other lessons
14 learned generated by B&W employees?

15 A I do not believe so.

16 Q In the second sentence you told
17 Allen Womack, "I've had such a list but have not
18 been totally happy with it," et cetera. Prior to
19 writing GPU Exhibit 12, did you have such a list
20 written somewhere else?

21 A No.

22 Q What were you referring to when you
23 said "I've had such a list"?

24 A A list in my head.

25 Q You said in item 1 that "Our

2 overall attitude toward safety, design philosophy
3 is not conducive to abnormal conditions."

4 What did you mean by "abnormal
5 conditions"?

6 A I don't recall the specific of what I had
7 in mind at the time I wrote this in terms of the
8 choice of a given set of words here or a given
9 set of words there, but I recall the overall
10 picture that I was trying to communicate.

11 Q With the overall picture in your
12 mind, what meaning does it lend to your phrase
13 "abnormal conditions" in that sentence that I
14 just read?

15 A Accidents.

16 Q What did you mean by an attitude
17 toward safety and design philosophy being "not
18 conducive" to abnormal conditions? What did you
19 mean by the phrase "not conducive"?

20 A Within the entire structure of people
21 responsible for the final, quote, safety state of
22 a plant which would be measured by many things,
23 one of them being the actual set of hardware
24 that existed, how it really could perform, I had
25 in some of my experiences found some reluctance

2 to do any more in the area than the strict
3 requirements of the NRC.

4 Customers did not wish to pay for
5 any added material. B&W in responding to
6 customers was reluctant to surface issues
7 considered beyond the present agreements with the
8 NRC and this is a culminated personal opinion borne
9 out of, at this time, nine years interacting on
10 this subject.

11 Q You follow that first sentence with
12 something that you put in quotes, namely, "ACRCS
13 and the NRC cannot make the system save."

14 Why did you put that in quotation
15 marks?

16 A I believe I had heard that at one time
17 from a member of the NRC. That is the reason I
18 put that phrase in quotes.

19 Q Is that something you had heard,
20 to the best of your recollection, before the
21 Three Mile Island accident?

22 A I'm not sure.

23 Q In the next sentence, you say,
24 "With our present attitude, I would fault middle
25 to top management most."

2

3

4

5

6

I think when we were discussing this entence earlier, you said that middle to top management referred to managers at B&W from your level and higher. Is that right?

6

A Yes.

7

8

Q Why did you say you faulted that echelon of management?

9

10

11

12

13

A I would think this should be viewed in terms of the overall thought but I was indicating that within Babcock & Wilcox both thoughts, that overall situation, was focused by middle to top management.

14

Q

What do you mean "was focused by"?

15

16

17

18

19

20

A Middle to top management provides -- generally provides the interface with the customers. They provide the interpretation of the general way things are done or will be done or what will be done. That I think is a focusing mechanism.

21

22

23

24

Q

You said earlier that B&W in responding to customers did not want "to surface issues beyond the present agreements with the NRC."

25

What do you mean by the phrase

1

2

"surface issues"?

3

4

5

6

A I said they were reluctant. I think I want to also relate that to the design basis. When I said "surface," I meant put forward an idea. Let it be known by other people.

7

8

9

10

11

Q Were you indicating that your phrase "beyond the present agreements with the NRC" referred to the understandings between B&W and the NRC with regard to the design basis analysis?

12

13

A No, I believe I was speaking more generally.

14

Q What is the more general meaning?

15

16

17

A "Design basis analysis" refers to just analysis. I would think in terms of design basis hardware.

18

19

20

21

Q Did you ever hear anyone from B&W speak up and tell a customer, "You know, we really should go beyond what the NRC is requiring if we're going to make this plan safe"?

22

23

A I have never heard someone say "We should." I have heard someone say "We have."

24

Q "We have" what?

25

A Gone beyond what the NRC has required.

2

Q But have you ever heard anyone

3

from B&W confronted with the reluctance to do more

4

than is required by the NRC say in the face of

5

that reluctance, "We should do more to make this

6

plan safe"?

7

MR. FISKE: I think I am going to

8

object to the form of the question. I don't

9

think I understand it.

10

MR. SELTZER: Mr. Dunn previously

11

testified there was a reluctance to do

12

more than is required by the NRC. I am

13

asking if he ever heard someone from B&W

14

address that reluctance and say, "We

15

really should do more than is required by

16

the NRC if we're going to make this plan

17

safe."

18

MR. FISKE: In other words, without

19

all the parenthetical phrases, has he ever

20

heard anybody from B&W say "We ought to

21

do more than is required by the NRC"?

22

MR. SELTZER: In order to make the

23

plan safe.

24

I would also like to limit the

25

question to the period before the Three

2

Mile Island accident.

3

A I don't recall anybody saying "We should."

4

I do recall people saying "We have."

5

Q In what context do you recall

6

somebody saying that "We have"?

7

A In the context of the small breaks.

8

Q Who said what to whom?

9

A I have said it. The requirements for

10

the NRC for performance of the high pressure

11

injection system are that the peak cladding

12

temperature be limited to 2200 degrees Fahrenheit.

13

In actuality, at a B&W plant, the peak cladding

14

temperature is limited to 1100 degrees Fahrenheit

15

and only exceeds the initial operating temperature

16

for a very small class of potential accidents.

17

All that is relative to the 177 plants.

18

Q On the second page of GPU Exhibit

19

12, do you see the sentence that begins at the

20

end of the fifth line with the words, "In short"?

21

A Yes.

22

Q You said there, "In short, then, we

23

need positive actions to create an atmosphere in

24

which loss of coolant accident and safety analysis

25

are taken very seriously."

2

What did you mean by "taken very

3

seriously"?

4

A This is an impression or constructed from an impression I again received from my overall interaction in the field which measures the attitude toward the believability of LOCA's or certain highly improbable safety analysis events relied on the probability of the occurrence of those events and that they were viewed as extremely unlikely within the industry in general.

12

Q Did the fact that they were viewed

13

as being extremely unlikely lead to their not

14

being taken very seriously in your view?

15

MR. FISKE: I think you are taking

16

that phrase in the memo and turning it

17

in reverse and I am not sure it has the

18

same meaning in the negative as it does

19

in the positive. I am not sure it has the

20

opposite meaning is what I meant to say.

21

Q Who is right?

22

MR. FISKE: I am not sure it is a

23

question of who is right. I think it is

24

more of what is the answer to the question.

25

Q What is the implication of viewing

2 loss of coolant accidents as highly unlikely
3 events in the context of this sentence?

4 A That, again, I believe relates to the
5 overall tone of the entire paragraph which is one
6 of a sense of some reluctance to raise certain
7 issues, difficulties at times in forcing issues
8 through and that the feeling that in part some of
9 that difficulty or reluctance would be reduced
10 if the accidents were considered more seriously
11 than they are today or then or considered without
12 view of their probability.

13 Q Is the reluctance to raise safety
14 issues something which you had seen previously
15 within B&W?

16 A Reluctance is, of course, a relative term,
17 and there had been times when to do the preparatory
18 work to identify a concern I had perhaps had to
19 have been more forceful than I thought was
20 necessary.

21 Q You had to be more forceful than
22 you thought should have been necessary?

23 A Yes, measuring it myself.

24 Q Measuring what yourself?

25 A The force I had to exert as to its

2

appropriateness.

3

Q In whom did you perceive reluctance

4

to raise safety issues at B&W?

5

MR. FISKE: I object to that

6

question. I do not think that is a proper

7

question. And the same grounds that have

8

been stated previously.

9

MR. SELTZER: My previous question

10

was had you perceived a reluctance within

11

B&W to raise safety issues. Your answer

12

was a little roundabout.

13

I will rephrase that first question

14

then.

15

Q Did you perceive a reluctance within

16

B&W to raise safety issues?

17

MR. FISKE: I think that is the same

18

objection that I have that I stated before.

19

MR. SELTZER: I don't think that

20

is appropriate any more because in

21

discussing what he meant by taking loss of

22

coolant accident and safety analyses very

23

seriously, he said that this was a

24

perception which he had against the

25

background of years of seeing (1) a

2

reluctance to raise safety issues and (2)

3

difficulty forcing issues through.

4

In trying to understand that

5

answer, I want to find out whether he had

6

observed at B&W a reluctance to raise

7

safety issues.

8

MR. FISKE: I think you have

9

overstated his testimony in your summary

10

of that.

11

MR. SELTZER: We can have the

12

reporter read it.

13

MR. FISKE: First of all, he was

14

talking about the design basis and,

15

secondly, he has not said that he had years

16

of difficulty in raising safety issues.

17

MR. SELTZER: This was from his

18

years of involvement at B&W, I think he

19

referred to his nine years at B&W. This

20

is a view that emerged.

21

Q Was that not your testimony?

22

MR. FISKE: I think your question

23

has to be limited to the memorandum and

24

I have allowed you to ask him what he

25

meant by a phrase in the memorandum but it

seems you are now going well beyond that.

MR. SELTZER: If I am, I am. I am just exploring what he says words in this memorandum meant, and I intend to push it to its limit.

Do you direct him not to answer?

MR. FISKE: Let me hear it.

(Question read.)

MR. FISKE: I think he already testified as to what he meant by that. You asked him that question, and he told you.

MR. SELTZER: I will move to strike as nonresponsive what he told me.

BY MR. SELTZER:

Q Could you answer the question?

MR. FISKE: You can answer.

A Safety issues relative to the intended design basis of the plant were raised at B&W and that I know of were legitimately surfaced and considered. Within that overall process, there was at times resistance, and I would like this section to be read and interpreted as a comment on the community in which we were a single member. I think that should suffice.

1

2

Q You said there were at times

3

resistance. You meant there were at times

4

resistance within B&W; is that right?

5

A Within and without.

6

Q What resistance had you experienced

7

within B&W to raising safety issues prior to

8

the Three Mile Island accident?

9

A Again, resistance is a relative term; and

10

what is resistance to me could very well be

11

proper procedure to someone else.

12

Q All I can do is work with you and

13

what you understood. All I can ask for is your

14

recollection, your impressions.

15

A With that statement in mind --

16

MR. FISKE: I think he is just trying

17

to put some perspective on it.

18

A (Continuing) The relative nature of this,

19

in the case of the pump discharge break, obtaining

20

the funds necessary to examine the situation was

21

somewhat difficult.

22

Q Is that what you were referring to

23

near the top of Page 2, regarding "need to fix the

24

RCP's running case"?

25

A No.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

Q From whom had you had difficulty getting the funds for the pump discharge work?

A In that particular case, we secured funds from the generic project team.

Q From whom had you trouble getting funds?

A The individual was Mr. Al Cobb.

Q What was Cobb's position?

MR. FISKE: You mean his title?

Q No, what position did he take in resisting giving you the funds?

A That we had an NRC reviewed license for these plants.

Q So why rock the boat?

MR. FISKE: I object to that.

Q Is that what Cobb's attitude was as expressed to you?

MR. FISKE: I object to that, unless you are talking about what he said.

MR. SELTZER: That is what I am talking about.

Q What do you mean when Cobb said his view was you already had an NRC license for these plants? What was the significance of that?

1
2 MR. FISKE: I object to that. I do
3 not know that Mr. Dunn should opine as to what
4 the significance of it was.

5 Q What did you understand was the
6 significance of his telling that to you?

7 MR. FISKE: No objection if you ask
8 him what he said in words or substance.

9 MR. SELTZER: I want to know what
10 meaning that had to the hearer.

11 MR. FISKE: I think that is irrelevant.
12 He has told you about the incident.

13 MR. SELTZER: I know you think it is
14 irrelevant. I think that is your position.
15 I also heard lawyers say the document
16 speaks for itself; and try to block all
17 examination on what words on a written sheet
18 mean.

19 I think that is just nonsense, if you
20 will pardon my saying so. I don't think
21 documents speak for themselves. I don't
22 think spoken words have unambiguative
23 meaning.

24 I think it is highly relevant to ask
25 recipients of the memoranda and hearers of

1
2 words to explain the implication of these
3 words as they perceived them.

4 MR. FISKE: With respect to this
5 conversation, Mr. Dunn has told you what he
6 said, and he told you what Mr. Cobb said.

7 MR. SELTZER: I don't care. I will
8 go to court with you on this right now, if
9 you direct him not to answer.

10 MR. FISKE: On what he understood --

11 MR. SELTZER: Cobb was saying; that's
12 right. The significance of what Cobb said
13 vis-a-vis whether they would fund further
14 their work on pump discharge breaks.

15 MR. FISKE: This question is premature
16 until you have exhausted the conversation.
17 I think you should exhaust the conversation.
18 I don't even think you have done that.

19 Q Did Cobb say anything more to you by
20 way of explanation as to why he didn't want to
21 authorize additional funding for studying the
22 pump's discharge case?

23 A He requested a detailed explanation of why
24 I was concerned and a kind of crystal-balling of
25 what the consequences might be, kind of again,

1
2 why you are concerned, what happened. I provided
3 that and funds were eventually secured for the
4 exploration work.

5 (Recess taken.)

6 Q What title did Cobb have at the time
7 you were asking him for funds?

8 A I could be wrong on this, but Manager,
9 Generic Projects; Project Management.

10 Q Was he some controller of the purse
11 strings?

12 A Yes. He had purse strings he controlled.

13 Q You asked him for funding to analyze
14 breaks in the pump discharge line in or about
15 early 1977, right?

16 A I have to go back and look at the record
17 to find out when it started. It was a couple of
18 months before the PSC was written.

19 Q It was about a year before the
20 April 1978 PSC was written, isn't it?

21 MR. FISKE: He is trying to place the
22 time.

23 Q Was it almost a year before, April
24 1977?

25 MR. FISKE: You fixed it as April '77.

1
2 MR. SELTZER: I am asking.

3 MR. FISKE: It is a fact he went to
4 Mr. Cobb for the funds in April 1977; is
5 that the question?

6 MR. SELTZER: Yes.

7 A I hadn't thought so, but I don't recall.

8 Q I show you your April 1977 activities
9 report, Page 2, Item E, Pump Discharge Break.
10 "Funds have been requested through Risk to perform
11 the analysis."

12 Does that refresh your recollection
13 as to when you sought funds for this analysis?

14 A This seems to indicate the subject.

15 Q Does that refresh your recollection
16 that you did seek funds in April 1977 for the
17 analysis of a pump discharge line, small break?

18 A No.

19 Q No, it does not indicate that?

20 A No, it does not refresh my memory.

21 Q It does indicate that as of April
22 1977 you were seeking funds for analysis of a
23 0.04 square foot break in the pump discharge line,
24 right?

25 A It indicates that ECCS is, yes.

1

2

Q You wrote that report, right?

3

A I do not know.

4

Q Whose name is in the "From" box?

5

A Mine.

6

Q Do you have any reason to doubt the

7

integrity of the statement that funds were

8

requested to perform the analysis of the pump

9

discharge break in the 177 plants as of April

10

1977?

11

A No. I don't have any reason to doubt that.

12

MR. SELTZER: I would like to mark

13

this document of undoubted veracity as GPU

14

Exhibit 104. It is Mr. Dunn's April

15

Activities Report to Dr. Roy, April 29, 1977.

16

(Covering memorandum dated April 29,

17

1977 from B. M. Dunn to D. H. Roy,

18

attaching April Activities Report, was

19

marked GPU Exhibit 104 for identification,

20

as of this date.)

21

Q When you went to Mr. Cobb to obtain

22

funding for analysis of the pump discharge line

23

break, you said he told you, "We had an NRC

24

reviewed license for these plants." That was the

25

basis on which he was initially denying funding.

2

3

What did that statement by Mr. Cobb mean to you in terms of your request for funds?

4

5

6

MR. FISKE: This is precisely why earlier I thought it was desirable that you elicit the whole conversation.

7

8

9

10

11

12

13

14

15

What he said was that Mr. Cobb said that there was an NRC reviewed license, and that Mr. Cobb requested a detailed explanation of why Mr. Dunn was concerned, and as Mr. Dunn put it, a crystal-balling of the consequences of his concern. That is the complete statement by Mr. Cobb -- at least, as I understand Mr. Dunn's testimony.

16

17

18

Q What was the significance to you of Cobb's statement that we had an NRC reviewed license for these plants?

19

20

21

22

23

24

MR. FISKE: I don't know -- I don't think this question is proper in the first place. But I don't think you can dissect what Mr. Cobb said and pick out half of it and ask him what the significance of that was.

25

MR. SELTZER: I will pick out a

2

quarter of it. I don't have to ask for the
significance of all of Tolstoy's "War and
Peace."

4

5

MR. FISKE: I think this is improper.

6

7

MR. SELTZER: I don't think you and I
should be quibbling over it. I think it is
a proper question. If you want to object to
form, you may.

8

9

10

11

12

13

14

15

MR. FISKE: I think it is more than
an objection as to form. This is not the
first time that this has come up. I don't
think that you are entitled to ask Mr. Dunn
what the significance is of somebody else's
answer.

16

17

18

You have the whole conversation. You
have got what happened. I think that is as
far as you can fairly go.

19

MR. SELTZER: I press the question.

20

MR. FISKE: I press the objection.

21

22

MR. SELTZER: You instruct the
witness not to answer?

23

MR. FISKE: Yes.

24

BY MR. SELTZER:

25

Q Had anybody ever told you on any

1
2 other occasion before the Three Mile Island
3 accident as a basis for refusing funding for your
4 unit --

5 MR. SELTZER: You want to say
6 something in the middle of my question?

7 MR. FISKE: Yes, because I think it
8 will save time in the end. I do not think
9 Mr. Dunn has testified that Mr. Cobb
10 refused him funding.

11 He certainly didn't get it in that
12 first conversation, but I don't think he
13 ever said he was refused. If you take that
14 into account in phrasing the question, it
15 would help.

16 Q On any other occasion, did anybody ever
17 say to you as a basis for refusing or delaying
18 funding that there already was an NRC reviewed
19 license for the plants in question?

20 A Yes, but on that circumstance there was a
21 clear need to explain the inappropriateness of the
22 situation as reviewed by the NRC. And once that
23 explanation was made, the funding was made
24 available. I was also in a design stage effort.

25 Q Did you make any immediate response

1
2 to Mr. Cobb's statement that there already was an
3 NRC reviewed license for the 177 plants?

4 A Yes.

5 Q What did you say in words or
6 substance?

7 A One thing, as I recall, was that at the time
8 for requesting funds we had not believed that the
9 condition was as serious as it turned out to be
10 after we had done the exploratory calculations.

11 I did inform Mr. Cobb that I did not
12 believe I could maintain the credibility of that
13 license basis without establishing that we had
14 been conservative previously or that I could not
15 stand behind the license without doing this
16 exploratory work.

17 Q You explained that to Mr. Cobb?

18 A Yes.

19 Q What was his response to that?

20 A I don't recall.

21 Q You ended your first point in GPU
22 Exhibit 12 with the statement, "I still do not
23 perceive a feeling of guilt in Babcock & Wilcox
24 over Three Mile Island, and I think there should
25 be one."

1

2

Why, at the time you wrote GPU

3

Exhibit 12, did you feel there should be a feeling

4

of guilt in B&W over Three Mile Island?

5

A We had had an opportunity to release

6

instructions which may have assisted the

7

operations crew that day in responding to the

8

accident in a fashion which would have mitigated

9

most of the undesirable results of that accident.

10

I had not observed people feeling sorry, or at

11

that time I had not observed people expressing

12

regret that, for whatever reason, those

13

instructions had not left B&W.

14

Q You used the phrase, "mitigated most

15

of the undesirable results of that accident."

16

Do you mean by that prevented the

17

core uncovering and fuel melting?

18

A Yes. I don't believe we could have

19

prevented the rupture of the quench tank.

20

Q You don't believe if the operators had

21

the benefit of the instructions, they could have

22

presented fuel melting?

23

MR. FISKE: That is not what he said.

24

He said that the instructions may have

25

assisted the operations crew in responding to

1

2

the accident.

3

4

5

6

Q If they had responded in accordance with your instructions, they would have been able to prevent core uncover and fuel melting; is that right?

7

8

9

MR. FISKE: You mean if they had not terminated HPI in accordance with his instructions? Is that what you mean?

10

11

MR. SELTZER: Yes.
A Yes.

12

13

14

Q You say in Item 3 of Page 3 of your memo that "I don't believe our operators are as ignorant of physical laws as is portrayed."

15

16

By "our operators," are you referring to the operators of B&W nuclear plants?

17

A Yes.

18

19

20

21

22

Q At the time you wrote GPU Exhibit 12, was it your view that if the operators at B&W nuclear plants had had your instructions on operation of high-pressure injection, they would have been able to understand those instructions?

23

24

MR. FISKE: I object to that. That is total speculation.

25

MR. SELTZER: I am viewing it in terms

1
2 of what he said about things that the
3 instructions may have helped the operators
4 mitigate the undesirable results of the
5 accident; and his statement that "I don't
6 believe our operators are as ignorant as
7 is portrayed."

8 MR. FISKE: You are asking about these
9 particular four operators that were on duty
10 at that time?

11 MR. SELTZER: No. I am talking of
12 operators in the more general sense that he
13 refers to "our operators" in Item 3 in
14 GPU Exhibit 12.

15 MR. FISKE: I think it is complete
16 speculation.

17 BY MR. SELTZER:

18 Q I am driving at: I want to understand
19 what he is intending by Item 3. I will take it
20 in smaller steps.

21 You said that you don't believe that
22 the operators at B&W plants are as ignorant of
23 physical laws as is portrayed.

24 Portrayed by whom?

25 A Out of the work for the small break operating

2 guidelines, I had received the impression that
3 instructions to the operators and procedures had
4 to be written to a level of detail wherein
5 actions based on those instructions or procedures
6 could be taken by people with very little
7 understanding of the physics or the physical
8 essence behind the instructions. They had to be
9 extremely literal.

10 Q On what did you base your belief
11 that the operators are not so ignorant as is
12 portrayed?

13 A Two things. I had had some contact after
14 Three Mile Island with operators and I have had
15 contact with similar personnel in other
16 experiences. I believe with proper education,
17 they could be made to understand the basics of
18 what would happen to their plant.

19 Q At the end of item 2 on GPU Exhibit
20 12, you said, "I believe right now we choose cost
21 over performance in our safety hardware."

22 What did you mean by the phrase
23 "choose cost over performance"?

24 A This whole paragraph deals with an idea
25 that I believe would be useful to place the entire

1
2 ECCS system under single point ownership.

3 The last sentence is a comment on
4 an issue involved in the design of a 205 plant
5 at that time wherein given two options, we were
6 tending to side or prefer the less expensive
7 of the two.

8 Q Were you compromising safety in order
9 to save cost, to use words that you have used in
10 this memorandum?

11 MR. FISKE: I don't object to the
12 first part of that question but I do object
13 to the second part.

14 MR. SELTZER: The word "compromise"
15 is his word.

16 MR. FISKE: The word "compromise" is
17 in the memo at some point and so at one point
18 is the word "safety."

19 MR. SELTZER: They are right in the
20 same paragraph.

21 MR. FISKE: Let's just ask the
22 question without the characterization so
23 we won't have a problem.

24 MR. SELTZER: I will rephrase the
25 question.

1
2 Q In the example you have just given,
3 had B&W to some extent compromised on safety in
4 order to reduce cost?

5 A No.

6 Q In what way had B&W, in the example
7 you were giving, chosen cost over performance?

8 A I mentioned that we were siding in one
9 direction. We had not made a decision.

10 Q Were you siding in the direction of
11 saving some cost at the expense of trimming the
12 margin on safety? Isn't that the point of your
13 paragraph?

14 A Yes, but I would like to explain it
15 accurately.

16 MR. FISKE: I am sure Mr. Seltzer
17 will give you that opportunity.

18 MR. SELTZER: Why don't you save
19 that for cross-examination.

20 Q Tell me exactly what you would like
21 to say. I am sure your counsel has gone over this
22 very carefully.

23 MR. FISKE: I am sure you want the
24 whole story, not just a part of it.

25 A We had a choice of creating the required

2

level of safety one of two ways. It was my

3

opinion when I wrote this that we were tending

4

towards a system whose performance would not be

5

as straightforward or as clear as the other

6

alternative and I had a personal preference for

7

the other alternative, and neither system would

8

compromise safety.

9

Q You said that at the time you wrote

10

GPU Exhibit 12 and you said you felt there should

11

be a feeling of guilt in B&W over TMI, nobody

12

else in the company had expressed that view to

13

you. Subsequent to your writing GPU Exhibit 12,

14

has anyone in Babcock & Wilcox said to you, in

15

words or substance, that they think that there

16

should be a feeling of guilt in the company

17

regarding Three Mile Island?

18

MR. FISKE: We got into this

19

problem once before. I do not have any

20

objection about asking about the

21

conversations but you are asking him to

22

make a characterization of what was said.

23

MR. SELTZER: He said in his answer

24

that up until this time he hadn't heard

25

such an expression. I am asking him simply

2

whether after he wrote this did he hear
such an expression.

3

4

I have already gone your route. We
examined him at some length about
individual conversations.

5

6

7

MR. FISKE: Then are you asking him
about a conversation in which someone used
the word "guilt"?

8

9

10

MR. SELTZER: No, not necessarily.
I said in words or substance.

11

12

MR. FISKE: That is the problem when
you talk about words or substance.

13

14

MR. SELTZER: I won't hold him to
a characterization of a conversation. If
he says to me, and I will offer this very
openly, "We may have had a conversation
that touched on that with so-and-so," I
will ask him "What did so-and-so say to
you and what did you say to him?"

15

16

17

18

19

20

21

I won't hold him to the
characterization.

22

23

MR. FISKE: Exactly what is the
question now?

24

25

(Record was read back.)

1
2 MR. FISKE: I will let Mr. Dunn
3 answer this question as long as it is
4 understood that the question isn't
5 requiring him to characterize statements
6 as to whether they reflect a feeling of
7 guilt as opposed to some other emotion
8 and I will let him answer it in terms of
9 any conversation he has had with anyone
10 that might by its broadest definition
11 include the subject you asked him about
12 and then ask him to tell us what those
13 conversations were.

14 MR. SELTZER: Fine.

15 MR. FISKE: So we avoid all
16 elements of suggestions of characterizations.

17 A Yes.

18 Q Who?

19 A Jim Taylor, John MacMillan.

20 Q Anyone else?

21 A In terms of specific conversations that
22 I recall, no one else.

23 Q I don't mean to take advantage of
24 the fact that you are sitting there thinking for
25 a while before you answered, but do you have any

2 other recollection of such a conversation even if
3 it is not a specific conversation that you can
4 recall?

5 A No. The rest of it is a deduction from
6 all sorts of stuff.

7 Q What do you mean a "deduction"?

8 MR. FISKE: You asked him about
9 conversations after he wrote his memo
10 which is GPU Exhibit 12, right? I don't
11 think a deduction about conversations is
12 very helpful.

13 MR. SELTZER: I want to know what
14 he means by "deductions."

15 Q What did you mean when you used
16 that word?

17 A Feelings generated within me from the
18 total response people make to me. The feelings
19 I get.

20 Q Do you get a feeling now of guilt
21 within B&W?

22 MR. FISKE: I won't let him answer
23 that question.

24 Q Is that the feeling you were
25 referring to?

2

MR. FISKE: I won't let him answer

3

that question for several reasons.

4

Q Did you have any conversation with

5

MacMillan on this subject other than the meeting

6

in your office that you already testified about?

7

A No.

8

Q Did you have any conversation with

9

Jim Taylor on this subject other than the

10

conversation with counsel present that you have

11

described?

12

A No. Let me say I don't believe so.

13

Q Is there anybody else with whom you

14

have had a conversation since the accident in

15

which they expressed any views to you regarding

16

the responsibility, if any, that B&W bears for

17

the Three Mile Island accident?

18

A Short of communications with counsel,

19

I do not believe the word "responsibility" in

20

the context of Three Mile Island has been

21

discussed.

22

Q Have you discussed with anybody

23

the consequence of B&W's apparently not having

24

sent out your February 1978 instructions other than

25

the people you have already described? For

2 example, you never testified so far that I can
3 recall that you and Bob Jones talked since the
4 accident about the effects of B&W apparently
5 having failed to send out the February 1978
6 instructions.

7 A We have been very much in tune to specific
8 issues of recollection.

9 Q Maybe I haven't asked you exactly
10 this question before so I wasn't meaning to --

11 MR. FISKE: I think it is fair to say
12 the subject has been exhaustively covered
13 but I won't object if you want to ask him
14 again.

15 MR. SELTZER: I was just responding
16 to what the witness said.

17 Q Have you talked since the accident
18 with Bob Jones about B&W apparently not having
19 sent out your February 1978 instructions?

20 A I testified earlier that I informed my
21 unit about that. Other than that recollection,
22 I do not recall having such conversation with Bob
23 Jones.

24 Q I don't mean to exclude that
25 conversation within your unit. In the context of

2 that conversation, what, if anything, did Bob
3 Jones say to you about the report that B&W had
4 apparently not sent out, the February 1978 high
5 pressure injection instructions?

6 A I was talking to the unit as a whole and
7 it was more an attempt to inform the unit that we
8 had been aware of circumstances like this, we
9 had recognized them and that we had attempted to
10 do something about them but that, for whatever the
11 reasons, the information had not gotten to the
12 utilities in time to be of whatever use it might
13 have been to the operators at that plant.

14 Q When you say "we had been aware of
15 circumstances like this," do you mean that "some
16 of us in ECCS Analysis" had been aware of
17 circumstances like Three Mile Island which occurred
18 sometime before Three Mile Island?

19 A Circumstances which involved, in our
20 opinion, mismanagement of the high pressure
21 injection system, yes.

22 Q And you told your unit that "we,"
23 meaning you and others, had tried to do something
24 about that type of mismanagement of high pressure
25 injection?

2 A Yes.

3 Q You were referring to your attempts
4 to get the company to send out your February 1978
5 instructions, is that right?

6 A I was referring to the issuance of my
7 memos and negotiations with Customer Service prior
8 to the issuance of the February 16th memo.

9 Q At the meeting with your unit where
10 you explained all this, was everyone or almost
11 everyone from your unit in attendance?

12 A Most of them were.

13 Q How soon after the Three Mile Island
14 accident did you have this meeting?

15 A I believe it was within a couple of
16 weeks. I'm not sure.

17 Q At the meeting or prior to the
18 meeting or shortly after, did you show people in
19 the unit your February 1978 memoranda?

20 A I don't recall whether I did or did not.

21 Q What, as best you can recall, was
22 the reaction of individual members of the unit
23 to the information that you were giving them at
24 the meeting?

25 MR. FISKE: Again, I object to this

unless it is testimony as to what people
said in words or substance.

MR. SELTZER: Fine, that is exactly
what I mean. Thank you.

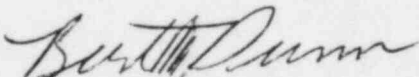
Q What, in words or substance, was the
response of the individual members of your ECCS
Analysis Unit when you told them what you related?

A I don't remember it.

Q Was there any discussion coming
from the members of the unit?

A Again, I don't remember it.

(Time noted: 5:00 p.m.)


Bert M. Dunn

Subscribed and sworn to before me

this 29 day of October 1982.

Danita R. Kidd, Notary
Commissioned Notary as Danita D. Robertson
Commission Expires: July 1, 1983

CERTIFICATE

STATE OF NEW YORK)
: ss.:
COUNTY OF NEW YORK)

I, JOSEPH R. DANYO, a Notary
Public of the State of New York, do hereby
certify that the continued deposition of
BERT M. DUNN was taken before
me on Monday, March 23, 1981 consisting
of pages 603 through 723;

I further certify that the witness had
been previously sworn and that the within
transcript is a true record of said testimony;

That I am not connected by blood or
marriage with any of the said parties nor
interested directly or indirectly in the matter
in controversy, nor am I in the employ of any
of the counsel.

IN WITNESS WHEREOF, I have hereunto set my
hand this 13th day of April, 1981.

Joseph R. Danyo

JOSEPH R. DANYO

I N D E X

WITNESS

PAGE

Bert M. Dunn (resumed)

605

E X H I B I T S

GPU
NUMBER

FOR IDENT.

101

Memorandum dated April 6,
1979, 4:15 p.m. from
Mr. Womack to Mr. Dunn,
subject "Loss of Feedwater
Plus Relief Valve Failure"

605

102

Typewritten document
entitled "Decay Heat
Removal During A Very Small
Break LOCA For A B&W
205-Fuel-Assembly PWR,
C. Michelson, January 1978"

647

103

Letter dated April 30, 1979
from James Taylor to R. J.
Mattson of the Nuclear
Regulatory Commission re
"Babcock & Wilcox Company's
Commitments" with
attachments

665

104

Covering memorandum dated
April 29, 1977 from B. M.
Dunn to D. H. Roy, attaching
April Activities Report

704

* * *