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UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK

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

Plaintiffs, :

-against- :

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

Defendants. :

-----x

Continued deposition of The Babcock &  
Wilcox Company, by BERT MERRIT 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 Thursday, March 12, 1981, at  
9:40 o'clock in the forenoon, before Charles  
Shapiro, a Certified Shorthand Reporter and  
Notary Public within and for the State of  
New York.



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## Also Present:

DAVID TAYLOR  
ROBERT KEATEN  
PATRICIA VAUGHAN

\* \* \*

1  
2 B E R T M E R R I T D U N N, resumed,  
3 having been previously duly sworn by the  
4 Notary Public, was examined and testified  
5 further as follows:

6 EXAMINATION (Continued)

7 BY MR. SELTZER:

8 Q Mr. Dunn, I am sure you are aware  
9 that your testimony today continues to be under  
10 oath, do you not?

11 A I am.

12 Q You testified yesterday that shortly  
13 after the Davis-Besse September 24, 1977 transient  
14 you had a conversation lasting about 15 minutes  
15 with Don Roy in his office.

16 Do you recall that?

17 A I recall that I testified to that extent  
18 yesterday.

19 Q Prior to your writing your memoranda  
20 in February 1978, did you have any subsequent  
21 conversations with Dr. Roy regarding premature  
22 termination of high-pressure injection?

23 A I don't believe so.

24 Q You had testified yesterday that at  
25 some point in your meeting with Roy shortly

1  
2 after the Davis-Besse incident, you related your  
3 concern and he said something to the effect  
4 of "Go take care of it, do something about it."

5 Did you ever report back to him on  
6 anything that you were doing to work out your  
7 concern?

8 A Not that I recall.

9 Q After you sent the February memoranda  
10 to Jim Taylor and prior to the Three Mile Island  
11 accident, did you have any conversations with Don  
12 Roy about your concern and about the subject of  
13 termination of high-pressure injection?

14 A Not that I recall.

15 Q Where are the monthly staff meetings  
16 of the Design Section held?

17 A Some are in the Old Forrest Road office  
18 building.

19 Q Is there any place where Don Roy  
20 generally held those meetings when he was the  
21 head of the Design Section?

22 A I don't know whether Don had a preference  
23 for any particular location or not.

24 Q Where did he tend to hold the meetings?

25 A I don't recall whether it was a tendency



1  
2 of one location over another.

3 Q Just can you give me the plurality of  
4 places where Don Roy convened the Plant Design  
5 Section staff meetings?

6 A Yes.

7 Q Where?

8 A There are six conference rooms, three  
9 training rooms, and three or four classrooms within  
10 the Old Forrest Road office building.

11 These staff meetings would have been  
12 held in one of those rooms on an as-available basis.

13 Q Has Allen Womack, when he took over the  
14 Plant Design Section, continued the practice  
15 of having monthly staff meetings? I used the  
16 wrong verb.

17 I know he is currently not the head  
18 of the Plant Design Section. Did Allen Womack  
19 continue the practice of having monthly staff  
20 meetings when he took over from Don Roy as  
21 Manager of the Plant Design Section?

22 A In approximation.

23 Q In approximation, yes?

24 A Yes. In approximation, yes.

25 Q Was there a day each month when those

1  
2 meetings were generally held under Dr. Roy?

3 A No.

4 Q It wasn't the first Tuesday of each month,  
5 something like that?

6 A No.

7 Q How long did the meetings generally  
8 last?

9 A Between one to two hours.

10 Q Did anybody prepare notes or minutes  
11 of the meetings?

12 A No.

13 Q You seemed to take a while in responding.  
14 Were people taking notes at the meetings?

15 MR. FISKE: I don't think Mr. Dunn took  
16 any longer to answer that question than he has  
17 taken to answer any other, but go ahead,  
18 Mr. Dunn.

19 A Yes.

20 Q On either an occasional or regular basis,  
21 were anybody's notes of the meetings circulated  
22 after the meeting?

23 A I can't recall any.

24 Q Whom do you recall generally taking  
25 notes at the Plant Design Section meetings?

2 A All of the staff.

3 Q Including you?

4 A Yes.

5 Q Have you kept your notes?

6 A Some of them.

7 Q Where?

8 A I would expect it to be many locations.

9 Q Do you keep them in a file that would  
10 be labeled in any way that would indicate that  
11 they contain notes of meetings such as this?

12 A No.

13 Q What kinds of file designations do you  
14 believe you have given to the files in which you  
15 keep those notes?

16 A I didn't say I kept them in a file.

17 Q Where did you keep them?

18 A In many locations.

19 Q You said that a while ago.

20 What are the locations?

21 A They could be in desk drawers, in a log book  
22 or just stacked up on my desk.

23 Q Do you generally have a log book  
24 in which you are making current entries?

25 A Not generally.

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Q Could you describe the log book in which you believe you would have taken notes at Plant Design Section meetings?

A It's a permanently bound book with an imitation leather cover, I believe the paper in it is eight and a half by 11, about three-quarters of an inch thick.

Q Is it a looseleaf binder?

A No.

Q How many of those log books have you maintained in the five years you have been Unit Manager?

A I maintained one book for some period of time. Maintenance is probably the wrong word. I used it from time to time.

Q Was that log book turned over to anybody in connection with the obligation to produce documents in this lawsuit?

A Yes.

Q Did you search all of your desk drawers for material which would be responsive to requests for production in this lawsuit?

A Yes.

Q Do you know whether you turned over

1  
2 for possible production in this lawsuit notes  
3 of meetings of the Design Section staff?

4 A Yes.

5 Q Yes, you did?

6 A Yes, I did.

7 Q At any of the Design Section staff  
8 meetings which were held on a regular basis each  
9 month or any other Design Section meeting,  
10 a meeting of members of the Design Section, was  
11 the subject of termination of high-pressure  
12 injection ever discussed before the Three Mile  
13 Island accident?

14 A Your question was at any of the Plant  
15 Design staff meetings or any other meetings involving  
16 Plant Design personnel, was the subject of  
17 termination of high-pressure injection discussed  
18 prior to the accident at Three Mile Island, is that  
19 correct?

20 Q Yes.

21 A Yes.

22 Q At what meetings was it discussed?

23 A The meetings I testified to yesterday.

24 Q Those were generally one-on-one  
25 meetings that you had with separate individuals,

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right?

A That is correct.

Q At a meeting that was more generally attended by a larger group of people from the Plant Design Section, was the subject of termination of high-pressure injection ever discussed?

A Not that I recall.

MR. SELTZER: I would like to mark for identification as GPU Exhibit 76 a memorandum from J. J. Kelly to Messrs. Karrasch, Swanson, Finnin, Dunn, LaBelle, Elliott, and Hallman, dated November 1, 1977, subject: "Customer Guidance on High-Pressure Injection Operation."

(Memorandum from J. J. Kelly to Messrs. Karrasch, Swanson, Finnin, Dunn, LaBelle, Elliott, and Hallman, dated November 1, 1977, subject: "Customer Guidance on High-Pressure Injection Operation" marked GPU Exhibit No. 76 for identification as of this date.)

Q Is GPU Exhibit 76 a copy of a memorandum which you received in the regular course of

1  
2 business in or about early November of 1977?

3 A I don't know.

4 Q Did you receive a copy of this  
5 memorandum at any time before you wrote your  
6 February 1978 memoranda?

7 A I don't know.

8 Q When is the first time you recall  
9 seeing a copy of GPU Exhibit 76?

10 A I guess I don't recall the first time I saw  
11 a copy of this.

12 Q Do you believe that you saw a copy  
13 of this before your President's Commission  
14 deposition?

15 A Yes.

16 Q Do you believe you saw a copy of this  
17 before the Three Mile Island accident?

18 A Yes.

19 Q Do you have any way that you could  
20 approximately fix a time span, however broad,  
21 in which you believe you first received a copy  
22 of GPU Exhibit 76?

23 A I believe I saw the copy -- a copy of this  
24 at approximately November 1st, 1977.

25 Q Just so that I can avoid three to



1  
2 five minutes of questioning the next time I  
3 introduce a document, can you tell me why, when I  
4 first asked you did you receive a copy of this  
5 in or about early 1977, you said no?

6 MR. FISKE: He didn't say no.

7 MR. SELTZER: He said he didn't recall.

8 Q Is that what you told me?

9 MR. FISKE: He said, "I don't know,"  
10 I believe was his answer.

11 Mr. Seltzer wants to know why you gave  
12 that answer.

13 A The difference between the word "know," I  
14 received it today -- "know" being very explicit,  
15 very definite knowledge that I received it -- and  
16 a less definite impression or knowledge to  
17 the -- what was the word we were using yesterday? --

18 Q Belief.

19 A -- belief is one word that might be  
20 appropriate -- when you use the word "know," I  
21 am trying to distinguish something that I actually  
22 could testify to as a very positive item.

23 Q If I had used the words "Do you believe  
24 you received a copy of GPU Exhibit 76 in or about  
25 early November 1977," would you have responded yes?

1

2

A Yes.

3

4

5

Q Had Joe Kelly discussed with you, prior to November 1, 1977, the fact that he was preparing a memorandum such as GPU Exhibit 76?

6

A I believe so.

7

8

Q What, as best you can recall, did he say to you and you say to him in words or substance?

9

10

11

12

13

A In substance I believe Joe indicated to me that there had been a follow-on event, a second incident involving possible inappropriate termination of high-pressure injection and that he was going to issue a memo on the subject.

14

In substance, I responded with "Good."

15

16

Q In other words, you encouraged him to send out a memorandum such as GPU Exhibit 76?

17

A Yes.

18

19

20

Q Did he discuss with you, as best you can recall, the individuals to whom he would distribute such a memorandum?

21

A Not that I recall.

22

23

24

Q We have discussed and you have told me who several of the individuals are in the distribution list.

25

Who is R. J. Finnin?

1

2

A I believe that to be Mr. Ron Finnin.

3

4

Q Do you know in what unit he worked, and what type of work he was doing in the fall of 1977?

5

A Not exactly.

6

7

8

9

Q Would it refresh your recollection if I showed you an organization chart for the Nuclear Service Department that has his name on it? (Handing document to the witness)?

10

11

A I believe at that time Mr. Finnin was a member of Nuclear Service.

12

13

14

Q Was he in the unit that reported to Don Hallman (indicating) a member of the Plant Performance Unit?

15

16

A According to this chart with which I am not familiar, he is indicated that way.

17

18

MR. FISKE: Do you want to mark that since he referred to it?

19

20

21

Q Are you familiar with this as being typical of the format of the organization charts within B&W?

22

A Yes.

23

24

MR. FISKE: We won't insist on a foundation; just to mark it.

25

MR. SELTZER: No, I am not. I am just

2                   trying to understand. I am not going to  
3                   offer it in evidence yet. We can mark  
4                   anything for identification.

5                   Q       Finnin is listed as being in charge  
6                   of start-up testing in the Plant Performance  
7                   Services Unit.

8                             Do you know what start-up testing  
9                   is responsible for?

10                  A       No.

11                  Q       Have you ever had any dealings with  
12                  Mr. Finnin?

13                  A       Yes.

14                  Q       In what connection?

15                  A       In a private connection.

16                  Q       You mean it had nothing to do with the  
17                  business of B&W?

18                  A       Our first -- my first connection with  
19                  Mr. Finnin had nothing to do with the business at  
20                  B&W.

21                             Follow-on or later connections, it  
22                  involved work from time to time and at this time  
23                  I don't recall the nature of those connections.

24                  Q       Did Kelly ever tell you, or do you have  
25                  any other understanding as to why Kelly sent GPU

1  
2 Exhibit 76 to Mr. Finnin?

3 A I don't believe Joe ever told me that.

4 Q Do you have any understanding why he  
5 sent it to him?

6 A Not other than Ron is a member of  
7 Customer Service.

8 Q Is Customer Service the name  
9 that is now given to the department that used  
10 to be Nuclear Service?

11 A I am not sure of that. I refer to both  
12 of them as the same.

13 Q So that when you use "Customer  
14 Service," it means the same thing as Nuclear  
15 Service?

16 A To me, yes.

17 Q D. W. LaBelle, the Manager of the  
18 Safety Analysis Unit, received a copy of GPU Exhibit  
19 76.

20 Are you familiar with Mr. LaBelle?

21 A I know Mr. LaBelle.

22 Q Is he a Unit Manager in the same  
23 section that you are a Unit Manager?

24 A At that time he was.

25 Q What is he today?

2 A He is a member of an organization within  
3 B&W dealing with advanced energy concepts, either  
4 as a Unit Manager or a Supervisory Engineer.

5 Q Is there still a unit within B&W  
6 known as Safety Analysis?

7 A Yes.

8 Q Who is the Manager of that now?

9 A Mr. Barkley Andrews.

10 Q Prior to the Three Mile Island  
11 accident, did you ever have any conversation with  
12 LaBelle on the subject of termination of  
13 high-pressure injection?

14 A I am not sure. I don't believe so.

15 Q Would LaBelle's unit have any  
16 responsibilities that would touch on the operation  
17 of high-pressure injection?

18 A Not generally.

19 Q During the years that you have been  
20 the Manager of ECCS, has Safety Analysis ever  
21 done anything that touched on high-pressure  
22 injection?

23 A Yes.

24 Q What?

25 A For certain secondary side transients, the

2

high-pressure injection system is actuated.

3

In analyzing those transients, Safety Analysis

4

would have to deal with that fact.

5

Q Did you ever consider consulting

6

LaBelle regarding prescriptions that you thought

7

should be sent out on when it would be appropriate

8

to terminate high-pressure injection?

9

A Not that I recall.

10

Q Do you know whether LaBelle was ever

11

consulted after the Three Mile Island accident

12

with respect to the Small Break Guidelines?

13

A No.

14

Q Or believe.

15

A I don't believe he was consulted relative

16

to the Small Break Guidelines.

17

Q Norm Elliott you testified yesterday was

18

the Manager of the training operation at B&W.

19

That is your understanding, is that right?

20

A Yes.

21

Q Have you met Norm Elliott from

22

time to time?

23

A Yes.

24

Q Have you ever been invited to participate

25

in any aspects of training?



2 A I believe so.

3 Q Have you ever participated?

4 A Yes.

5 Q In what training activities have you  
6 participated and in what capacity?

7 A The ECCS would occasionally be asked to give  
8 lectures to utility personnel as part of  
9 training programs conducted by B&W for the utilities.

10 Q When asked, did you serve?

11 A Yes, or had one of my people do the job.

12 Q Prior to the Three Mile Island accident,  
13 had ECCS been asked to give lectures?

14 A Yes.

15 Q Subsequent to the Davis-Besse  
16 transient in September of 1977, but prior to the  
17 Three Mile Island accident, had the ECCS Unit  
18 been asked to give lectures?

19 A I don't believe so.

20 Q On what subjects had ECCS given  
21 lectures prior to the Three Mile Island accident?

22 A Generally on the subject of ECCS analysis,  
23 the materials we supplied in support of the  
24 license for the plant, building analysis.

25 Q Building?

1  
2 A Yes.

3 And perhaps internal forcing functions.

4 Q Did you personally deliver any of the  
5 lectures?

6 A Yes.

7 Q Did you ever talk about the fundamental  
8 purposes of ECCS?

9 A Yes.

10 Q How many times did you give lectures,  
11 you personally?

12 A I'm not sure.

13 Q Were you a regular feature on the  
14 training lecture circuit?

15 MR. FISKE: I don't think there is  
16 any circuit, Mr. Seltzer, in that sense of  
17 the word. They are all home games.

18 Q Were you a regular participant in the  
19 training programs?

20 A I don't know.

21 Q Approximately how many operators  
22 were exposed to an original Bert Dunn lecture on  
23 ECCS?

24 MR. FISKE: I'm sorry, I don't understand  
25 what you mean by "original."

1  
2 MR. SELTZER: By Bert Dunn in  
3 person, not through --

4 MR. FISKE: You mean in sum total  
5 how many different operators listened to any  
6 lecture he gave as part of the training  
7 program?

8 MR. SELTZER: Yes, approximately.

9 Q Prior to March 28th.

10 A I would estimate between 40 and 50.

11 Q Do you know whether any of those  
12 included personnel from Metropolitan Edison Company?

13 A No, I do not.

14 Q In lecturing to 40 or 50, how  
15 many different lectures do you believe you  
16 delivered? In other words, how many different  
17 groups do you think you lectured to?

18 A Two or three.

19 Q In all of the two or three lectures,  
20 do you believe you devoted time to the fundamental  
21 purposes of emergency core cooling?

22 A Yes.

23 Q What are the fundamentals that you  
24 believe you imparted to your students?

25 A One would be the accident basis for each of

1  
2 the emergency core cooling system components;  
3 another would be the description of how the  
4 components function during classical or simplified  
5 accident scenarios to illustrate how they  
6 accomplished their purposes.

7 Q Does that describe the fundamentals  
8 that you related?

9 A It describes the fundamentals relative  
10 to the emergency core cooling system.

11 Q Did you ever discuss when is the  
12 appropriate time for termination of high-pressure  
13 injection?

14 A No.

15 Q Did you ever discuss the concept  
16 of 50 degrees subcooling margin?

17 A Prior to March 28th?

18 Q Yes.

19 A No.

20 Q Did you ever discuss maintenance of  
21 any subcooling margin prior to March 28th, 1979?

22 A I am not sure.

23 Q As we have used "subcooling margin" in  
24 this question and in the previous one, did you  
25 understand that I meant the margin below the

1  
2 temperature at which saturation is achieved?

3 A That's how I took your statement.

4 MR. SELTZER: Off the record.

5 (Discussion off the record.)

6 BY MR. SELTZER:

7 Q Do you want to modify anything that  
8 you have said already in light of your conference  
9 with counsel?

10 A The part of the lecture dealt with the  
11 fact that important or limiting small breaks  
12 required continuous operation of the high-pressure  
13 injection up until the time that the critical  
14 phase of the accident had been passed.

15 Q You told the operators that?

16 A In substance.

17 Q Did you tell them that at all two  
18 or three lectures that you delivered?

19 A I couldn't testify to that directly.  
20 I believe so.

21 Q That prescription requires that the  
22 operators have first identified that there is a  
23 loss of coolant accident in progress, right?

24 A I don't know that I communicated a  
25 prescription.

1  
2 I told them how a small break  
3 accident would involve -- evolve and what were some  
4 of the things necessary to deal with it.

5 Q Did you testify a minute ago that  
6 during a small break loss of coolant accident, it  
7 is important to maintain continuously high-pressure  
8 injection?

9 A I testified that during the limiting  
10 small break loss of coolant accidents, it is  
11 important in order to mitigate the accident to the  
12 degree that the licensing basis for the plant  
13 is maintained, to maintain continuous high-pressure  
14 injection.

15 Q Did you ever discuss with your students  
16 how they should know when they were in the critical  
17 point of the accident and should not terminate  
18 high-pressure injection?

19 A No.

20 Q Who else from the ECCS Unit delivered  
21 lectures to the Training Group before the Three Mile  
22 Island accident?

23 A I'm not sure.

24 Q Whom do you believe gave such  
25 lectures other than yourself?

2 A I believe Bob Jones gave some lectures.

3 Q Do you believe anybody from ECCS  
4 gave lectures to operators coming for training  
5 between the time of Davis-Besse's incident in  
6 September 1977 and March 28th, 1979?

7 A No, I do not believe we did.

8 Q When the participation of ECCS  
9 people was being invited for training, who would  
10 convey the invitation?

11 A I don't think the invitation was unique.

12 Q Could you describe how those requests  
13 came in?

14 A By phone from somebody in the Training  
15 Department.

16 Q Did the request to the best of your  
17 recollection ever come from Norm Elliott?

18 A I have no idea.

19 Q To the best of your recollection,  
20 did the request ever come from Walt Perks?

21 A I have no idea.

22 Q Do you have any recollection of  
23 anybody in Training making a request that somebody  
24 from ECCS come over and give a lecture?

25 MR. FISKE: You mean any specific



individual?

MR. SELTZER: Yes, thanks.

A No, I did not retain anybody's particular name.

Q Prior to the Three Mile Island accident, did you ever make any suggestion to Norm Elliott or anybody else in Training that it could be useful for somebody from the ECCS Unit to come over and give a lecture?

A I don't believe I did.

Q Since the Three Mile Island accident, have you ever expressed to anyone your view on the quality of the B&W training program as it existed prior to the accident?

A No.

Q Have you ever stated anything in writing about the quality of the B&W training program?

A I don't believe so.

Q Have you ever expressed any opinion about the capabilities of the people who have conducted or are responsible for the B&W training program?

A Since March 28th?

2

Q Yes.

3

A Yes.

4

Q In what context did you express such views or opinion?

5

6

A I believe I complimented one of the instructors on his presentation.

7

8

Q Was this a presentation given before or after the accident?

9

10

A After the accident.

11

Q Did you ever compliment an instructor before the accident?

12

13

A Not that I'm aware of.

14

Q Have you ever expressed an opinion about the capability of Norm Elliott?

15

16

A I don't believe so.

17

Q Have you or any of the other ECCS lecturers prepared any written materials in connection with the lectures you delivered before the Three Mile Island accident?

18

19

20

21

A We would use illustrated viewgraphs during the lectures.

22

23

Q Did you hand out any written materials?

24

A I don't believe so.

25

Q When I was asking you previously

1  
2 about whether you have expressed any opinion  
3 about the quality of the training program or the  
4 competence of the people that ran it, I had  
5 asked you whether you had expressed such views after  
6 the accident.

7 Had you ever expressed any views on either  
8 of those subjects before the Three Mile Island  
9 accident?

10 A Not that I recall.

11 Q After the Davis-Besse transient  
12 but before the Three Mile Island accident,  
13 did you ever discuss with anybody the possibility  
14 that you or somebody else from ECCS or the  
15 Engineering Department should give a lecture as  
16 part of the training program on termination of  
17 high-pressure injection?

18 MR. FISKE: I think he answered  
19 that question before, but go ahead.

20 A I don't believe so.

21 Q Are you familiar, other than just  
22 from GPU Exhibit 76, with the October 23, 1977  
23 incident at Davis-Besse?

24 A No.

25 Q Have you ever heard what led the

2 operator to bypass high-pressure injection on  
3 October 23, 1977?

4 A I don't know that I do know what led to  
5 him -- led to it.

6 Q Do you have a belief as to what led  
7 them to terminate it?

8 A Yes.

9 Q What?

10 MR. FISKE: I think you ought to  
11 first ask what the belief is based on.

12 Q What is the belief based on?

13 A I am not sure I can recall.

14 Q O.K. What is your belief as to why  
15 they terminated?

16 A I believe that the pressurizer level  
17 increased again.

18 However, that may have nothing  
19 to do with the actual reason.

20 Q Joe Kelly says in the first sentence  
21 of GPU Exhibit 76, "Two recent events at the Toledo  
22 site have pointed out that perhaps we are not giving  
23 our customers enough guidance on the operation of  
24 the high-pressure injection system."

25 "The Toledo site" refers to Davis-Besse

1  
2 Unit I, does it not?

3 A I believe it does.

4 Q Kelly has said in that first sentence  
5 that those events pointed out that "perhaps we are  
6 not giving our customers enough guidance on the  
7 operation of the high-pressure injection system."

8 You subsequently took actions which  
9 reflected your agreement with that statement,  
10 did you not?

11 A I took actions which were based on my  
12 assumption that this statement is reasonably  
13 accurate.

14 Q Why did you believe that B&W should  
15 give its customers more guidance on the operation  
16 of the high-pressure injection system?

17 A Because for whatever reasons I felt  
18 that operators were terminating high-pressure  
19 injection at inappropriate times.

20 Q Why did you believe B&W should give  
21 greater guidance instead of leaving it to each  
22 customer to try to figure out how to operate  
23 the high-pressure injection system?

24 A Because it's important to operate the  
25 system properly in the event that there is a

critical small break, and we had evidence that in two circumstances it had been operated inappropriately in our belief.

Q Was it your thought that B&W had observed certain experience which other customers could profit from? I didn't phrase that as aptly as I should.

Was it your view that B&W had gained certain experience from its observation of the Toledo Edison incident which other customers of B&W could profit from?

A We had gained information which our customers could I believe profit from.

Q Is there any other reason why you believed B&W was in a good position to give greater guidance on the proper operation of high-pressure injection rather than leaving it to each customer to figure out for itself?

MR. FISKE: I think I will object to the form of the question, but you may answer it.

A Well, it's my understanding that each customer as an organization is responsible for its operations and no, I don't believe there were other reasons.

Q In the box at the top of GPU Exhibit 76



marked for identification what does the heading "Cust." refer to?

A Excuse me?

Q (Indicating.)

Is that short for customer?

A Yes.

Q After the abbreviation for customer, Joe Kelly has written "Generic."

Did you understand Kelly to mean that this was customer guidance on high-pressure injection system operation which should be made generally available to all customers at B&W plants?

A I would interpret that as meaning that to whatever purpose Joe felt this memo would serve, he considered the issue applicable to all customers.

Q Do you see the next to the last sentence in the first paragraph that begins with the phrase "As a result"?

A Yes.

Q Kelly states there, "As a result, the transient continued on with boiling in the RCS, etc."

Does that mean that the temperature



1  
2 in the reactor coolant system exceeded the  
3 saturation point during the Davis-Besse transient?

4 A I would not infer that.

5 Q Can you have boiling in the reactor  
6 coolant system primary control volume without  
7 having reached saturation?

8 A For the system as a whole, yes.

9 Q From your knowledge of the Davis-Besse  
10 transient at the time you received GPU Exhibit 76,  
11 do you believe you were aware that saturation  
12 had occurred in the primary control volume on  
13 September 24, 1977?

14 A My study and deduction of the September 24th,  
15 1977 transient indicated to me that saturation  
16 had occurred in the reactor cooling system.

17 Q When you say "saturation had occurred  
18 in the reactor cooling system," you are referring  
19 to the primary control volume, not the volume  
20 in the pressurizer, right? Because it is my  
21 understanding from Al Womack and others that  
22 you always have saturation from the pressurizer  
23 under normal operation.

24 A With the understanding of that addition, yes.

25 Typically I refer to the primary

1  
2 system as the remainder less the pressurizer.

3 Q Were you telling me a minute ago  
4 that you wouldn't understand the "As a result"  
5 sentence to refer to the existence of saturation  
6 in the reactor cooling system?

7 A I don't believe I told you that.

8 Q Does the sentence, "As a result, the  
9 transient continued on with boiling in the  
10 RCS, etc." mean that saturation temperature had  
11 been reached in the reactor cooling system?

12 A The sentence could not be interpreted  
13 to mean that uniquely.

14 Q Did you understand it to mean that?

15 MR. FISKE: You mean based on  
16 everything he knew about the accident?

17 MR. SELTZER: Yes.

18 A Yes.

19 Q Just to perfect my knowledge, is it  
20 true you can't exceed the saturation temperature  
21 in water until you have boiled off all the  
22 liquid water?

23 A No.

24 Excuse me. You said in water,  
25 didn't you?

2

Q Yes.

3

A That answer is yes, except under extremely unusual circumstances.

4

5

Q Does the steam which stays in

6

close proximity with boiling water also remain

7

near the saturation temperature until all the

8

water has been boiled into steam?

9

MR. FISKE: Mr. Seltzer, I would

10

suggest, if you are asking the questions for

11

general information, you have a highly

12

qualified individual to your right that

13

you can ask.

14

MR. SELTZER: What?

15

MR. FISKE: On your right who can

16

answer all those questions as well as

17

Mr. Dunn can.

18

MR. SELTZER: This is very relevant

19

to what I am going to be getting into.

20

I am not just asking for general edification.

21

MR. FISKE: Well, why don't you read

22

the question back.

23

(Question read by the reporter.)

24

A First, water is a word used to describe a

25

chemical substance, described more accurately as

2 H2O. For the purposes of the remaining  
3 discussion, I will term water as being a liquid  
4 state. I will also have to say that I will be  
5 talking about normal occurrences, the general rule  
6 in answering your question, and occurrences typical  
7 of small break loss of coolant accidents, and  
8 the answer would be yes.

9 Q Are you familiar with the term  
10 "superheat"?

11 A Yes.

12 Q Does superheat refer to an elevation  
13 of steam temperature above the temperature  
14 of saturation?

15 A Yes.

16 Q Kelly concluded in his memo  
17 by saying "I would appreciate your thoughts on this  
18 subject."

19 Do you see that?

20 A Yes.

21 Q Did you, subsequent to receiving  
22 this memo, ever give Kelly your thoughts on the  
23 subject, namely, the subject in his memo?

24 A I don't know.

25 Q Do you believe that you did?

1  
2 A I believe that Joe and I had intercourse  
3 on the subject of the memo and on my thoughts  
4 about the particulars of items "a" and "b." As  
5 to whether that was subsequent to the memo or not,  
6 I don't know.

7 Q What did you believe would be the next  
8 step to obtain any implementation of these guidelines  
9 or communicating these guidelines to customers?

10 A I believe the next step would be an open forum  
11 of discussion.

12 Q Did you think that that was going to be  
13 a forum involving people sitting around in a room  
14 or somewhere discussing it orally?

15 A I believe that to be one possibility.

16 Q Did you believe that the forum could  
17 also be conducted through exchange of written  
18 views?

19 A Yes.

20 Q What led you to believe that a forum  
21 of either nature would ensue?

22 A I felt that people would want to understand  
23 why Joe had written this memo, why he had recommended  
24 "a" and "b."

25 Q Whom did you expect or what group did

1  
2 you expect would take the initiative in creating  
3 such a forum?

4 A I don't believe I had any expectations  
5 of one group or another taking the initiative.

6 Q Did you believe it could be any of  
7 the several people included on the distribution  
8 list who could initiate such a forum?

9 A Yes.

10 MR. FISKE: Is this a good time to  
11 break?

12 MR. SELTZER: Sure.

13 (Recess taken.)

14 BY MR. SELTZER:

15 Q To the best of your recollection,  
16 was the October 23, 1977 Davis-Besse occurrence  
17 ever discussed at a Plant Design Section meeting?

18 A I don't recall such a discussion.

19 Q Bruce Karrasch is on the distribution  
20 of GPU Exhibit 76 marked for identification,  
21 and Bruce Karrasch was also on the distribution of  
22 your February memoranda.

23 Did you ever have any discussions  
24 with Bruce Karrasch prior to the Three Mile Island  
25 accident about the proper time for terminating



2 high-pressure injection?

3 A I don't believe so.

4 Q Joe Kelly's guidelines for when you  
5 should terminate high-pressure injection are not  
6 related to whether the reactor coolant system  
7 is subcooled, is that right?

8 MR. FISKE: Not specifically.

9 MR. SELTZER: Specifically, generally,  
10 or otherwise.

11 Q Let me be as specific as I can be.

12 Joe Kelly's guidelines in GPU Exhibit 76 are  
13 not tied to whether the reactor coolant system is  
14 at a temperature lower than saturation, is that  
15 right?

16 A They are not uniquely tied to that, no.

17 Q In other words, they don't prescribe that  
18 the operators determine that the reactor coolant  
19 system is below saturation before terminating  
20 high-pressure injection, do they?

21 A Not that I can see.

22 Q That was a fundamental  
23 improvement which you made in your guidelines  
24 when you formulated them for Jim Taylor in your  
25 February 16, 1978 memorandum, isn't that right?



MR. FISKE: I think I will object to the form.

You may answer.

A The characterization of the recipe that I gave in the February 9th memo --

Q I don't mean to interrupt, but I was referring to the February 16 memo.

A Very well.

The characterization given in the February 16th memo deals with subcooling and is therefore a change from the characterization given in the November 1 Kelly memo.

Q At the time that you made that change, you believed it was an important change, didn't you?

A I believe that the instructions or recipe contained in the February 16th memo was a more direct measurement of appropriate conditions for termination of high-pressure injection.

Q Do you know of an individual at Babcock & Wilcox named J. F. Walters?

A Yes.

Q Is he somebody that you have spoken

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25

with from time to time?

A I believe we are referring to the person I term Frank Walters, and I know who he is and have spoken to him from time to time.

Q Is Frank Walters somebody who is in Customer Service and reports to Don Hallman?

A No.

Q Did he report to Don Hallman in the fall of 1977?

A I believe so.

Q And he was in Customer Service at that time?

A Yes.

Q Did you ever talk with Frank Walters prior to the Three Mile Island accident about termination of high-pressure injection?

A To the best of my knowledge today, no.

Q Prior to the Three Mile Island accident, did you ever have any conversations with anyone in Training about the subject of termination of high-pressure injection?

A No.

Q Is the Training Services Group located in the same Old Forrest Road building

1  
2 that you were located in in the fall of 1977?

3 A Yes.

4 Q Is there anyone in Training Services  
5 that you were socially friendly with in the  
6 period between the Davis-Besse incident and the  
7 Three-Mile Island accident?

8 A No.

9 Q Is Norm Elliott someone that you  
10 have ever from time to time just called up and  
11 said "How about having lunch together today"?

12 A No.

13 Q Between the time of the Davis-Besse  
14 incident in September of 1977 and the Three Mile  
15 Island accident, did you have any conversations  
16 on any subject with anyone in Training?

17 A Not that I recall.

18 Q On February 9, 1978 you sent a  
19 memorandum to Jim Taylor on the subject: "Operator  
20 Interruption of High-Pressure Injection."

21 What prior contact had you had with  
22 Jim Taylor?

23 MR. FISKE: You mean on anything?

24 MR. SELTZER: Yes.

25 A Many prior contacts.

1  
2 Q Had you worked together with him on  
3 licensing matters?

4 A Yes.

5 Q Is that a fair characterization of all  
6 of the things that you had done together?

7 A Most of them.

8 Q What other things had you done with  
9 Jim Taylor?

10 A Previous to Jim's assignment as Section  
11 Manager for licensing, Jim had been assigned as  
12 a Manager for a group whose function was coordination  
13 with Brown Boveri Reactorate and we had technical  
14 interchanges and relationships during that period.

15 Q At page 82 of your President's  
16 Commission deposition, you were being asked  
17 about the February 3, 1978 memorandum and at line  
18 10 you were asked what led you to address it to  
19 Mr. Taylor. You said, "Mr. Taylor is a Manager of  
20 Licensing. I considered this a significant issue for  
21 which I had not been able to create action by  
22 other means and felt that Mr. Taylor could influence  
23 such action to take place."

24 What did you mean when you said "I had  
25 not been able to create action by other means"?

1

2

What other means were you referring to?

3

4

5

A The discussions with Integration and the request that Integration instigate a forum for review or a forum for resolution of my concern.

6

7

8

9

Q If you felt that you wanted Integration to create a forum for the resolution of your concern, why didn't you speak to Bruce Karrasch, the head of Integration?

10

A I don't know.

11

12

Q Was there any hostility at the time between you and Bruce Karrasch?

13

A No.

14

15

Q Had you had any run-ins with him that made you disinclined to talk to him?

16

A No.

17

18

Q Is he somebody that you conversed with at Plant Design Section staff meetings?

19

A Yes.

20

21

22

Q Is he somebody that you felt you could talk to openly in the course of B&W's business?

23

A Yes.

24

25

Q Is he somebody that you discussed other things with during the period between the

1  
2 Davis-Besse transient and the Three Mile Island  
3 accident?

4 A Yes.

5 Q Were you bashful about discussing it  
6 with him?

7 A No.

8 Q What in particular was there about  
9 Mr. Taylor that made you select him as the  
10 principal recipient of your February 9 and  
11 February 16 memoranda rather than John MacMillan or  
12 Olds or somebody else in the company?

13 A The issue in my belief was safety-related.  
14 Mr. Taylor was a Manager of an organization  
15 connected with the licensing function and thus, to  
16 some extent, connected to safety considerations.

17 Mr. Taylor is also a highly-influential  
18 person within Babcock & Wilcox, and I felt that  
19 that influence would be useful.

20 Q What do you mean by "highly influential"?

21 A Jim is well-respected. He is a Section Manager.  
22 He has many contacts, and in my belief thought to be  
23 a very capable person.

24 Q You say "many contacts."

25 Do you mean contacts with management at



1  
2 B&W that were senior to him among others  
3 with whom he had contact?

4 A I think I meant more generally, just contact  
5 with a great many people in B&W.

6 Q Did those contacts include people  
7 who were in senior management at B&W?

8 A Yes.

9 Q Who was the head of the Engineering  
10 Department at the time of the Davis-Besse  
11 accident?

12 A I believe at the time of the Davis-Besse  
13 accident the head of the Engineering Department  
14 was Mr. Jim Deddens.

15 Q What types of contact did you have with  
16 Jim Deddens while he was the head of the Engineering  
17 Department?

18 A Administrative contacts in the form of  
19 information meetings, meaning contact for review  
20 of critical business issues.

21 Q Were there any periodic meetings  
22 that you and Deddens attended?

23 A During what time period?

24 Q During the period that you were Unit  
25 Manager prior to the Three Mile Island accident.



1

2

A One.

3

Q When was that?

4

A Well, it wasn't unique.

5

Q You mean there was one type of meeting?

6

A Yes.

7

Q It was held recurrently?

8

A Yes.

9

Q What was that type of meeting?

10

A A general department information meeting.

11

Q How frequently were those held?

12

A Approximately once every year.

13

Q At what time of the year?

14

A The practice has been discontinued and I believe they were in the spring but I could be wrong.

16

17

Q Were technical subjects ever discussed at those meetings?

18

19

A No.

20

Q So if you had a serious concern about potential for operator action to terminate high-pressure injection, would that have been an appropriate thing to discuss at the general department information meeting?

21

22

23

24

25

A That would have been a highly inappropriate

2 thing to discuss at that meeting.

3 Q Why would it have been highly  
4 inappropriate?

5 A The meetings were to discuss general  
6 business plans and goals for the corporation.

7 Well, our part of the corporation.

8 Q An important safety concern would  
9 not be appropriate to discuss at such a meeting?

10 A Not in my mind.

11 Q Your concern about high-pressure  
12 injection was an important safety concern in your  
13 mind, wasn't it?

14 A I considered the issue of control of  
15 high-pressure injection as a serious issue and as  
16 related to safety.

17 Q Is Deddens somebody whom you ever  
18 dropped in to talk to without making an appointment  
19 ahead of time?

20 A No.

21 Q Did you ever make an appointment  
22 to see Deddens?

23 A I don't believe so.

24 Q Did you ever discuss with Deddens  
25 your serious concern about inappropriate

1  
2 termination of high-pressure injection?

3 A No.

4 Q Before sending your February memoranda  
5 to Jim Taylor, did you discuss with Don Roy the  
6 fact that you were having trouble getting action  
7 on your serious concern?

8 A I don't believe so.

9 MR. SELTZER: I would like to mark  
10 for identification as GPU Exhibit 77 your  
11 February 9 memo to Jim Taylor, subject:  
12 "Operator Interruption of High-Pressure  
13 Injection."

14 MR. FISKE: Off the record.

15 (Discussion off the record.)

16 MR. SELTZER: I would like to mark  
17 for identification, at Mr. Fiske's suggestion,  
18 the organization chart for the Nuclear Service  
19 Department for, it looks like December 1,  
20 1977, showing Mr. Finnin's position and  
21 from which the witness was testifying a  
22 moment ago.

23 (Organization chart of Nuclear  
24 Service Department dated 12-1-77 marked  
25 GPU Exhibit No. 77 for identification as

of this date.)

(Two-page memorandum dated February 9, 1978 to Jim Taylor from Bert M. Dunn marked GPU Exhibit No. 78 for identification as of this date.)

BY MR. SELTZER:

Q Is GPU Exhibit 78 a copy of a memo which you authored and sent to Jim Taylor on or about February 9, 1978?

A Yes.

Q Did you also send it to each of the individuals listed as a copyee on page 2 of the document?

A I believe so.

Q Eric Swanson is your first copyee. He was in the Plant Integration Section at the time, right?

A Yes.

Q Why did you send it to Eric Swanson?

A Primarily for information.

Q Why did you think this was information that you wanted Eric to have?

A I had been discussing the subject of termination of high-pressure injection with

1  
2 Mr. Swanson and I wanted to keep him informed  
3 of what I was doing.

4 Q Don Roy was the Manager of the Plant  
5 Design Section at the time you sent GPU  
6 Exhibit 76 to him, is that right?

7 A Yes.

8 Q He was also at that time your boss,  
9 right?

10 A Correct.

11 Q And he is the same Don Roy who had  
12 told you go do it, take steps to resolve your  
13 concern over inappropriate termination of  
14 high-pressure injection, right?

15 A We had agreed to my doing that.

16 Q Why did you send Dr. Roy a copy of  
17 GPU Exhibit 78 marked for identification?

18 A For information.

19 Q Why did you believe that this was  
20 information which should come to Dr. Roy's attention?

21 A I don't know.

22 Q Prior to the Three Mile Island  
23 accident, did Don Roy ever say anything to you about  
24 the contents of your February 9 and February 16  
25 memoranda?

1  
2 A Prior to the March 28th accident at Three  
3 Mile Island?

4 I believe he did not.

5 Q You also sent a copy to Bruce  
6 Karrasch, the Manager of the Plant Integration  
7 Section.

8 Why did you believe that you wanted  
9 Bruce Karrasch to have the information contained  
10 in GPU Exhibit 78 marked for identification?  
11 Let me ask a preliminary question.

12 Did you still believe at the time you  
13 sent GPU Exhibit 78 that Plant Integration  
14 would be an appropriate unit to create a forum  
15 for the resolution of your concern?

16 A I believe they would be an appropriate unit,  
17 but I also recognized that the forum had not yet  
18 been created.

19 Q Did you also feel that you had  
20 waited a sufficient amount of time for  
21 Integration to move the ball forward?

22 A Yes.

23 Q And that now you wanted to pursue other  
24 avenues?

25 A Not necessarily.



1  
2 Q This is the first time you brought  
3 your concern to Jim Taylor's attention, isn't  
4 that right?

5 A I believe so.

6 Q When I said "pursue other avenues,"  
7 I didn't mean pursue them to the exclusion of  
8 continuing to pursue having Plant Integration  
9 create a forum.

10 It's a fact, isn't it, that in sending  
11 this to Jim Taylor, you were pursuing another  
12 avenue for resolution of your concern other  
13 than waiting for Plant Integration to act?

14 A I think that's fair.

15 Q Why did you send Bruce Karrasch the  
16 information that is in GPU Exhibit 78?

17 A For information.

18 Q Is there anything you hoped he  
19 would do with the information?

20 A I don't think I can recall whether there was  
21 anything specific I hoped he would do with the  
22 information.

23 Q This is the first time that you had  
24 communicated your concern directly to Bruce Karrasch,  
25 isn't that right?



1  
2 A I believe so.

3 Q Did you have any reason to believe  
4 that Joe Kelly or Eric Swanson had communicated  
5 your concern to Mr. Karrasch before February 9,  
6 1978?

7 A I don't know.

8 Q Did you have any desire that Mr. Karrasch  
9 might take some action or interest in your concern  
10 as a result of receiving your February 9 memorandum?

11 A I had the general desire that people take  
12 interest or action.

13 Q And that general interest would extend  
14 to the people that you were sending this memo to?

15 A Yes.

16 Q All of them?

17 A No.

18 Q Did it extend to Bruce Karrasch?

19 A The general desire, yes.

20 Q At the time you sent H. A. Bailey  
21 a copy of GPU Exhibit 78, he was in a Licensing  
22 Unit that reported to Jim Taylor, is that correct?

23 A That is correct.

24 Q What was his particular function as you  
25 were aware of it in or about early 1978?

1  
2 A Henry was a member of the generic licensing  
3 unit and primarily represented licensing for ECCS  
4 matters.

5 Q In sending the information in GPU  
6 Exhibit 78 to Mr. Bailey, did you want him to be  
7 supportive of your request that Jim Taylor,  
8 who was the head of Licensing, take some action?

9 A Well, I don't think I asked Mr. Taylor to take  
10 any action.

11 I asked that action be taken in the  
12 form that I wanted Henry to support the idea that  
13 action should be taken.

14 Yes, I would have wanted his support.

15 Q You also sent a copy to E. R. Kane  
16 who was in the Operating Plant Licensing  
17 Unit reporting to Mr. Taylor.

18 Did you send it to him because you  
19 wanted his support in obtaining action through  
20 the Licensing Unit or Licensing Section?

21 A Again, I was seeking that action take place.  
22 I am not sure that I was thinking it particularly  
23 important that it take place through the Licensing  
24 Section. In the forum that I was seeking action,  
25 I would have been desirous of Mr. Kane's support.

1  
2 Q In sending it to Jim Taylor, were you  
3 asking that Taylor, possibly with the support of  
4 others in his Licensing Section, initiate  
5 the action to resolve your concern even if they were  
6 not going to complete the action themselves?

7 A Excuse me, I missed the first clause.

8 Q Were you asking that Taylor  
9 and others in Licensing initiate the action even if  
10 they were not going to carry forward the action  
11 entirely by themselves to resolve your concern?

12 Maybe catalyze instead of initiate  
13 would be a better verb.

14 A I was seeking help in starting action.

15 I would say start or cause to be started  
16 action. If that's catalyzation, fine.

17 Q That's what you were looking for from  
18 Jim Taylor and others in Licensing in sending  
19 this memo to them on February 9, 1978, is that  
20 right?

21 A Yes.

22 Q You also sent a copy to J. D. Agar  
23 who was in a Contract Licensing Unit reporting to  
24 Jim Taylor.

25 Were you looking for his support in

getting action initiated by the Licensing Group?

A I was looking for his support in getting action initiated.

Q Was there anything particular about Mr. Agar and the role that you know he had previously performed that led you to select him as a recipient of GPU Exhibit 78?

A Not that I can recall.

Q What about Mr. Kane?

A I believe I was aware that Mr. Kane was connected with operational plants -- operating plants.

Q So that he might be well positioned for initiating the action of communicating with operating plants, is that your thought?

A No.

Q What was his connection to operating plants that encouraged you to send him GPU Exhibit 78?

A That I felt he had a position connected with operating plants and the Licensing area and would be interested in this type of a subject.

Q Are you aware of whether Kane had some role working for Taylor of reviewing safety

concerns including PSCs?

A I don't believe so.

Q What does PSC stand for?

A Preliminary safety concern.

Q Did you believe that there was anybody reporting to Taylor who had as one of his responsibilities monitoring PSCs for the Licensing Section?

A Yes.

Q Who was that?

A I don't know.

Q Among the universe of people whom it could have been, would Kane have been one of them?

A I don't know.

Q You don't have any reason to exclude Kane, do you?

A No.

Q You also sent a copy of the February 9 memorandum to R. L. Pittman who was a Manager of Mechanical Equipment and Fluid Systems in the Nuclear Service Department.

What prior contact had you had with Pittman before you sent him this memorandum?

2 A I don't believe any.

3 Q Why did you decide to communicate  
4 the information in GPU Exhibit 78 to Mr. Pittman?

5 A I wanted to communicate the information in  
6 my memo to representatives of Nuclear Service.  
7 I believe I discussed who those representatives  
8 might be with either Eric Swanson or Joe Kelly  
9 and at that discussion arrived at these names.

10 Q Why, if you can recall, did they  
11 suggest Pittman to you?

12 A I do not recall.

13 Q Who is J. D. Phinny?

14 A I'm not sure.

15 Q Why did you send it to Phinny?

16 A For the same reason the memo was sent to  
17 Pittman.

18 Q Did you believe that Nuclear Service  
19 or Customer Service, as you sometimes call it,  
20 would be an appropriate group for communicating  
21 your concern and your prescription for proper  
22 operation of high-pressure injection to customers?

23 A Yes.

24 Q Was that one of the reasons why you  
25 sent it to people in Nuclear Service?



1  
2 A Yes.

3 Q T. Scott was in Test Planning in Nuclear  
4 Service.

5 Had you had any prior dealings with  
6 Scott before you were kind enough to send him  
7 GPU Exhibit 78?

8 A I agree that I was very kind to send him  
9 that memo.

10 I do not believe I had previous  
11 interactions or at least cannot recall them.

12 Q Is he somebody whose name had been  
13 suggested to you by Eric Swanson, Joe Kelly, as  
14 an appropriate recipient of this memo?

15 A That is correct.

16 Q Did you get any response to this  
17 memo either orally or written from Eric Swanson?

18 A Not that I recall.

19 Q By this memo, let me re-ask the  
20 question and add this memo or the February 16  
21 memo.

22 A Not that I can recall.

23 Q Did you get any response to  
24 either your February 9 or February 16 memoranda  
25 from Dr. Roy?



1  
2 A Previous to March 28th, 1979?

3 Not that I can recall.

4 Q After March 28th, 1979, what, if  
5 any, response to your one-year earlier  
6 memoranda did you get from Dr. Roy?

7 A I can't recall the specifics of responses.

8 Q What did he say in words or substance?

9 A Well, the two memos in question were  
10 discussed a great deal by various parties  
11 after March 28th, 1979, and I wanted to respond  
12 accurately to your question, and not indicate  
13 that nobody had talked about them at all after March  
14 28th, 1979.

15 Don at one time after March 28th,  
16 1979 indicated disappointment that more action  
17 had not taken place because of the memos and  
18 the concern raised in substance.

19 Q Did he indicate that he believed you  
20 should have done more to incite action?

21 A I don't believe so.

22 Q Did he indicate that he believed any  
23 other particular individual should or could have  
24 done more?

25 A No.

1  
2 Q He didn't say in words or substance  
3 that he thought Jim Taylor could have done more  
4 to take action?

5 A No.

6 Q When he spoke to you after the  
7 accident about your February 1978 memoranda,  
8 did he indicate in any way that he remembered  
9 that you and he had discussed your concern over  
10 high-pressure injection being terminated prior to  
11 the Three Mile Island accident?

12 A I'm not sure I can answer.

13 Q Was there anything in your conversation  
14 with Don Roy that would create the belief or  
15 impression that Roy remembered you and he had discussed  
16 your concern at some time prior to the Three Mile  
17 Island accident?

18 MR. FISKE: Wait a second.

19 Can I hear that question again, please?

20 (Question read by the reporter.)

21 A I'm not sure I can answer.

22 Q What is inhibiting your answer?

23 A Privileged communication.

24 Q You mean that Don Roy may have said  
25 something to you on the subject in the presence

1  
2 of an attorney?

3 A Yes.

4 Q Did Don Roy indicate to you after the  
5 Three Mile Island accident that he should have  
6 done more to take action on your concern?

7 MR. FISKE: Did he say that, is that  
8 the question?

9 MR. SELTZER: Yes. Did he say that  
10 in words or substance.

11 A Again, I am not sure I can answer that.

12 MR. FISKE: For the same reason?

13 THE WITNESS: For the same reason.

14 Q I don't want to press it because I think  
15 your counsel may need to know a little bit more  
16 from you about the nature of the communication.

17 I want to press, but if you want to talk  
18 to him first about in whose presence and to whom he  
19 was talking and were they seeking legal counsel  
20 at the time the statement was made before I press  
21 the question, feel free to.

22 MR. FISKE: Yes, I think obviously  
23 for the time being, unless you want us to stop  
24 and do it now.

25 MR. SELTZER: Yes, could you?

1  
2 MR. FISKE: I mean we can step outside  
3 for a moment.

4 MR. SELTZER: Why don't you do that.

5 MR. FISKE: O.K.

6 (Whereupon, Mr. Fiske and the witness  
7 left the room and returned thereafter.)

8 (Recess taken.)

9 MP. FISKE: I have discussed this  
10 subject with Mr. Dunn and if it will save  
11 any time, without precluding you from  
12 asking any questions you want to ask, it is  
13 Mr. Dunn's recollection that the statements  
14 by Dr. Roy were made as part of a meeting  
15 in which Mr. Dunn participated with Dr. Roy and  
16 others with George Edgar who was counsel to  
17 B&W and the purpose of the meeting and  
18 the purpose of the communication was to make  
19 Mr. Edgar aware of the facts in connection  
20 with Mr. Edgar's representation of the  
21 company at the Kemeny hearings, so we  
22 would take the position that that is a  
23 privileged communication.

24 BY MR. SELTZER:

25 Q Did you ever discuss the same subject

1  
2 matter with Don Roy out of the presence of  
3 Mr. Edgar?

4 A I don't know.

5 Q Do you believe that you did?

6 A No.

7 Q At any time before or after the  
8 Three Mile Island accident, did Bruce Karrasch  
9 ever respond to your February 9 or February 16  
10 memorandum?

11 A No.

12 Q Did Mr. Bailey ever respond to either  
13 memorandum?

14 A No.

15 Q Did Mr. Kelly ever respond to either  
16 memorandum either before or after the  
17 accident at Three Mile Island?

18 A Not to my knowledge.

19 Q Did Mr. Kane ever respond to your  
20 February 9 or February 16 memorandum?

21 A Not to my knowledge.

22 Q Did Mr. Agar ever respond to your  
23 February 9 or February 16 memorandum?

24 A Not to my knowledge.

25 Q Did Mr. Pittman ever respond to either

2 your February 9 or February 16 memorandum?

3 A Not to my knowledge.

4 Q Did Mr. Phinny ever respond to your  
5 February 9 or February 16 memorandum?

6 A Not to my knowledge.

7 Q Did Mr. Scott ever respond to your  
8 February 9 or February 16 memorandum?

9 A Not to my knowledge.

10 Q In other words, the only person who  
11 responded to either your February 9 or February 16  
12 memorandum was Dr. Roy?

13 A The testimony I gave relative to Dr. Roy's  
14 response was a short, quick, verbal communication  
15 and not in essence a response to the memo.

16 Q So none of the people whom you sent  
17 copies to responded either orally or in writing  
18 to either the February 9 or the February 16  
19 memorandum, right? Is that your testimony?

20 A Yes.

21 Q That leaves Jim Taylor as the  
22 last hope of mankind.

23 Did Jim Taylor ever respond orally  
24 or in writing to either your February 9 or February  
25 16 memorandum either before or after the Three Mile

1  
2 Island accident?

3 MR. FISKE: I would not object to the  
4 question part of that.

5 MR. SELTZER: I will withdraw the  
6 characterization of who Jim Taylor is.

7 Q Do you understand what is left of  
8 the question?

9 MR. FISKE: Did Mr. Taylor ever  
10 respond to your memo.

11 A I am not sure.

12 Q Other than in the presence of the  
13 illustrious Mr. Edgar, did he ever respond?

14 A I am not sure.

15 MR. FISKE: Off the record.

16 (Discussion off the record.)

17 BY MR. SELTZER:

18 Q Do you believe that he responded to  
19 you?

20 A Yes.

21 Q What is your belief as to when he  
22 responded?

23 A Within a few days of the February 9th memo.

24 Q Prior to receiving the February 16th  
25 memo?



2 A Yes.

3 Q And was that an oral response?

4 A I am talking about my belief that the  
5 response occurred. Yes.

6 MR. FISKE: Well, let's make clear  
7 once again as to whether the belief is based  
8 on a recollection.

9 MR. SELTZER: I am going to press where  
10 it was, who else was there, what was said.

11 Q Where do you believe you had the oral  
12 conversation with Jim Taylor following the  
13 February 19th memo?

14 MR. FISKE: I have no objection to  
15 that, if you just substitute the word  
16 "recall" for "belief."

17 Q You said you believe you had a  
18 conversation with Jim Taylor after February 9,  
19 before February 16.

20 Where do you recall, to the best of  
21 your recollection, such a meeting taking place?

22 A I was in my office.

23 Q Did he come to your office or did he  
24 speak to you over the telephone?

25 A He spoke to me over the telephone.

2

Q How long a conversation was it, to

3

the best of your recollection?

4

A Subject, again, to the belief that this

5

took place, it was five or ten minutes.

6

Q In words or in substance what do you

7

recall he said to you?

8

A He asked me about the validity of my concern

9

and asked me to explain it.

10

Q Did you explain your concern as best

11

you can recall?

12

A Yes.

13

Q What in words or substance did you

14

explain to him was the basis of your concern?

15

A That the operation of high-pressure injection

16

for certain critical small breaks required that

17

the high-pressure injection be on during the entire

18

course of the transient up until the critical phase

19

of the accident.

20

Q Did you discuss with him what the

21

consequences of prematurely terminating high-pressure

22

injection could be?

23

A I believe so.

24

Q Did you tell him in words or substance

25

that the consequences of premature termination

1  
2 could be possible core uncovering?

3 A I believe so.

4 Q Did you tell him that that could lead  
5 to possible fuel damage, or would that go without  
6 saying?

7 A No, that does not go without saying.

8 I indicated that core temperature  
9 excursions for critical small breaks would be  
10 more severe than computed for the licensing  
11 base if significant interruption of the high-pressure  
12 injection prior to the critical phases of the  
13 accident occurred and this could possibly lead  
14 to core damage.

15 Q Did Mr. Taylor indicate in this telephone  
16 conversation that you believe took place that  
17 he didn't believe what you were saying was accurate?

18 A I don't think so.

19 Q Did he say anything to you about  
20 what, if any, action, he intended to take as a  
21 result of getting your February 9 memorandum?

22 A I'm not sure.

23 Q Do you have any recollection of asking  
24 him what action he would take?

25 A No.

1  
2 Q Was there any resolution reached in your  
3 telephone conversation with him?

4 MR. FISKE: The resolution of what?

5 MR. SELTZER: Of any subject that was  
6 being discussed with him on the telephone.

7 A I don't believe so.

8 Q Did he leave you with anything that  
9 he wanted you to follow up on and report back to  
10 him?

11 A No.

12 Q Did you believe at the end of that  
13 conversation that there were any gaps in  
14 Mr. Taylor's knowledge that needed to be filled  
15 in order for him to act upon your February 9  
16 memorandum?

17 THE WITNESS: Could I have that  
18 repeated to me, please?

19 (Question read by the reporter.)

20 A No.

21 MR. SELTZER: Do you want to take a  
22 break for lunch or shall we just continue on?

23 MR. FISKE: No, this is a good time.

24 MR. SELTZER: O.K.

25 (Lunch recess taken at 12:40 p.m.)

## AFTERNOON SESSION

(2:13 p.m.)

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

EXAMINATION (Continued)

BY MR. SELTZER:

Q It's a fact, isn't it, that prior to February 1978 B&W had submitted to the NRC Licensing documents that describe the effectiveness of core cooling during a small break loss of coolant accident, isn't that correct?

A Yes.

Q For certain small break loss of coolant accidents, the Licensing documents submitted required the continued operation of high-pressure injection until a critical point in the loss of coolant accident, isn't that correct?

A That assumption was made in all such analyses.

Q If in fact operators under certain small break loss of coolant accident conditions were terminating high-pressure injection before the critical point was reached, then the effective cooling that was predicted in the Licensing documents would not be maintained, isn't that true?

2 A Not necessarily.

3 Q Isn't it true that in some instances,  
4 if high-pressure injection were terminated  
5 before the critical point effective cooling would  
6 not be maintained?

7 A That's true.

8 Q In --

9 A Excuse me. Effective cooling to the level  
10 predicted by the Licensing calculations  
11 would not be maintained.

12 Q What is the level of effective  
13 cooling which the GDC required?

14 A I can't answer your question.

15 Q What is the level of effective cooling  
16 which 50.46 requires?

17 A 50.46, Code of Federal Regulations, expresses  
18 effective cooling in terms of four or five results  
19 of the accident measured by other parameters,  
20 people normally think it as clad temperature  
21 below 22 hundred degrees Fahrenheit.

22 Q And that's the cladding on the fuel rods?

23 A Yes.

24 Q You said there were four or five  
25 criteria?

1

2

A Yes.

3

Q Do all four or five go to maintaining clad temperature below 2200 degrees?

4

5

A No.

6

Q What were the other four or five?

7

A Local calculated oxidation of the clad during the accident shall not exceed 17 percent. The integrated degree of cladding oxidation over the entire surface of the core shall not exceed one percent of the theoretical maximum oxidation for zircalloy. The core shall be maintained in a condition amenable to core cooling and a long-term cooling process should be established.

10

11

12

13

14

15

Q Are those five parameters the criteria of effective core cooling set forth in 10 CFR, Section 50.46, as you understand it?

17

18

A Yes.

19

Q Do the General Design criteria also specify what is effective core cooling?

20

21

A I am not sure.

22

Q Do you ever do work in ECCS Analysis that requires compliance with the General Design criteria of the NRC?

23

24

25

A I believe that as far as the emergency



core cooling system is concerned, the General Design criteria are very non-specific. In practice, meeting the criteria set forth in 10 CFR, 50.46 is recognized as providing systems in compliance with the General Design criteria.

Q Do you ever do work in your ECCS Analysis Unit that requires conformance to the NRC Standard Review Plan?

A No.

Q Do you ever do work in your unit --

A Excuse me. I made a mistake.

The answer to the previous question should have been yes.

Q In other words, you do work in which you attempt to conform to the criteria of the Standard Review Plan?

A Do work in which we will comply with some Standard Review Plans.

Q Which Standard Review Plans?

A That would depend on the type of analysis that we were performing. I would be talking most often about responsibilities for containment calculations, internal forcing functions calculations, subcompartment calculations.

1

2

Q Did you say internal forcing functions?

3

A Yes.

4

Q Do you ever concern yourself in the ECCS Analysis Unit with the single failure criteria?

5

6

A We apply such a criteria to our work.

7

8

Q Do you try to apply it so that you can determine whether no single failure results in a loss of effective core cooling?

9

10

MR. FISKE: Are you talking

11

now or pre-Three Mile Island or ever?

12

MR. SELTZER: Ever.

13

A No.

14

Q How do you apply it?

15

A The Licensing basis of the plant is constructed around a bounding single failure made up of one complete train of emergency systems considered to be out of service during the accident.

16

17

18

19

Q Do you do analyses in your unit of multiple casualties?

20

21

A We have.

22

23

24

25

Q Do you do analyses of multiple casualties in which after one train is assumed to be out of service, a subsequent casualty affects the operation of the remaining train?

2 A I don't believe I would term them analyses.

3 Q What would you call them?

4 A We have passed opinions on the results  
5 of those types of things.

6 Q Do you mean pass an opinion?

7 A Expressed an opinion.

8 Q What do you express an opinion on?  
9 What have you expressed an opinion on?

10 A Can we have that qualified a little bit?

11 Q You said that "pass an opinion" meant  
12 have expressed an opinion, and I want to now  
13 get back to what is it that you have expressed an  
14 opinion on with respect to multiple casualties  
15 occurring.

16 You said you didn't do analyses, but  
17 you have passed opinions?

18 A You gave me a very specific multiple casualty.

19 Q O.K.

20 A And we have expressed opinions on, for example,  
21 the time required for a total core boil-off with no  
22 ECCS whatsoever. That would be a multiple casualty  
23 like you discussed.

24 Q You said you passed an opinion on that  
25 but you haven't done an analysis of it?

1

2

A No.

3

Q No what?

4

A No, we have not done a detailed analysis of that.

5

6

Q At the time you wrote GPU Exhibit 78 marked for identification to Jim Taylor, you were referring to the termination of high-pressure injection in response to an indicated high-pressurizer water level, right?

10

11

A I was talking about the termination of high-pressure injection during the September 24th Toledo incident.

12

13

14

Q And you indicate in the beginning of the second paragraph that it was terminated due to "an apparent system recovery indicated by high level within the pressurizer," do you see that?

16

17

18

A Yes.

19

20

21

22

Q If high-pressure injection is terminated at that time and not resumed, would the ability to keep the core effectively cooled within the criteria of Section 50.46 be imperiled?

23

24

MR. FISKE: Could I hear the question again, please.

25

(Question read by the reporter.)

2 A Not necessarily.

3 Q In a reactor that had been at full  
4 load immediately prior to the start of such a  
5 transient, would the ability of the core to  
6 continued to be effectively cooled be imperiled?

7 A Not necessarily.

8 Q Under certain circumstances would it be?

9 A Under the assumption that we are talking about  
10 the events as they occurred at Toledo on  
11 September 24th, 1977 under certain circumstances,  
12 the ability to cool the core would be imperiled.

13 Q What are the circumstances that would  
14 lead to the ability to cool the core being  
15 imperiled?

16 MR. FISKE: Are you asking Mr. Dunn  
17 for what was in his mind at the time he wrote  
18 his memo?

19 MR. FISKE: Yes.

20 A As an example, the block valve for the PORV  
21 in this accident was closed at 20 minutes. Had  
22 that block valve remained open for an extended  
23 period of time, the ability to cool the core  
24 would have been imperiled should something have  
25 happened to the reactor coolant pumps.

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Q You mean if there was a loss of off-site power, for example?

A That would be one possible way to terminate reactor coolant pump function.

Q If the reactor coolant pumps were manually arrested and couldn't be restarted, would that be another?

A Yes.

Q Are you saying that that would imperil effective core cooling in the context of the Davis-Besse plant which was only at 9 percent of full power when the transient began?

A I had thought we were talking about a plant that was at full power. I believe my answer would be as good at 9 percent power.

Q You mean your answer would be the same?

A Yes.

Q At the conclusion of the second paragraph of GPU Exhibit 78 marked for identification, you said, "Had this event occurred in a reactor at full power with other than insignificant burnup it is quite possible, perhaps probable, that core uncover and possible fuel damage would have resulted."

1  
2                   Were you assuming when you made that  
3 statement that the scenario at Davis-Besse was  
4 the same as it was, that the sequence of events was  
5 the same except that the reactor was at full power  
6 with other than insignificant burnup?

7       A       For the purposes of the sentence I was  
8 enhancing the result to some extent; it would have  
9 also been a requirement to have had the PORV opened  
10 for a somewhat extended period of time over the  
11 events of that day.

12       Q       When you say "opened for some extended  
13 period of time," do you mean longer than the 20 minutes  
14 it was open without the block valve shut?

15       A       Yes.

16       Q       Have you ever done or seen any  
17 analysis or calculations of how long a block  
18 valve would have to remain open for the  
19 consequences that you have described here  
20 to occur?

21                   MR. FISKE: "The consequences" being  
22 "quite possible, perhaps probable, that  
23 core uncover and possible fuel damage  
24 would have resulted"?

25                   MR. SELTZER: Yes.



2 A I don't believe so.

3 Q When you wrote GPU Exhibit 78 to the  
4 Manager of Licensing, Jim Taylor, did it occur  
5 to you that you were raising a licensing concern  
6 with him since the termination of high-pressure  
7 injection could imperil the ability of the plant  
8 to keep the core effectively cooled within the  
9 requirements of 50.46?

10 A No.

11 Q Is that an issue that you believe  
12 you discussed with Jim Taylor in your telephone  
13 conversation with him shortly after February 9th?

14 A No.

15 Q Has it ever occurred to you that  
16 it raises licensing concerns?

17 MR. FISKE: Well, I will object to  
18 that question.

19 Q Have you ever discussed with anybody  
20 that the inability to keep the core effectively  
21 cooled because of a premature termination of  
22 high-pressure injection can imperil the ability to  
23 cool to the levels required by Section 50.46?

24 A I believe so.

25 Q With whom have you discussed that?

1  
2 First let me ask you, have you had  
3 such discussion prior to the Three Mile Island  
4 accident?

5 A I believe so.

6 Q With whom?

7 A Mr. Eric Swanson, Mr. Joe Kelly, Don Roy,  
8 and Jim Taylor; Bob Jones.

9 Q Were the discussions that you had,  
10 discussions that you had simultaneously with  
11 all of them present or were those several  
12 different discussions?

13 A These were the same discussions I have  
14 testified about earlier.

15 Q In other words, all of these are  
16 discussions which you had after the Davis-Besse  
17 event of September 24th, 1977 and before the  
18 Three Mile Island accident?

19 A All of these discussions were.

20 Q When did you discuss the inability  
21 to cool effectively to the requirements of Section  
22 50.46 with Mr. Taylor?

23 A I think I may have answered inappropriately  
24 a minute ago.

25 The discussion with Mr. Taylor was

1  
2 in the phone conversation which I said I believe  
3 I had, so I can't state with assurance that  
4 I had -- that discussion with Mr. Taylor would  
5 have been during that telephone conversation.

6 Q You believe during a telephone  
7 conversation shortly after you received your  
8 February 9, 1978 memo you discussed with him the  
9 fact that if high-pressure injection were  
10 terminated during a small break loss of coolant  
11 accident, it could imperil the ability to maintain  
12 effective core cooling up to the requirements of  
13 Section 50.46, is that your belief?

14 A My best belief is that the communication  
15 said that the cladding temperatures would be  
16 higher than calculated for the licensing basis  
17 and could in fact proceed to extreme  
18 temperature which would violate the requirements  
19 of 10 CFR 50.46.

20 MR. FISKE: I think there is one  
21 aspect of the question that may be a little  
22 confusing.

23 When you asked him whether he  
24 discussed the fact that terminating HPI  
25 could affect the ability to cool the core

2

within the requirements of 50.46, I am

3

not sure it's clear whether you are asking

4

him whether he actually referred to that

5

conclusion or whether he referred to facts

6

from which you could draw that conclusion.

7

I think his answer perhaps illustrates

8

that.

9

Q In talking with Jim Taylor in the

10

conversation you believe you had with him, you

11

discussed the effects of such a sequence of

12

events on cladding temperature, right?

13

A Yes.

14

Q Did either of you state, to the

15

best of your recollection, that such a rise in

16

cladding temperatures would exceed the permissible

17

upper limit under Section 50.46?

18

A I don't believe so.

19

Q From your familiarity with Jim Taylor,

20

would he be well aware that extreme cladding

21

temperatures would violate the criteria of

22

Section 50.46?

23

MR. FISKE: I object to that question.

24

I don't think Mr. Dunn should have to answer

25

that.

1  
2 Q From your experience -- and I mean  
3 your actual experience dealing with Jim Taylor -- has  
4 he shown by his actions, including his statements  
5 and his writings, that he is somebody who  
6 understands the criteria of Section 50.46?

7 MR. FISKE: I am going to object to  
8 that, Mr. Seltzer. That's an extremely broad  
9 question.

10 MR. SELTZER: I will limit it, at your  
11 suggestion, Bob, to the five criteria  
12 of effective core cooling.

13 This is somebody who said he had  
14 numerous dealings with Jim Taylor in  
15 licensing contexts.

16 MR. FISKE: If you want to ask him  
17 whether he has discussed those requirements with  
18 Mr. Taylor, I have no problem.

19 MR. SELTZER: I will start there, thanks.

20 MR. FISKE: But you are asking him to form  
21 a conclusion which I am not sure that he is  
22 any more qualified to form than anyone else.

23 MR. SELTZER: I appreciate your help.

24 Q Have you dealt with Jim Taylor on  
25 licensing matters where compliance with Section 50.46

1  
2 was an issue?

3 A Yes.

4 Q Have you dealt with Him Taylor where  
5 complying with the requirements of effective core  
6 cooling under 50.46 was a significant issue?

7 A Yes.

8 Q Did you converse with Jim Taylor about  
9 the several criteria for effective core cooling  
10 under Section 50.46?

11 A Yes.

12 Q Did you converse with him about the  
13 fact that maximum cladding temperature was one  
14 of the effective criteria for effective core  
15 cooling under Section 50.46? That was a little  
16 less than fully articulate.

17 Have you conversed with Jim  
18 Taylor about the fact that maintaining cladding  
19 temperatures less than a certain maximum is one  
20 of the criteria for effective core cooling  
21 under Section 50.46?

22 A Yes.

23 Q From those conversations with Taylor,  
24 do you believe that Taylor understands the criterion  
25 of maintaining cladding temperature less than 2200

degrees?

MR. FISKE: I am going to object to that again, Mr. Seltzer. The facts are the facts and you can ask Mr. Taylor.

MR. SELTZER: I can ask Taylor, but I think I am entitled to ask other people whether --

MR. FISKE: Whether he thinks he knows?

MR. SELTZER: Yes.

MR. FISKE: I don't think you can do that.

MR. SELTZER: I am flabbergasted if you are concerned that somebody is going to say that the Manager of Licensing at the great Babcock & Wilcox Company doesn't understand the core cooling criteria of 10 CFR 50.46.

MR. FISKE: Believe me, Mr. Seltzer, I invite you to ask Mr. Taylor and you will get a forthright answer.

As a matter of principle, I don't think it is proper to ask Mr. Dunn or any other witness to speculate what he thinks somebody else knows about something.



2

MR. SELTZER: I am not asking him

3

to speculate.

4

I am asking from statements that Jim

5

Taylor made and actions Jim Taylor has taken, has

6

Jim Taylor evidenced a comprehension of this

7

particular aspect of 10 CFR 50.46.

8

I think people can ask whether they have

9

seen Reggie Jackson exhibit proper fielding

10

talents in right field at Yankee Stadium and it

11

is not a proper objection to say, "Why don't

12

you ask Mr. Jackson?"

13

Now, this man has witnessed Jim Taylor

14

displaying certain skills in discussing

15

and using the tools of 10 CFR 50.46. I would

16

like to ask his conclusion whether, from the

17

display that he observed, Taylor was showing

18

a comprehension of that.

19

I think it is pretty elemental.

20

MR. FISKE: I don't think it's a big

21

deal, so go ahead.

22

BY MR. SELTZER:

23

Q Have you ever seen Reggie Jackson

24

field a ball at Yankee Stadium?

25

A No.

2

Q So I won't ask you about that.

3

4

5

You have had conversations with Jim Taylor regarding maximum cladding temperatures permitted under the criteria of 50.46, right?

6

A Yes.

7

8

9

10

11

Q From what you have observed in Taylor's statements and writings, does Taylor show a comprehension of the maximum clad temperature permitted for effective core cooling under Section 50.46?

12

13

14

MR. FISKE: On this one I will settle for an objection as to form.

15

16

Q You may answer.

THE WITNESS: Does that mean I may answer?

17

18

A Yes.

19

20

21

22

23

Q You said in your earlier testimony that you talked with Taylor about the fact that when you terminate high-pressure injection under the circumstances described in GPU 78 it would lead to extremes in cladding temperature.

24

25

By the use of the word "extremes," did you mean temperatures in excess of 2200 degrees?

1  
2 A In a general way, depending on how long  
3 the emergency core cooling system was terminated  
4 prior to the critical time during an accident,  
5 the temperatures could be in excess of 2200 degrees  
6 Fahrenheit.

7 Q Is that what you were intending to  
8 convey to Mr. Taylor in your conversation with him?

9 A That was part of it.

10 Q In your conversations with Don Roy  
11 in which you say you discussed the fact that  
12 effective core cooling would be imperiled by  
13 the inappropriate termination of high-pressure  
14 injection, did you or he, to the best of your  
15 recollection, ever specifically mention compliance  
16 with Section 50.46?

17 A Not to my knowledge.

18 Q In conversations with Eric Swanson,  
19 did you ever mention compliance with Section 50.46?

20 A Not to my knowledge.

21 Q In your conversations with Kelly  
22 or with Jones regarding the problem of premature  
23 termination of high-pressure injection, did  
24 you ever mention or did they ever mention to you  
25 that this could imperil compliance with 50.46?

2 A I do not believe so.

3 Q From your work with it, is it your  
4 understanding that Section 50.46 sets forth  
5 criteria which have to be met in order for a  
6 plant to be licensed?

7 A No.

8 Q What, if anything, is the relationship  
9 between Section 50.46 and licensability of a nuclear  
10 plant in the United States of America?

11 A 50.46 puts forth criteria which must be  
12 met by certain plants to receive licenses for  
13 operations in the United States. .

14 Q Is it correct that all of the 177 and  
15 205 nuclear plants supplied by B&W to operators  
16 in the United States have had to meet the criteria  
17 of Section 50.46 in order to be licensed?

18 A No.

19 Q Which ones have not had to meet  
20 50.46?

21 A I am not sure.

22 Q How do you know that there are some  
23 that haven't had to comply with it?

24 A 10 CFR 50.46 was issued at a time after  
25 which certain of our plants had already operated,

2 operated under another rule for a period of time.

3 Q Do you believe that Davis-Besse has  
4 had to comply with 50.46?

5 A Yes.

6 Q Do you believe that Three Mile  
7 Island Unit 2 had to comply with it?

8 A Yes.

9 Q You said that in the first sentence  
10 of your memo to Jim Taylor, GPU Exhibit 78, "This  
11 memo addresses a serious concern within ECCS Analysis."

12 Do you see that?

13 A Yes.

14 Q With what other members of the ECCS  
15 Analysis Unit had you discussed the serious concern  
16 addressed by this memo?

17 A Mr. Bob Jones.

18 Q Any others?

19 A I'm not sure.

20 Q Do you believe that there were others  
21 whose names you can't positively recollect?

22 A I don't know.

23 Q Was it your practice in 1977 and 1978  
24 to hold periodic meetings among some or all of  
25 the members of the staff of ECCS Analysis?

1  
2 A No.

3 Q Did you ever hold team meetings?

4 A Yes.

5 Q Do you conduct them on a non-periodic  
6 basis?

7 A Yes.

8 Q Did you have any meetings of some or  
9 all of the members of ECCS Analysis prior to February  
10 9, 1978 when you discussed any of the implications  
11 of the Davis-Besse transient or termination of  
12 high-pressure injection?

13 A I don't know.

14 Q Do you believe that you did?

15 MR. FISKE: If you put it in terms  
16 of recollection, I won't object.

17 Q Do you have any recollection of such a  
18 conversation?

19 A I do not recall one.

20 (Recess taken.)

21 BY MR. SELTZER:

22 Q In your telephone conversation with  
23 Taylor which you believe took place, did Taylor  
24 say anything to indicate whether he had previously  
25 been informed of the Davis-Besse transient of

1  
2 September 24, 1977?

3 A I don't recall.

4 Q Do you remember whether Jim Taylor was  
5 at the Training Room B meeting shortly after the  
6 Davis-Besse transient?

7 A I do not remember.

8 Q At any time during your conversation  
9 with Jim Taylor regarding your February 9 memorandum,  
10 did Taylor say anything to you which in words or  
11 substance informed you of any action which Taylor  
12 was going to take or was considering taking as a  
13 result of your memorandum?

14 A Yes.

15 Q What did he say in words or substance?

16 A In substance that he was going to ask Nuclear  
17 Service to follow up on the issue.

18 Q Did he indicate how he was going to ask  
19 them to follow up?

20 A No.

21 Q Did he --

22 A Not that I recall.

23 Q Do you recall whether he indicated  
24 who in Nuclear Service he was going to ask to do the  
25 following up?



1  
2 A I don't believe he did.

3 Q What, if anything, was your response  
4 to that statement by Mr. Taylor?

5 A I agreed.

6 Q You agreed that that would be a good  
7 next step to take, is that right?

8 A That that would be a next step to take.

9 Q You concluded your memo, GPU  
10 Exhibit 78, by stating, "I believe this is a very  
11 serious matter and deserves our prompt attention and  
12 correction."

13 Do you see that?

14 A Yes.

15 Q When you used the pronoun "our," were  
16 you referring to Babcock & Wilcox?

17 A Yes.

18 Q I take it when you made that statement,  
19 you believed that that was a proper conclusion?

20 A That what was a proper conclusion?

21 Q That this is a very serious matter and  
22 deserves B&W's prompt attention and correct.

23 A Yes.

24 MR. SELTZER: I would like to mark as  
25 GPU Exhibit 79 for identification your next

correspondence with Jim Taylor dated February 16, 1978, subject: "Operator Interruption of High-Pressure Injection."

(Memorandum dated February 16, 1978, subject: "Operator Interruption of High-Pressure Injection" marked GPU Exhibit No. 79 for identification as of this date.)

Q Is GPU Exhibit 79 a copy of a memorandum which you sent to Jim Taylor on or about February 16, 1978?

A Yes.

Q Did you also send a copy to each of the individuals listed after "cc:" at the bottom of the page?

A I believe so.

Q Who is that chap, R. Davis?

A That would be Ron Davis.

Q Was he the Manager of Control Analysis at that time?

A At that time.

Q Why did you decide to add him to the distribution?

A I don't recall.

1  
2 Q Control Analysis is a unit in what  
3 section?

4 A The Plant Design Section.

5 Q Did you ever get any response from  
6 Davis to your memorandum?

7 A Not that I recall.

8 Q You begin your February 16 memorandum  
9 by telling Jim Taylor, "In review of my earlier  
10 memo on this subject, dated February 9, 1978,  
11 Field Service has recommended the following  
12 procedure for terminating high-pressure injection  
13 following a LOCA."

14 Is Field Service different from Customer  
15 Service?

16 A It may be. Not in my terminology.

17 Q So in your terminology, Field Service,  
18 Customer Service, and Nuclear Service are tautologies?

19 MR. FISKE: That means they are the same?

20 MR. SELTZER: Yes.

21 A Yes.

22 Q Who in Field Service had reviewed your  
23 earlier memorandum?

24 A I don't know.

25 Q Do you have a belief as to whom it was,

1  
2 who recommended the following procedure for terminating  
3 high-pressure injection?

4 A My belief, the person that participated  
5 with me, and in fact recommended parts of this recipe,  
6 was Mr. Kal Goslow.

7 Q What were the circumstances under which  
8 you got together with Goslow to discuss this?

9 A As I recall, Kal telephoned me indicating that  
10 he was looking at my February 9th memo and wanted to  
11 have a discussion, and we met shortly thereafter in my  
12 office.

13 Q Did Kal Goslow indicate to you from  
14 whom he had received a copy of your February 9  
15 memorandum?

16 A No.

17 Q What was Kal Goslow's contribution?

18 A To the February 16th memo?

19 Q Yes.

20 A Basically the outline of the second allowable  
21 condition for high-pressure injection termination  
22 was Mr. Goslow's.

23 Q In other words, instead of keying the  
24 second criterion to a specific temperature or  
25 a specific pressure, he suggested tying it to some

2 safe margin below saturation?

3 A To my understanding, that's correct.

4 Q Who was it who thought 50 degrees was  
5 a nice round number to take for the subcooling  
6 margin?

7 MR. FISKE: You mean who recommended the  
8 50 degrees?

9 MR. SELTZER: Exactly.

10 A At this time I can't recall.

11 Q Did Goslow indicate to you that he  
12 had discussed your February 9 recipe with  
13 anyone else in his section?

14 A I don't recall.

15 Q Did he indicate that he had discussed  
16 any of your concern regarding high-pressure  
17 injection with anyone in Customer Service,  
18 Nuclear Service, Field Service?

19 A I don't recall.

20 Q Why did you pick ten minutes as the  
21 appropriate time period in both paragraphs 1 and 2  
22 of the recipe?

23 MR. FISKE: I object to the form of  
24 the question.

25 MR. SELTZER: Why?

1  
2 MR. FISKE: Well, I don't think he did  
3 pick ten minutes in the second part (indicating).

4 MR. SELTZER: I suggest that possibly ten  
5 minutes will be the adequate time.

6 Q I will stand corrected. I am just  
7 asking how did you come up with ten minutes as being  
8 the time that you inserted for any purpose in  
9 paragraphs 1 and 2.

10 A It was a subjective decision.

11 Q On April 2, 1979, B&W sent out  
12 to all of its customers guidelines for when it is  
13 appropriate to terminate high-pressure injection.

14 Are you aware of that?

15 A April of '79?

16 Q Yes.

17 A Yes.

18 Q The April 4, 1979 prescription or, as you  
19 have called it, recipe was verbatim, the items 1  
20 and 2 that you have here except that a time period  
21 of 20 minutes was used instead of ten minutes,  
22 isn't that correct?

23 A No.

24 (Recess taken.)  
25

1  
2 BY MR. SELTZER:

3 Q In any of your monthly reports  
4 did you ever make reference to the area of concern  
5 described in your February 9 or February 16 memoranda?

6 A I don't know.

7 Q Do you have any belief as to whether  
8 you did?

9 A No. Not one way or the other.

10 Q Subsequent to the telephone conversation  
11 with Mr. Taylor, did you ever follow up with him,  
12 prior to the Three Mile Island accident, to see  
13 what, if anything, he had done?

14 A Not other than this memo on February 16th.

15 Q Were there occasions between February 16,  
16 1978 and March 26, 1978 when you spoke with Jim  
17 Taylor?

18 A Yes.

19 Q Were there occasions when you spoke  
20 to him face to face?

21 A Yes.

22 Q Did you assist him on licensing matters  
23 during that period of approximately a year and one  
24 month?

25 A Yes.



1  
2 Q Did you assist him on licensing matters  
3 on more than one plant?

4 A Yes.

5 Q Is Taylor somebody that you felt  
6 you could converse with informally?

7 A Yes.

8 Q Prior to the Three Mile Island  
9 accident, is he somebody into whose office you  
10 could stop for conversation without an  
11 appointment?

12 A Yes.

13 Q Did you from time to time?

14 A I have done that from time to time.

15 Q Did he sometimes stop into your  
16 office to talk?

17 A Yes.

18 Q During the period from February 16,  
19 1978 through March 28, 1979, did you ever ask Jim  
20 Taylor what he had done with the ideas you  
21 had expressed in your February 9th and 16th memoranda  
22 to him?

23 A Not that I recall.

24 Q Did he ever mention anything to you  
25 during that period about what he was doing with

1  
2 respect to either of your memoranda?

3 A Not that I recall.

4 Q What was Kal Goslow's reaction  
5 to your concern as he expressed it to you?

6 A I don't know that he expressed his reaction  
7 to me.

8 Q Did he say anything that indicated that  
9 he thought advice should be sent out to customers  
10 regarding when it would be appropriate to terminate  
11 high-pressure injection?

12 A No.

13 Q I take it he indicated to you that he  
14 knew the recipe that you were preparing was a  
15 recipe to be sent to operators of B&W plants,  
16 is that a fair statement?

17 A You should ask Kal.

18 Q I will tell him you sent him.

19 After February 16, 1978, what was  
20 the next involvement you had with any action taken  
21 on the concerns you were expressing in GPU  
22 Exhibits 78 and 79?

23 A Shortly following the Three Mile  
24 Island accident?

25 Q Yes.

For more than a year after February 16, 1978, did you speak to anybody about the concerns that you had voiced in the Exhibits 78 and 79?

A I don't believe so.

Q Did you write to anybody or did anyone write to you about the concerns you had voiced in the GPU Exhibits 78 and 79 marked for identification?

A I did not write to anybody and I don't believe anybody wrote to me.

Q Except Hallman who gave you a copy of his August 3, 1978 memo to Karrasch, right?

A Correct. Hallman put me on distribution for that memo.

Q Did you take no further action after sending the February 16 memo because you understood that Taylor was going to be taking whatever further action was necessary?

A No.

Q Did you take no further action because you believed Nuclear Service was going to be taking whatever further action was necessary?

A Yes.

Q Did you have that belief because

2 of what Taylor had told you over the telephone?

3 A No.

4 Q From what did you gain the belief that  
5 Nuclear Service would be taking whatever  
6 action was necessary?

7 A I am not sure how I got that belief.

8 Q Is it possible that it came from  
9 what Taylor had told you over the telephone?

10 MR. FISKE: I object to the form  
11 of the question.

12 Q You may answer.

13 A No.

14 Q Is there anything else that you recall  
15 that you would say was the source of that belief?

16 MR. FISKE: I think he just said he  
17 doesn't know how.

18 MR. SELTZER: I am just asking a  
19 second time.

20 A Would you repeat --

21 THE WITNESS: Can you read the question  
22 back to me, please?

23 (Question read by the reporter.)

24 A I don't know that I can answer that question.

25 Q What is it about the question that

1  
2 makes it difficult to answer?

3 A The "anything else that I recall that I  
4 would say," that seems to require speculation.

5 Q Is there anything else that you recall  
6 that gave rise to that belief, that Nuclear  
7 Service was going to take further action with  
8 regard to your concern?

9 A The interaction between myself and Mr. Goslow  
10 led me to that assumption.

11 Q You mean somebody in Nuclear  
12 Service must have given Kal Goslow the memo because  
13 they thought it was a concern worth pursuing, is that  
14 the assumption you were making?

15 A No.

16 Q Explain how your assumption worked,  
17 please.

18 A That's what I can't explain.

19 Q So you are saying the appearance of  
20 Kal Goslow in your office with a copy of your  
21 memorandum in his hand from February 9 and his  
22 desire to discuss it with you created in your mind  
23 the assumption that Nuclear Service was going  
24 to take some further action?

25 A That, and our follow-on agreement of an

1  
2 alternate recipe which was for the most part  
3 created by Mr. Goslow or someone else in Nuclear  
4 Service and communicated to me by him.

5 Q What do you mean when you say "our  
6 follow-on agreement"? What was the agreement?

7 A The words in the February 16th memo, item 2.

8 Q Those were words which you had agreed  
9 upon with Kal Goslow?

10 A Yes.

11 Q Kal Goslow isn't marked for a copy of  
12 your February 16th memorandum.

13 Do you have any belief that you sent  
14 him a copy?

15 A I don't recall.

16 Q Do you have any belief that you sent  
17 copies of the February 9th or 16th memorandum to  
18 anybody who is not marked for copies on those  
19 memos?

20 MR. FISKE: You mean recollection?

21 MR. SELTZER: Yes.

22 A I have no recollection one way or the other.

23 Q Do you have any belief that you sent  
24 it to people other than the listed copyees  
25 and addressee?

1  
2 A No. Not one way or the other.

3 Q Prior to the Three Mile Island accident,  
4 had you ever been asked to review an SPI before it  
5 was sent out?

6 A What is an SIP?

7 Q A Site Instruction Package.

8 A I don't know.

9 Q Had you ever been asked before the  
10 Three Mile Island accident to review any instructions  
11 sent out by B&W to customers?

12 A I don't recall.

13 MR. SELTZER: I would like to have  
14 marked as GPU Exhibit 80 for identification  
15 Don Hallman's memo to Bruce Karrasch  
16 with a copy to you and others dated  
17 August 3, 1978, subject: "Operator  
18 Interruption of High-Pressure Injection  
19 (HPI)."

20 (Memorandum to Bruce Karrasch from  
21 Don Hallman dated August 3, 1978, subject:  
22 "Operator Interruption of High-Pressure  
23 Injection (HPI)" marked GPU Exhibit No. 80  
24 for identification as of this date.)

25 Q Don Hallman says in the first sentence



2 of GPU Exhibit 80, "References 1 and 2 (attached)  
3 recommend a change in B&W's philosophy for  
4 high-pressure injection system use during  
5 low-pressure transients."

6 What is a low-pressure transient as  
7 you understand its use here?

8 A I'm not sure to the extent which it is used.  
9 My interpretation would be that transient which  
10 evolved to system conditions below normal.

11 Q References 1 and 2 are references to works  
12 that you authored, right?

13 A Yes.

14 Q Don Hallman gives you credit for  
15 recommending a change in B&W's philosophy.

16 Do you see that?

17 A Yes.

18 Q Did you believe that what you were  
19 recommending was a change in your company's  
20 philosophy?

21 A I don't think I considered it that way.

22 Q Do you think what you were recommending  
23 was consistent with B&W's philosophy for the use  
24 of high-pressure injection?

25 A I don't think I considered it relative to any

1  
2 B&W philosophy to decide one way or the other.

3 Q Do you think Hallman was over-  
4 intellectualizing the subject?

5 MR. FISKE: I object to that.

6 MR. SELTZER: I withdraw it.

7 MR. FISKE: You just wanted to see if  
8 I was still awake.

9 (Laughter)

10 Q Do you have any idea what Hallman was  
11 referring to when he used the phrase "philosophy  
12 for high-pressure injection system"?

13 A No.

14 Q I don't mean to cover terraine we covered  
15 yesterday, but just let me set the stage.

16 You understand the August 3 memo from  
17 Hallman is raising a concern about going solid,  
18 right?

19 A I would rather stick to his exact words.

20 Q What do you understand Hallman's concern  
21 is as expressed in GPU Exhibit 80?

22 A I would quote him.

23 Would you like me to do that?

24 Q Whatever you think is necessary to  
25 correctly respond to the question.

2 A A concern on what would happen if the pressurizer  
3 goes solid with one or more HPI pumps continuing  
4 to operate as to whether or not there would be  
5 a pressure spike before the relief valves opened  
6 which could cause damage to the RCS and a concern  
7 over what damage would a water surge through the  
8 relief valve discharge piping and quench tank cause.

9 Q At any time prior to the Three Mile  
10 Island accident, did you and Bruce Karrasch  
11 discuss Hallman's concerns as Hallman has expressed  
12 them in this memo?

13 A At any time prior to the Three Mile Island  
14 accident?

15 Not to my knowledge.

16 Q At any time prior to the Three Mile  
17 Island accident, did you discuss Hallman's  
18 concerns with anyone?

19 A Not to my knowledge.

20 Q At any time before the Three Mile Island  
21 accident, did you discuss with anybody any concerns  
22 or reservations regarding the prescriptions which  
23 you had suggested in your February 16 memo?

24 A I am not sure.

25 Q At any time before the Three Mile

2

Island accident and after the February 16 memo,

3

did you learn that anyone had any reservations

4

about the prescription which you had advanced?

5

A In the February 16th memo?

6

Q Yes.

7

A No.

8

Q So I take it that if you never learned

9

after February 16 that anyone had any reservations

10

about what you had expressed there that you

11

didn't have any discussion with anybody after

12

February 16 about such reservations, is that

13

correct?

14

A Prior to March 26th, 1979.

15

Q You mean that is correct, prior to

16

March 26th, 1979?

17

A Yes.

18

Q Were you on vacation in August of 1978?

19

A I don't recall.

20

(Continued on next page.)

21

22

23

24

25

1  
2 Q Do you have any recollection of  
3 receiving GPU Exhibit 80 in or about early August  
4 of 1978?

5 A No.

6 Q What is your normal practice when you  
7 receive memoranda addressed to you? What do you  
8 do with them?

9 MR. FISKE: I don't mean to be  
10 technical, but by "address to," do you mean  
11 any memo he gets a copy of?

12 MR. SELTZER: Yes.

13 A The mail, which may be more than memoranda,  
14 is sorted by my secretary and placed in one of two  
15 receiving baskets for my attention.

16 Q What is the difference between the two  
17 receiving baskets?

18 MR. FISKE: Are you talking about the  
19 procedure back in or about August of 1978?  
20 Right?

21 MR. SELTZER: Yes.

22 A An attempt to sort out information  
23 requiring my attention or action and information  
24 passed on for -- letters passed on for information.

25 In general, memos or letters written

1  
2 directly to me would be in the higher priority  
3 review box; where I had been copied for  
4 information, it would be in the other box.

5 Q What was it your practice to do in  
6 or about mid-1978 with memos that were in the  
7 information box?

8 A To skim them for content as soon as  
9 possible in view that the other information I  
10 would need to attend to, the other information  
11 received as well as the other obligations of my  
12 job.

13 Q If you had received and read a memo  
14 like GPU Exhibit 80 marked for identification,  
15 what would have been your normal practice on  
16 what you would do with it after you finished  
17 reading it if you had a normal practice?

18 MR. FISKE: I will object to that.

19 I don't see how there can be a normal  
20 practice. Every memo is different in terms  
21 of the subject matter. I think this is  
22 clearly a hypothetical.

23 Q Do you keep subject files in which  
24 you file correspondence you receive?

25 A From time to time I have kept such files.

1

2

Q Have you ever made any attempt to  
locate a copy of GPU Exhibit 80 in them?

3

4

A No.

5

Q Do you sometimes do that with memos  
that you have received, meaning do you sometimes  
forward them to people in your unit?

6

7

8

A Yes.

9

Q Have you ever asked your secretary  
to try to find your copy of GPU Exhibit 80?

10

11

A No.

12

Q Will you take a look, please, at  
GPU Exhibit 75 marked for identification. Will you  
turn to your resume.

13

14

15

Did you prepare your resume which is  
included there?

16

17

A Yes.

18

Q Approximately when was that resume  
prepared?

19

20

A I really don't know. Within a year.

21

Q Within the past year?

22

A I think so.

23

Q Will you turn to the second page of  
your resume. At the top of the page it states  
that for six years you have been Unit Manager of

24

25



Emergency Core Cooling System Analysis.

Is what appears in the next two paragraphs below that -- I am sorry, the next four paragraphs including the paragraph below the note, that is a description of the responsibilities which you have discharged as Manager of the EECS Analysis Unit?

A It's a reasonable practical description as opposed to a job description or position description.

Q You say at the beginning of the first paragraph that you have been "Responsible for technical evaluation of performance of the emergency core cooling system for light water nuclear reactors during loss-of-coolant accident conditions."

You also say you have been responsible for communicating those evaluations to operators and owners and that you have handled management of customer interfaces related to such evaluations.

What do you mean by "customer interfaces related to such evaluations"?

A Explanations of our work to customers on a technical level, negotiation of the requirements

1  
2 of the customer input on a technical level.

3 Q You also say that you have been re-  
4 responsible for "creation and implementation of  
5 Company policy and positions on ECCS performance  
6 and related technical issues."

7 Could you explain to what extent you  
8 have been responsible for creation and implementation  
9 of Company policy and positions?

10 A I would be a key consultant to the Licensing  
11 Department who is literally charged with the  
12 responsibility for the creation of company policies  
13 in that area in deciding what our policy should  
14 be in areas that require the policy.

15 Q What do you mean by a company policy  
16 on ECCS performance?

17 Let me ask you perhaps a simpler  
18 question and we will come back to that question.

19 Is don't shut off the high pressure  
20 injection unless you are 50 degrees subcooled a  
21 current B&W policy on ECCS performance?

22 A I would say it is a standard B&W  
23 recommendation but I would not upgrade it to the  
24 word policy.

25 Q Maybe we are creeping up on what a

1  
2 policy is then.

3 Can you tell me now what rises to the  
4 level of company policy on ECCS performance?

5 A There are not too many policies directly  
6 on ECCS performance with the regulations  
7 involved in the area. It is not really required to  
8 add further guidance.

9 Q So you really weren't saying you  
10 were responsible for very much when you said you  
11 were responsible for creation and implementation  
12 of company policy on ECCS performance, is that right?

13 MR. FISKE: Well, that's a little  
14 argumentative.

15 MR. SELTZER: I am just trying to  
16 understand whether those words have content  
17 or they are devoid of content.

18 A Within the area of evaluation, there is the  
19 procedure with which you will perform an evaluation.  
20 That procedure becomes part of the policy.

21 Q Do you notice at the bottom of the page  
22 you have the heading, "The following major  
23 accomplishments were made during this period:"

24 Do you see that?

25 A Yes.

2

Q Major Accomplishment (c) reads,

3

"Specification of operational procedures for handling  
4 of loss of coolant accidents (these procedures  
5 may have prevented a second incident similar to  
6 TMI-2 on at least one occasion since March 28, 1978 ."

7

I take it that should be March 28, 1979.

8

A Yes.

9

Q Am I correct that the second incident

10

that you were referring to there is the Crystal

11

River incident?

12

A Yes.

13

Q And are the procedures that you claim

14

were a major accomplishment the small break

15

guidelines? Maybe I shouldn't put words in your

16

mouth,

17

What are the operational procedures

18

for handling of loss of coolant accidents that

19

you referred to in item (c)?

20

A I would be referring -- I am referring

21

to the culmination of the efforts to communicate

22

appropriate high-pressure injection operation

23

philosophy to the operators. This involves the

24

instructions issued by the NRC, recommendations and

25

letters issued by ourselves, the small break operating

1  
2 guidelines as well as Training, and I don't mean to  
3 take credit for all of that, but a good portion.

4 Q Are the guts of that the recipe as  
5 you have called it for when it is appropriate  
6 to terminate high-pressure injection?

7 Let me not get so tangled up in jargon.

8 Is the essence of that the prescription  
9 that you developed for when it is appropriate  
10 to terminate high-pressure injection?

11 A Yes, it's part.

12 Q The essence of this major accomplishment?

13 A That's part of it.

14 Q All of the other things grow out  
15 of that, don't they, or are a part of the  
16 implementation of them, aren't they?

17 A I believe they could be expressed as part of  
18 the implementation.

19 Q Did the pilot-operated relief valve  
20 fail at Crystal River?

21 A I am not sure that's a proper terminology  
22 for what happened there.

23 Q What is your understanding of what  
24 happened there?

25 A It is my understanding that the pilot-operated

1  
2 relief valve was opened for a period of time.

3 Q Was it opened for a longer period of  
4 time than was intended by the design?

5 A That's my belief, or at a time not intended  
6 by the design.

7 Q In what way was the Crystal River  
8 incident "similar to TMI-2"?

9 A In my mind it is similar because it involves  
10 a transient, it involves some discharge of  
11 fluid from the pressurizer, and it involves, I  
12 believe, a high-pressurizer level.

13 Q Is it your understanding that  
14 at Crystal River there was boiling or saturation in  
15 the reactor coolant system?

16 A I don't know that one way or the other.

17 Q Is that a conclusion which you have drawn  
18 in the pressurizer level?

19 A No.

20 Q Have you heard anyone discuss whether there  
21 was saturation in the Crystal River reactor during  
22 its transient that you are referring to here?

23 A I don't know whether I have heard anybody discuss  
24 that or not.

25 Q Have you ever read anything or discussed



1  
2 with anybody what caused the rise in pressurizer  
3 level at Crystal River?

4 A Again, I will have to say I don't know.

5 Q Do you believe that you have ever  
6 discussed that with anyone? Do you have any  
7 recollection of discussing that with anyone?

8 A I have a recollection of examining the data  
9 from Crystal River. I have recollections of  
10 discussions of that data but the particular points  
11 that you have mentioned in your questions I can't  
12 be sure whether they were discussed or not.

13 Q If I showed you data that contained  
14 temperatures and pressures during the Crystal River  
15 transient, would you be able to determine whether  
16 they had reached saturation?

17 MR. FISKE: You may answer that yes or  
18 no, if you can.

19 A Depending on the degree of accuracy of the  
20 data you provided me.

21 Q What was the basis for your statement  
22 that, "these procedures may have prevented a  
23 second incident similar to TMI-2" at Crystal  
24 River?

25 A From the information we received in Lynchburg



1  
2 following the Crystal River event. I believe  
3 I was informed that the operator, during the early  
4 phase of the accident, made a conscious decision  
5 to maintain high-pressure injection even under  
6 the expectation that he would force water through  
7 his pressurizer safety valves because he was unable  
8 at that time to determine reactor coolant system  
9 primary variables of pressure and temperature and  
10 therefore was not assured that he knew the conditions  
11 within the RCS.

12 Q How did that indicate to you that these  
13 procedures, which you took some major credit for,  
14 had prevented an incident similar to TMI-2?

15 MR. FISKE: Mr. Seltzer, he didn't say  
16 that they had prevented it.

17 MR. SELTZER: May have prevented it.

18 MR. FISKE: May have prevented it.

19 A The procedures on the small break operating  
20 guidelines and the resultant training on that along  
21 with the inclusion in the small break operating  
22 guidelines of descriptions of the expected course  
23 of a small break loss of coolant accident in my  
24 opinion effectively stress the need to know positively  
25 that we can assure core protection prior to

1  
2 terminating an emergency system.

3 Q The need to do what?

4 THE WITNESS: Would you read me back  
5 the answer?

6 (Answer read by the reporter.)

7 MR. SELTZER: "In my opinion" what?  
8 Will you please read that again?

9 (Answer re-read by the reporter.)

10 Q So you are saying that the new small break  
11 guidelines and the training that was developed to  
12 implement those guidelines effectively stressed  
13 the need for the operator to assure himself that  
14 there was effective core cooling before terminating  
15 high-pressure injection, is that correct?

16 A I can generally accept that. We are talking  
17 about the inventory in the RCS?

18 Q Yes.

19 A Not the instantaneous cooling.

20 Q In saying that, are you also saying that  
21 you believe, or do you also believe that prior to  
22 the development of the small break guidelines  
23 and the development of training to implement those  
24 guidelines, it was not effectively stressed to the  
25 operators that they should assure themselves that

2 there was core protection before they terminated  
3 high-pressure injection?

4 A No, I am not saying that.

5 Q Do you know whether the prior  
6 procedures effectively stressed it or not?

7 MR. FISKE: I am going to object to that  
8 question, Mr. Seltzer. I don't think  
9 Mr. Dunn should have to express a conclusion  
10 as to whether they effectively stressed it or  
11 not.

12 Q Have you reviewed the procedures and  
13 training that was in effect prior to the implementation  
14 of the small break guidelines?

15 A Not in detail.

16 MR. SELTZER: Why don't we suspend for  
17 today and resume tomorrow.

18 MR. FISKE: Fine.

19 (Time noted: 4:38 p.m.)

20

*Bert Merrit Dunn*  
BERT MERRIT DUNN

21

22 Subscribed and sworn to  
23 before me this 29 day  
24 of October, 1982.

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

CERTIFICATE

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

I, CHARLES SHAPIRO, CSR,, Notary Public  
of the State of New York, do hereby certify that the  
continued deposition of BERT MERRIT DUNN  
was taken before me on March 12, 1981 consisting  
of pages 135 through \_\_\_\_\_;

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 28<sup>th</sup> day of MARCH, 1981.

Charles Shapiro  
CHARLES SHAPIRO, CSR

## I N D E X

## WITNESS

## PAGE

Bert Merrit Dunn

136

## E X H I B I T S

## GPU

## FOR IDENT.

76	Memorandum from J. J. Kelly to Messrs. Karrasch, Swanson, Finnin, Dunn, LaBelle, Elliott, and Hallman, dated November 1, 1977, subject: "Customer Guidance on High-Pressure Injection Operation"	143
77	Organization chart of Nuclear Service Department dated 2-1-77	182
78	Two-page memorandum dated February 9, 1978 to Jim Taylor from Bert M. Dunn	183
79	Memorandum dated February 16, 1978, subject: "Operator Interruption of High-Pressure Injection"	230
80	Memorandum to Bruce Karrasch from Don Hallman dated August 3, 1978, subject: "Operator Interruption of High-Pressure Injection (HPI)"	242

\* \* \*

Vol. 2

136-143 Roy / Design Section Wtys.

-137 - never reported back to Roy

143-177 Kelly memo / ECS lectures

144 - saw it when written

146 - Kelly told Dunn of 2d DB HPI event

153-54 - Dunn gave lectures to ops, not sure if dist'd.

155 - never discussed subcooling margin in lectures

157 - important to maintain HPI during SBLOCA

158 - rev of lectures given B&W DB & TMI-2.

HPI - non-proposed  
lecture on HPI  
B&W DB & TMI-2

163 - Dunn assured Kelly statement about insuff. guidance to customers was accurate.

163-64 - had evidence that HPI had been operated inappropriately<sup>DB</sup>

165 - thinks Kelly thought issue applicable to all customers.

166 - Dunn's analysis indicated saturation in RCS at DB

167 - Dunn understood Kelly's memo to indicate there had been saturation in RCS at DB

170 - Dunn & Kelly "had intercourse" on subject memo; not sure if subsequent to memo being written -

171-72 - no discussions of Kamisch about proper time for turn 'g HPI.

173 - Dunn thought his 2/16/78 instructions were a more direct measurement of appropriate cond'ns for HPI turn'in -

177 - doesn't know why he didn't personally ask Kamisch to set up a forum on his concern in Plant Integration

178-229 2/9/78 Dunn memo

178 - sent memo to Taylor. He's highly respected, highly influential within B&W

181 - considered HPI control to be a serious issue related to safety

181-82 - didn't discuss HPI concern of Reddens or Roy

GRU-78.  
2/9/78 memo

183-84 - sent memo to Swanson for info

184-85 - also sent to Roy for info; didn't discuss issue w/ Roy  
per TMI

185 - still felt Plant Integ appropriate unit to resolve concern. but had waited long enough for then to act



- 186 - also sent memo to Kanarech for info
- 188 - sent to Bailey; wanted Bailey to support idea that action shd be taken; also wanted Kane's support,
- 189 - was seeking help in getting action started on concern
- 190 - also looking for Agan's support
- 192 - sent memo to Pittman in order to communicate concerns to Nuclear Service, which he felt wd be an appropriate group for communicating his concern
- 193 - doesn't recall any response from Swanson
- 194 - doesn't recall response from Roy prior to acc.
- 198-21 Kanarech didn't respond, nor did Bailey, Kelly, Kane, Agan, Pittman, Phinney, or Scott; only Roy responded and that was post-acc
- 200 - not sure if Taylor ever responded; - then says he did respond within a few days of 2/9/78 memo & prior to 2/16/78 memo
- 201-02 Taylor spoke to Dunn by phone; Dunn explained concern
- 203 - told Taylor that core uncovering results
- 204 - no resolution reached in phone conversation; felt as gaps in Taylor's understanding.
- 212 - if block valve stayed open & HPI off, core cooling cal have been impeded if RCPs lost -
- 215 - Dunn didn't see HPI concern as a licensing issue based on inability to meet 50.46 criteria
- 215-16 - discussed possible violation of 50.46 of Swanson, Kelly, Roy, Taylor, Jones prior to TMI -
- 223 - To Dunn, Taylor comprehended 50.46 criteria
- 226 - Dunn discussed concern w/ Jones
- 228 - Taylor told Dunn he wd ask Nuc. Service to follow up on issue; Dunn agreed w/ this step



229-242 - 2/16/78 memo

- 230-31 - Deen 't recall why he sent memo to her & Deen 't recall any response
- 231-32 - Thinks Goslow reviewed his memo; Goslow contributed 2d card in fr 2/16 memo (D. margin)
- 235 - no further follow-up at Taylor on HPI concern
- 238<sup>32</sup> after 2/16 memo, didn't speak to anyone re: HPI concern for over a yr, until after M1, 2; understood Nuc. Service wd be taking necessary action; not sure how to get this belief
- 240<sup>31</sup> assumed Nuc Service wd act w/ interaction w/ Goslow and 2/16 memo

242 - 249 8/3/78 Hallman memo

- 242 - Deen didn't consider memo a change in philosophy
- 245 - didn't discuss Hallman's concerns w/ Harasch  
p. 7M1
- 246 - didn't learn of any reservations anyone had about 2/16 memo prior to acc.
- 247 - no recall in of receiving Hallman memo

2

Ⓢ 249 - Deen's resume / Crystal River

- 253 - major accomplishments include preventing TM1-like incident at Crystal River
- 257 - learned that at CR, op kept HPI on even tho wd take per shed and put water through relief valves
- 258 - new guidelines stressed need for op to know if effective core cooling before turning HPI