

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, :

80 CIV. 1683
(R.O.)

-against- :

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

Defendants. :

-----x

Continued deposition of THE BABCOCK &
WILCOX COMPANY, by BRUCE ADOLPH KARRASCH, taken
by Plaintiffs, pursuant to Notice, and as
adjourned, at the offices of Kaye, Scholer,
Fierman, Hays & Handler, Esqs., 425 Park Avenue,
New York, New York, on Wednesday, June 17, 1981
at 9:45 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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★ ★ ★

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2 B R U C E A D O L P H K A R R A S C H,

3 resumed, having been previously duly sworn by a
4 Notary Public, was examined and testified further
5 as follows:

6 EXAMINATION (Cont'd.)

7 BY MR. SELTZER:

8 Q Do you know that your testimony today is
9 still under oath?

10 A Yes, sir.

11 Q Do you know ~~what~~ means you are sworn to tell
12 the truth, the whole truth and nothing but the truth?

13 A Yes.

14 MR. FISKE: He knows that.

15 Q After sending you GPU Exhibit 80, Don Hallman
16 spoke to you several times asking for a response to that
17 memo, is that right?

18 MR. FISKE: What do you mean by "several
19 times"?

20 MR. SELTZER: Exactly what I said, several
21 times.

22 Q On several occasions.

23 MR. FISKE: Is that right, Mr. Karrasch?

24 A I recall two occasions in which Don Hallman and I
25 spoke about my response to his memorandum to me.

Karrasch

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Q I think that is wrong. I think you have testified previously that between August 3rd and year end he called you at least two times or saw you in the hall and then after the first of the year, he saw you at least an additional time which would make at least three times, isn't that right?

MR. FISKE: Are you counting the time when he had the conversation?

MR. SELTZER: I am counting every single time that they talked about the accident concerning the August 3rd memo.

A I misunderstood your question then.

MR. FISKE: Yes.

Q Let me make it absolutely clear. My question was simply isn't it a fact that Don Hallman contacted you several times about getting a response from you to his August 3rd memo, GPU Exhibit 80?

MR. FISKE: That is exactly the point, Mr. Seltzer. Let Mr. Karrasch testify as to each time he remembers that he had a discussion with Mr. Hallman and I think this would become very clear.

Q Isn't it a fact that he contacted you at least two times between August 3, 1978 and New Year's

Karrasch

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Day 1979?

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A To the best of my recollection, Don and I

4

discussed -- excuse me. Don contacted me about this

5

memo at least two times before the end of the year 1978.

6

Q When you say "at least two times," does that

7

mean that you can firmly recall at least two occasions

8

on which he contacted you between August 3rd and year

9

end?

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A I do not recall the exact occasions.

11

Q When you used the phrase today "at least

12

two occasions," are you saying that you believe there

13

may have been more occasions than two between August 3rd

14

and year end?

15

A I just don't remember.

16

Q After the first of the year 1979, Don Hallman

17

contacted you again, right, with respect to the

18

August 3rd memo, GPU Exhibit 80?

19

A Yes. I recall a conversation with Don shortly

20

after the first of the year with respect to this memo.

21

Q All three of the conversations that you

22

recall or at least two before year end and the one after

23

the start of the new year 1979 were occasions on which

24

Don Hallman was asking you, "Have you got a reponse

25

for me yet to my August 3rd memo," right?

Karrasch

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2 A Yes, I believe that is correct.

3 Q After the start of 1979 when Don Hallman
4 contacted you, you got a copy of the August 3, 1978
5 memo, GPU Exhibit 80, right?

6 A Yes.

7 Q You have previously testified at page 31
8 of your President's Commission deposition that, "I recall
9 reading the memorandum quite carefully."

10 What do you mean when you say you read the
11 memo quite carefully?

12 A I read the whole thing.

13 Q What do you mean by "carefully"?

14 A I read the whole thing.

15 Q Did you study it?

16 A I read it.

17 Q Were you paying more than casual attention
18 to it as you read it?

19 A I read the memo for the first time since August
20 and I read the whole thing, I went back and looked at
21 the two questions that I was being asked and focused my
22 attention on the two questions.

23 Q You testified that as a result of this
24 quite careful reading of Don Hallman's memo, "I recall
25 thinking that Bert's concern is a very serious one."

Karrasch

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Who is the Bert that you were referring to?

3

A Bert Dunn.

4

Q What was Bert's concern that you thought was a very serious one?

5

6

A The possibility of uncovering the core if the operator prematurely terminates high pressure injection.

7

8

Q Why did you think uncovering the core is a very serious concern?

9

10

A Previous work that I had done related to small break LOCA at B&W gained me the knowledge that the real concern in the small break loss of coolant accident is uncovering the core and subsequent overheating of the fuel.

11

12

13

14

15

Q Why from your small break loss of coolant accident work did you think that there was a cause for real concern if there was melting of the fuel?

16

17

18

A The basic design approach in nuclear fuel design is to maintain the integrity of the fuel rod cladding so that the radioactive fission products are contained within the cladding.

19

20

21

22

Overheating of that cladding can cause it to lose its integrity and therefore it would not contain the fission products.

23

24

25

Q What are the consequences of not containing

Karrasch

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2 the fission products?

3 A They could be released into the reactor coolant.

4 Q Is that a cause of real concern? Was that a
5 cause of real concern to you in or before 1978?

6 A Yes, that is a cause of concern to me.

7 Q Why would release of fission products into
8 the reactor coolant be a cause of real concern to you?
9 Why was it a cause of real concern to you in 1978?

10 MR. FISKE: Are you asking in what context?

11 MR. SELTZER: In the context of small break
12 loss of coolant accidents.13 A The last three or four questions I have answered
14 have been in the context of any accident.15 The safe operation of a nuclear plant
16 depends on containing the radioactive fission products
17 of the nuclear reactor. There are three barriers to
18 maintain those products from the environment. They are
19 the fuel rod cladding, the reactor coolant system and
20 the reactor building.21 I lose some of my margin to safety if I
22 rupture one of those barriers. So, rupture of the
23 cladding reduces the safety of the plant and therefore
24 is a concern.

25 Q You said that the second barrier was the

Karrasch

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2 reactor coolant system?

3 A Yes, sir.

4 Q That is really not being as precise as you
5 could be, is it? The reactor coolant --6 A It can be more precisely stated as the reactor
7 coolant system pressure boundary.8 Q During a small break loss of coolant
9 accident, there has been a breach or a break in the
10 pressure boundary of the reactor coolant system, hasn't
11 there?

12 A Yes, sir, I believe that is the definition.

13 Q If there is a rupture or melting of the
14 fuel cladding at the same time that there is a small
15 break loss of coolant accident, then you have lost two
16 of the three barriers to containing radioactive fission
17 products, haven't you?

18 A Yes, sir.

19 Q You understood when you quite carefully read
20 Don Hallman's memo that the high pressure injection
21 system which he was talking about in there was a system
22 intended to operate in the event of a small break loss of
23 coolant accident, right?

24 A Yes, I believe that was my understanding.

25 Q So one of the serious consequences that you

Karrasch

1
2 anticipated when you read Don Hallman's memo was that
3 two of the three barriers to containing radioactive
4 fission products could be lost under the circumstances
5 being described by Bert, as you call him, isn't that
6 right?

7 A I don't recall my exact thought process when
8 reading Don Hallman's letter. I do recall refocusing
9 my attention on the two questions which were being asked
10 of me.

11 Q Well, you knew when you read this that if
12 there was a breach of the fuel cladding during a small
13 break loss of coolant accident, radioactive fission
14 products would have a path to escape into the
15 containment building, isn't that right?

16 A Again, I don't recall what my thought process or
17 reasoning was when I read the memorandum in January of
18 1979.

19 Q That wasn't my question.

20 I am asking you this: In 1978, isn't it a
21 fact that you knew based on ten or more years at Babcock
22 & Wilcox and being a nuclear engineer that if there was
23 a rupture of fuel cladding and a simultaneous small break
24 loss of coolant accident, that there was a path of escape
25 for radioactive fission products to get out of the

Karrasch

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reactor coolant system and into the containment

3

building?

4

A I have had that general knowledge for several years, yes.

5

6

Q You knew that before 1978 and you knew it

7

in 1978, right?

8

A Yes, sir.

9

Q Did you know in 1978 that it was a serious

10

consequence to have radioactive fission products escape

11

into the containment building?

12

A Yes, sir.

13

Q Why is that a serious consequence?

14

A Because I have lost that -- excuse me, that means

15

I have lost two out of my three barriers and I only have

16

one left.

17

Q What did you understand in 1978 was the danger

18

of losing that last barrier?

19

MR. FISKE: You mean a danger of -- I don't

20

understand the question.

21

Q What did you understand in 1978 were the

22

consequences if you lost the third and final barrier

23

to the containment of radioactive fission products?

24

A If you breach the integrity of the reactor

25

building and there are radioactive fission products

1
2 within the building, not contained within the reactor
3 coolant pressure boundary, those fission products could
4 be released to the environment.

5 Q Did you understand in 1978 that there were
6 serious consequences that would follow from a release
7 of radioactive fission products into the environment?

8 Let me be very clear, I am building on
9 everything that you knew, had studied, had worked on
10 at B&W for ten years.

11 A My work at B&W was not in the area of radiation
12 released to the atmosphere. I really don't understand
13 the details of the consequences of radioactivity in the
14 air.

15 Q I didn't ask you for the details, I asked
16 you did you know in 1978 that there were serious
17 consequences from releasing radioactive fission products
18 into the environment and I am talking about fission
19 products that have escaped from ruptured fuel rods,
20 from a ruptured primary containment system and from a
21 breached containment building.

22 A I knew in 1978 that that was something to be
23 avoided.

24 Q Did you know that there were serious
25 consequences from that?

Karrasch

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2 A I don't know what the consequences of that are.

3 Q Do you know that in 1978 the NRC had
4 stringent limits placed on the amount of radiation that
5 can be released from nuclear power plants?

6 A I was aware that there are limits.

7 Q What is your understanding as to why the
8 NRC had imposed those limits?

9 A The limits were imposed to keep radioactivity
10 within the site boundaries.

11 Q Why?

12 A The consequences of releasing radioactivity outside
13 the site are serious.

14 Q Serious in what way?

15 A If the radioactivity is released beyond the site
16 boundary, there is a possibility of exposing people to
17 such radioactivity.

18 Q What is wrong with exposing people to that
19 radioactivity?

20 A I really don't know the details of the
21 consequences of people being exposed to radioactivity.

22 I do know in a general sense that it is not
23 a good thing to do.

24 Q Why isn't it a good thing to do?

25 A I guess it is dangerous --

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2

Q Dangerous to their health?

3

A -- and can hurt them, yes.

4

Q How can it hurt them?

5

A I really don't know. I have not studied health

6

physics at all. I just know in a general sense that it

7

is not a good thing to do.

8

Q Do you know what chromosomes are?

9

A Not really.

10

Q You don't have any idea what a chromosome

11

is?

12

MR. FISKE: Mr. Seltzer, this is really
getting a little bit far afield.

13

14

MR. SELTZER: The heck it is. It is not
getting far afield at all.

15

16

MR. FISKE: Are you asking him -- I assume
these questions all relate to 1978?

17

18

MR. SELTZER: Yes, they do.

19

A I took high school biology.

20

Q Did your biology teacher in high school tell

21

you what a chromosome is?

22

A I recall learning what a chromosome is. I don't--

23

I can't tell you what it is today.

24

Q Do you own any chromosomes?

25

A I don't know.

Karrasch

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Q Do you know what a gene is?

3

A Not really.

4

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MR. FISKE: Mr. Seltzer, we can conduct a biology examination at some other time when our clients don't have to pay for it.

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MR. SELTZER: My client is very happy to pay for this. If this man doesn't understand genes and chromosomes are essential to genetic transport and to human life and that radioactivity causes genetic mutation, maybe B&W doesn't understand what it is all about when you release radioactivity. .

14

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MR. FISKE: Mr. Seltzer, nobody has testified it is a requirement to be Manager of Plant Integration that you be an expert in biology.

17

18

MR. SELTZER: I am not talking about being an expert. This is high school stuff.

19

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MR. FISKE: I don't think it is a requirement that he had gone to high school and taken biology. I think Mr. Karrasch has testified that he understood that it was not a desirable thing to do to have radioactive material released into the atmosphere. I think we all know that. I don't think we have to spend a long time in a deposition

Karrasch

going back into high school biology to agree which we can all agree that it is not a good thing to release radioactivity into the atmosphere. We will stipulate to that and let's get on to something that is important.

MR. SELTZER: Mr. Fiske, it is not a question of stipulating to it because we are not just trying to prove what the facts of biology are or what the facts of radioactive release are. I am trying to show what Bruce Adolph Karrasch knew in 1978 when he got a memo that talks about uncovering the core.

MR. FISKE: I understand.

MR. SELTZER: All right.

MR. FISKE: But I don't think we need to go into a long dissertation on high school biology to answer that question.

Q Had you ever heard or read in or before 1978 that exposure to radiation can cause genetic mutation?

A I guess the only information I can recall is just hearing about the results of the atomic bomb blast in World War II in Japan, that it had serious consequences on the people there for a long time.

Q Did you hear that many of the consequences

Karrasch

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of exposure to radiation occurred months and years after
the exposure occurred?

3

4

A Yes, I recall that.

5

6

Q Did you understand that the delayed adverse
reaction was due to genetic damage that had been done
at the time of the exposure?

7

8

A No, not really.

9

10

Q Did you have any idea how the body had stored
up that reaction?

11

A No.

12

13

Q Do you know that every cell in your body
has chromosomes in it?

14

A No.

15

16

Q Do you know that genes are entities for
hereditary communication?

17

A Yes, I think I recall that.

18

19

Q Do you know that exposing genes to
radioactive bombardment can cause mutations in genes?

20

A No.

21

Q Do you know what a mutation is?

22

23

A I don't know the definition of the word. When I
hear it, I relate it to deformity.

24

25

Q Do you know that focusing radioactivity on
genes can cause the genes to be changed or deformed?

Karrasch

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2 A No, I really don't.

3 Q When you said that exposing people to
4 radiation if there is a release of radiation from a
5 nuclear plant is dangerous, did you mean it was
6 dangerous to their health?

7 A Yes.

8 Q What unhealthy things did you understand
9 in 1978 could happen to people who were exposed to
10 radiation?

11 A As I testified earlier, I didn't then nor do I
12 now understand the impact or the effect of radiation on
13 the human body.

14 Q Had you ever heard at any time up until
15 today that the incidence of cancer increases in people
16 who have been exposed to excessive radiation?

17 A I believe I have read that.

18 Q How long ago do you think you were aware
19 of that phenomenon? Is that something you have been
20 generally aware of for years?

21 A Yes, I think that's accurate.

22 Q So in 1978, you were generally aware of
23 that?

24 A Yes, sir.

25 Q Did you know in 1978 that many people die

Karrasch

of cancer?

A Yes.

Q Has anybody in your family died of cancer?

A No, sir.

Q Have any friends of yours ever died of cancer?

A Yes.

Q Was it a painful death?

MR. FISKE: Mr. Seltzer, I will not let him answer these questions. I think this is ridiculous. You are getting into some very personal questions here that are totally unnecessary to this deposition. I think this is totally out of order.

I would suggest you just withdraw that question. I wouldn't think you would want to have it on this record.

MR. SELTZER: I do want it on the record.

MR. FISKE: All right, that is your choice but Mr. Karrasch is not going to answer it.

MR. SELTZER: All right.

Q Did you take any biology courses in college?

A No, I did not.

Q In any of your college courses, including

Karrasch

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2 your Masters degree program, did you ever study anything
3 about radiological effects on human beings?

4 A I don't recall.

5 Q In more than a decade of working at Babcock
6 & Wilcox, did you ever receive any training or instruction
7 from your employer about the effects of radioactivity
8 on human beings?

9 A I don't recall.

10 Q You have no recollection of getting any
11 instruction in more than a decade of working at B&W
12 regarding the effects of radiation on men and women and
13 children, is that right?

14 A Yes, that is correct.

15 Q Don Hallman said in his first sentence of
16 his memo to you, GPU Exhibit 80, that Bert Dunn's two
17 memos "recommend a change in B&W's philosophy for high
18 pressure injection system use during low pressure
19 transients."

20 Do you see that?

21 A Yes, I do.

22 Q In the next to the last paragraph, the
23 first line, Don Hallman says to you, "To date, Nuclear
24 Service has not notified our operating plants to change
25 high pressure injection policy consistent with" Bert

1
2 Dunn's two memos.

3 Did you understand from GPU Exhibit 80 that
4 what Bert Dunn had recommended was a change in the B&W
5 policy or philosophy for operating high pressure
6 injection?

7 MR. FISKE: Can I hear that question again,
8 please.

9 Q Did you understand that what Bert Dunn was
10 recommending was a change in B&W's policy or philosophy
11 for the operation of high pressure injection?

12 I am just asking as you read GPU Exhibit 80
13 quite carefully, did you get that understanding?

14 A I really don't remember.

15 Q As you read it today, do you understand that
16 Bert Dunn has recommended a change in B&W's policy or
17 philosophy for the operation of high pressure injection?

18 MR. FISKE: I will not let Mr. Karrasch
19 answer that question. The memo speaks for itself
20 in that respect. It is exactly what the first
21 sentence says.

22 MR. SELTZER: That may be what it says to
23 you and that may be what it says to me and to Pat
24 Vaughn and David Taylor, but I think it is highly
25 relevant to know what it means to Bruce Adolph

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2 Karrasch and we will just suspend for the day if
3 I can't ask him --

4 MR. FISKE: All right, let's suspend. He
5 will not answer the question.

6 MR. SELTZER: Tell me why he won't answer?
7 Why are you directing him not to answer that
8 question, his understanding of what a document
9 he received meant?

10 MR. FISKE: I have not objected at any time
11 in this deposition or at any other deposition to
12 asking him what his understanding was at the time
13 he received the document. I have consistently
14 objected at this deposition and others to questions
15 directed at asking a witness what his understanding
16 today is with respect to a document and it is on
17 that basis that I will not allow Mr. Karrasch to
18 answer this question.

19 It is no different than the same position
20 that has been taken throughout these depositions.

21 If you want to suspend, we will suspend.

22 MR. SELTZER: You think under the Federal
23 Rules of Civil Procedure you have a right to
24 direct him not to answer the question rather than
25 just making the objection which preserves your

objection until trial?

MR. FISKE: I said before, Mr. Seltzer, that the only remedy to prevent abuse of the discovery process is to, when necessary, instruct the witness not to answer, otherwise these depositions would go on interminably. So, the short answer to your question is, yes, I do believe that it is a proper procedure.

MR. SELTZER: Let's take a break.

(Recess taken.)

BY MR. SELTZER:

Q You read GPU Exhibit 80 quite carefully after Don Hallman's 1979 request for a response, right?

A Yes.

Q Prior to your Kemeny deposition, did you reread it quite carefully?

A I read the memo prior to the Kemeny deposition, yes.

Q Did you understand from GPU Exhibit 80 that Bert Dunn was recommending a change in how high pressure injection would be operated?

MR. FISKE: You mean -- you are talking about the 1978-1979 time period?

MR. SELTZER: Yes.

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A I think I testified that I don't remember reading those words that, quote, Bert Dunn was recommending a change in B&W's philosophy for high pressure injection system use during low pressure transients, close quote.

Q My question was a little bit different. You knew that, and I will try and break it down into smaller pieces for you, you knew that Bert Dunn was making a recommendation of something, right?

A Yes.

Q You knew that he was recommending a method for operating high pressure injection, right?

A No, I don't remember that.

Q What do the initials HPI mean, what did those initials mean to you as the head of Plant Integration in 1978?

A High pressure injection.

Q Do you know of anything else that those initials stood for in 1978?

A No, I do not.

Q Do you see the initials HPI several times in GPU Exhibit 80?

A Yes.

Q Do you see the words "high pressure injection" spelled out as part of the subject of GPU Exhibit 80?

1
2 A Yes.

3 Q What is your understanding as to why Don
4 Hallman was writing to you? What was your understanding
5 about why he was writing to you?

6 MR. FISKE: You mean writing to him as
7 opposed to somebody else?

8 MR. SELTZER: You flabbergast me. I can't
9 imagine what "writing to you" could mean other than
10 writing to him and not to somebody else.

11 MR. FISKE: I am trying to understand what
12 the focus of the question is. In other words,
13 are you trying to ask Mr. Karrasch what his
14 understanding of it was as to why Mr. Hallman
15 had directed this memorandum to him rather than
16 to somebody else or are you asking Mr. Karrasch
17 what his understanding was of the memo itself?

18 I think your question is --

19 MR. SELTZER: I understand now. I
20 understand what your problem was.

21 Q What did you understand was Don Hallman's
22 purpose in writing GPU Exhibit 80?

23 A I understood that Don Hallman's purpose was to
24 request that I answer two questions related to operation
25 of the pressurizer.

1

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Q Why did you understand Don Hallman was concerned about the operation of the pressurizer?

3

4

A I don't remember trying to understand why he was concerned.

5

6

I do remember focusing my attention on the two questions and taking action to answer those two questions.

7

8

9

Q You concluded after reading GPU Exhibit 80 quite carefully that Bert Dunn was right, what Bert was saying was correct, isn't that true?

10

11

12

A Yes, sir.

13

14

Q What did you understand Bert Dunn was saying that was right and that was correct?

15

16

17

A My understanding at the time was that Bert was saying that premature termination of high pressure injection during a small break LOCA could possibly result in uncovering the core.

18

19

20

Q You believed that that position taken by Bert Dunn was correct, is that right?

21

A Yes, sir.

22

23

24

Q How did you understand premature termination of high pressure injection during a small break loss of coolant accident could lead to uncovering the core?

25

A If you have a break in the system, water will

1
2 continue to be released out the break.

3 If you do not replenish the loss, the water,
4 using the high pressure injection system, you could
5 possibly get to the point where enough water would be
6 released from the system that the water level in the
7 reactor vessel would be such that the core could uncover.

8 Q On the one hand, then, Hallman was presenting
9 you with Bert Dunn's scenario in which high pressure
10 injection is turned off and the core uncovers, is that
11 right? That was the scenario that Hallman told you
12 about and attributed to Bert Dunn?

13 A I think, as I just testified, my understanding of
14 what the concern was in Don Hallman's letter was that
15 the premature termination of high pressure injection
16 during a small break LOCA could possibly cause the core
17 to uncover.

18 Q If the core uncovered, you would have all
19 of the serious consequences of breaching the fuel
20 cladding and so forth that we discussed earlier this
21 morning, right?

22 A I don't believe my thought process even went that
23 far when reading the memo.

24 Q But those are the consequences that
25 follow, if you uncover the core, you breach the fuel

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2

cladding due to overheating of the zirconium?

3

A I don't think that is really true.

4

5

Q O.K., I don't want to get sidetracked on that now. I will come back to that.

6

A All right.

7

8

Q You don't think it is true that zirconium alloy melts when the core uncovers.

9

10

11

12

While Bert Dunn was concerned about loss of high pressure injection leading to uncovering the core, Don Hallman was voicing a different concern, right?

13

14

15

A If you are alluding to the fact that Don was asking me two questions about pressurizer operation, then that is right.

16

17

18

Q O.K.

Don Hallman was concerned about permitting the pressurizer to go solid, right?

19

A That is my understanding, yes.

20

21

22

Q The pressurizer could not go solid during a small break loss of coolant accident if the high pressure injection system is turned off, right?

23

A That is correct, to the best of my knowledge, yes.

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Q So you understood that Don Hallman was concerned about the pressurizer going solid if instead

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of terminating the high pressure injection, the high pressure injection pumps continued to operate, isn't that true?

A Yes, I think that is true.

Q You understood it was Bert Dunn's recommendation that the high pressure injection pumps be left on once they had initiated and left on until certain subcooling margins had been established, isn't that right?

A There, again, I really don't remember the details of what Bert was recommending.

All I really recall is what Bert's concern was.

Q Bert's concern was uncovering the core, is that right?

A I think the concern has to be stated as premature termination of HPI during small break LOCA which would subsequently lead to uncovering the core.

Q The antidote to that concern is to leave the high pressure injection on, as you understood it, when you read Hallman's memo, right?

A Yes.

Q Hallman was concerned that the antidote of leaving the high pressure injection system on could lead

1
2 to taking the pressurizer solid, right?

3 A Yes.

4 Q Did you know before you got back to Don
5 Hallman with your response to his memo what B&W's policy,
6 philosophy or recommended procedures were with regard
7 to the operation of the high pressure injection system
8 during a small break loss of coolant accident?

9 A I didn't know for sure because I have not read
10 the operating procedures.

11 I did know enough about the use of the
12 high pressure injection system to know that it comes on
13 automatically at approximately 1800 psi and that it
14 should be left on until the pressure in the reactor
15 coolant system recovers above 1600 psi.

16 Q How did you know that?

17 A Just from a basic familiarity of the safety
18 analysis of the plant.

19 Q When you read Don Hallman's memo for the
20 first time in or about early August 1978, did you get
21 out a copy of B&W's procedures or recommended procedures
22 for operation of high pressure injection?

23 A No, sir, I didn't.

24 Q When you reread the memo after the start of
25 1979, did you get out B&W's procedures or recommended

1

2 procedures for operation of high pressure injection?

3 A No, sir, I didn't.

4 Q Did you ask anybody to get you a copy of
5 B&W's procedures for high pressure injection operation
6 at either of those times?

7 A No, I did not.

8 Q Did you call anybody on the telephone or ask
9 anyone to come into your office to discuss with you
10 B&W's procedures for high pressure injection operation?

11 A No.

12 Q Before your Kemeny staff deposition in July
13 1979, you read all five of the key memoranda relating
14 to operator interruption of high pressure injection
15 and Bert Dunn's recommendations for dealing with it,
16 right?

17 A I read Joe Kelly's memorandum, both of Bert Dunn's
18 memorandums, Don Hallman's memo.

19 Q Was there a handwritten Walters memo that
20 you also read?

21 A And the Frank Walters memo, so that's five, yes.

22 Q Do you have in front of you Dunn's two
23 memoranda?

24 A Yes.

25 Q Take a look at GPU Exhibit 79, please, which

1
2 is Bert's February 16, 1978 memo.

3 You read that before you Kemeny testimony?

4 A Yes.

5 Q Is that the first time that you have a clear
6 present recollection of reading it?

7 A Yes.

8 Q Did you understand it when you read it?

9 A I think I had a general understanding of the memo
10 when I read it.

11 Q The recommendations there for operating
12 high pressure injection are different than what you
13 understood B&W's procedures or recommended procedures
14 for operating high pressure injection were in 1978, is
15 that right?

16 A Yes, I think that's correct.

17 Q What did you understand were the principal
18 differences between the Bert Dunn recommended procedure
19 for terminating high pressure injection and what you
20 understood were B&W's recommended procedures for
21 terminating high pressure injection in 1978?

22 A The difference is in the instructions for operator
23 termination of the high pressure injection system.

24 My understanding in 1978 of the procedures
25 was that the --

1
2 MR. FISKE: No, he is asking you in 1979,
3 before you testified before the Kemeny staff, what
4 was your understanding then as to how the
5 proposal in GPU Exhibit 79 differed from what your
6 understanding was of B&W's procedures as they
7 existed in 1978.

8 MR. SELTZER: I think that is what he was
9 beginning to answer. He was saying in 1978 --

10 MR. FISKE: Just go ahead and answer.

11 A My understanding of the procedure in 1978 was that
12 it instructed the operator to leave the high pressure
13 injection system on until reactor coolant system pressure
14 had recovered above 1600 pounds.

15 My understanding of Bert's recommended
16 procedure for terminating high pressure injection is
17 that subcooling margin be used as the basis for
18 terminating high pressure injection instead of recovery
19 of reactor coolant pressure.

20 Q Where, to your understanding, was the 1978
21 instruction on termination written?

22 A I assumed that it would have been written in the
23 operating procedures for the high pressure injection
24 system.

25 Q Have you ever seen the operating procedures

1
2 that were in effect for the high pressure injection system
3 as they existed prior to the Three Mile Island accident?

4 A I do not recall seeing those procedures.

5 Q So you don't know where you would find them
6 in a group of procedures on operating a nuclear plant,
7 is that right?

8 A I have not reviewed utility operating procedures.

9 Q Had you ever seen the B&W simulator operating
10 procedures, in other words, the Old Forest Road
11 procedures that are kept in or near the simulator?

12 A I don't recall.

13 Q If you wanted to find the procedures for
14 operating high pressure injection as they were formulated
15 and recommended by B&W before the Three Mile Island
16 accident, is there a book that people had at their
17 disposal prior to March 28, 1979?

18 MR. FISKE: You mean was there a book at
19 B&W containing all of the operating procedures
20 at the different plants?

21 MR. SELTZER: No. I am focusing on B&W's
22 drafted procedures or recommended procedures.

23 MR. FISKE: You mean as opposed to the ones
24 that were actually in effect?

25 MR. SELTZER: As opposed to the ones that

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were actually at the plants.

Q Were they kept in a book?

A I don't know exactly where they were kept.

Q Have you ever seen the operating procedures for any plant?

A I vaguely recall seeing operating procedures for the Oconee nuclear station when I was there during the early startup.

Q When was that?

A 1973.

Q Are the procedures that you have seen or were the procedures that you have seen tabbed so that you could open up to procedures for high pressure injection?

MR. FISKE: You mean these ones at Oconee?

MR. SELTZER: I think those are the only ones he said he has ever seen.

A I don't recall what the book looked like.

Q Have you ever seen procedures that were tabbed so that you could open up to a section on how to run high pressure injection?

A I really don't remember.

Q Have you ever seen procedures that had an index that permitted you to look up high pressure

1
2 injection so that you could turn to the procedures
3 on high pressure injection?

4 A Again, I recall seeing procedures but I don't
5 remember which ones nor what they looked like.

6 Q Why did you think Bert Dunn's recommended
7 procedure was correct?

8 MR. FISKE: He has already testified to
9 that, Mr. Seltzer.

10 MR. SELTZER: No, I think he just testified
11 that it was correct. Now I am asking why he thought
12 it was correct.

13 MR. FISKE: Well, I think he has answered it
14 but go ahead. You can answer it again if you want
15 to.

16 Now you are talking about back to January
17 1979?

18 MR. SELTZER: Yes.

19 A The basic design of a pressurized water reactor
20 is that the reactor coolant remain subcooled. It is not
21 supposed to be voiding.

22 Bert was simply stating keep high pressure
23 injection on until cooling becomes subcooled. It was
24 right.

25 Q You believed at the time you told Don

1
2 Hallman that you thought Dunn was correct that Dunn's
3 recommendations were a useful clarification of the
4 existing B&W recommendations on high pressure injection
5 operation?

6 A Yes.

7 Q Do you know about saturation curves? Steam
8 tables?

9 A Yes.

10 Q If an operator leaves high pressure injection
11 on until system pressure is at or above 1600 psi, will
12 the reactor coolant system be below the saturation curve?

13 MR. FISKE: Mr. Seltzer --

14 Q I am talking about what you knew in 1978
15 based on your knowledge that you said you knew then that
16 the existing procedure was that you leave HPI on until
17 you were at or above 1600 psi.

18 MR. FISKE: The question is now what did he
19 know what, then?

20 MR. SELTZER: Yes, in 1978.

21 MR. FISKE: What is the question? Did he
22 know whether if it was above 1600 it would be
23 above or below the saturation curve?

24 MR. SELTZER: Right.

25 MR. FISKE: Do you know?

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A The saturation curve is a function of pressure.

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All 1600 psi does it define a saturation temperature.

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You have to look at both temperature and pressure.

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Q Did the procedure that was in effect in 1978 for operating high pressure injection say anything about looking at temperature before terminating high pressure injection?

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MR. FISKE: Do you know?

11

A I don't know.

12

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Q You had only told me previously that you can shut it off if you are above 1600 psi, right?

14

A Well --

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Q Isn't that what you told me previously?

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MR. FISKE: I think he said his understanding was it should not be turned off until the pressure had come back to at least 1600.

19

Q Is that right?

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MR. FISKE: That was his understanding or his assumption.

21

22

A That was my understanding.

23

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Q Once the pressure is above 1600 psi, what would happen? Were the operators told under the procedures prepared by B&W that they could shut off high

1
2 pressure injection or that they should do anything
3 else before they shut off high pressure injection?

4 A I really don't know.

5 MR. FISKE: Can we take five minutes?

6 MR. SELTZER: Yes, sure.

7 (Recess taken.)

8 Q Do you know in 1978 that one of the
9 procedures for guiding the operator on high pressure
10 injection termination was a procedure that dealt with
11 pressurizer water level?

12 A No, I do not.

13 Q Did you know in 1978 that pressurizer water
14 level and reactor coolant system pressure tended to move
15 in the same direction?

16 A I think I knew that in general that that trend
17 was true during normal operation of the plant.

18 Q What do you mean by "during normal operation
19 of the plant"?

20 A During nonaccident conditions.

21 Q Did you have any belief that pressurizer
22 water level and reactor coolant system pressure moved
23 in opposite directions under transient conditions?

24 A I really don't recall any knowledge of reactor
25 coolant pressure and pressurizer level during accident

1
2 conditions.

3 Q Did you ever have any simulator training?

4 A Yes. I spent some time working on the simulator.

5 Q By "working on," do you mean working at the
6 controls?

7 A I recall using the simulator to study the
8 integrated control system.

9 Q Did you ever have any experience handling
10 simulated transients on the simulator?

11 MR. FISKE: You mean from the point of view
12 of the operator?

13 MR. SELTZER: No, from any point of view.

14 A All I can recall is that I spent some time in the
15 simulator room observing the plant response during normal
16 power operation transients.

17 Q Did you observe the plant response to any
18 loss of coolant accidents?

19 A I don't recall.

20 Q Don Hallman contacted you at least two times
21 between August 3, 1978 and New Year's 1979.

22 It is a fact, is it not, that on no occasion
23 between August 1978 and January 1979 did you check with
24 Eric Swanson or Art McBride to see if they had done
25 anything to respond to Hallman's memo, isn't that correct?

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A I do not recall contacting Art McBride or Eric Swanson and asking them if they had responded to Don's memo.

Q Do you recall talking to them and asking them whether they were doing anything to work on a response to Don Hallman's memo?

A I do not recall.

Q You don't recall doing that? Is that what you are saying?

A I don't recall if I did or if I didn't.

Q On any of the occasions when Don Hallman asked you have you got an answer for him yet, did you ask Hallman, in words or substance, why he was asking you repeatedly for an answer?

A I really don't remember.

Q Except for days when you were out of the office or Eric or Art were out of the office, was it your practice to see them on a daily basis during 1978?

A No, it wasn't.

Q How frequently would you see them?

A Two or three times a week.

Q Do you recall any impediment to your talking with McBride or Swanson between August 1978 and January of 1979?

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2 A I don't understand what you mean by "impediment."

3 MR. FISKE: Was there anything that would
4 have prevented you from talking to them?

5 A The only thing that could prevent me talking to
6 them was their or my unavailability due to activities
7 we were involved in.

8 Q Do you recall that during the second half
9 of 1978 their activities or your activities were such
10 that you could not even pick up a telephone and call them
11 and ask them, "What are you doing to respond to Don
12 Hallman's memo"?

13 A I think, as I testified earlier, I would be
14 in contact with both of them normally two or three times
15 per week.

16 Q This is during the second half of 1978,
17 right?

18 A During the second half of 1978.

19 Q You could have used those two or three times
20 a week meetings to ask them about Don Hallman's memo,
21 right?

22 A I could have, yes.

23 Q Even in the week immediately surrounding
24 Don Hallman's coming to you and asking you, "Have you
25 done any work on my memo," you didn't talk to either

1
2 Swanson or McBride to ask them, "Have you answered
3 Hallman's memo"?

4 A I really don't recall.

5 Q You never sent them a follow-up memo saying,
6 "Don't forget to answer Don Hallman's memo"?

7 A I am almost sure that I did not.

8 Q Why are you so sure that you didn't?

9 A Because I don't recall doing it.

10 Q Do you keep a copy of memos that you send
11 to people or does your secretary?

12 A Yes.

13 Q Is it safe to assume that if you had written
14 a memo and you or your secretary kept a copy, you would
15 have found it by today?

16 A Yes.

17 Q When you got the request from Hallman in
18 1979 again asking you to respond to his August 3, 1978
19 memo, it is a fact that even then you did not check
20 with McBride or Swanson to see whether they had done
21 any work in response to the Hallman memo, isn't that
22 right?

23 A I do not recall checking with them.

24 Q In 1978, how close was your office to Eric
25 Swanson's?

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2 A I would say it was within 30 to 40 feet.

3 Q How close was your office to Art McBride's?

4 A I would also say it was within 30 to 40 feet.

5 Q Are these fully enclosed offices that you
6 and the other two had? Walls from floor to ceiling
7 and a door that has to be opened to get in and out or
8 are they cubicles?

9 A They were really neither. All three of our offices
10 had an open landscape arrangement with 6-foot high
11 screens all the way around them.

12 Q As a manager, did you encourage people who
13 reported to you in Plant Integration to feel free to drop
14 into your office if they had any problem they wanted to
15 discuss?

16 A Yes, I did.

17 Q Did you leave your door open generally if
18 you weren't having a confidential conference?

19 MR. FISKE: Can I hear the question again.

20 Q Did you leave your door open if you weren't
21 having a confidential conference?

22 A There were no doors.

23 Q Did you make it your practice to walk around
24 and see what people in your unit were doing?

25 A I would not say that was a normal practice. They

1
2 would come see me for business discussions.

3 Q How did you supervise the work in the Plant
4 Integration Section?

5 Let's back up. You have been a manager at
6 G&W for quite a few years.

7 Have you had any management training?

8 A Yes.

9 Q What management training have you had?

10 A I took a formal four-week course from the American
11 Management Association in 1974 and 1975.

12 Q What was the 1974 course about?

13 A The course I am referring to was a four-week course
14 where I was in a seminar setting for one week at a time
15 during the time period 1974, 1975.

16 Q Where was it given?

17 A I spent two weeks in New York City and two weeks
18 in Dallas, Texas.

19 Q What topics were covered?

20 A All I can really recall today was that the basic
21 theme of the whole four-week course was, quote, getting
22 things done through other people, end quote. The course
23 taught us how to delegate, follow up, make decisions and
24 basically use a participative management philosophy to
25 make things happen.

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Q What did you learn about how to follow up?

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A I guess I learned that it was an important part of making things happen.

4

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Q Why was it important?

6

A In order to maintain the control that a manager should have, it's important for him to know what is going on.

8

9

Q What techniques or methods of follow up were covered in the instruction you had?

10

11

A I don't recall the details at all.

12

Q What does "follow up" mean?

13

A To check and see that things are happening as expected.

14

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Q After you got Don Hallman's memo, you never did anything to check and see that things are happening as expected to respond to his memo, did you?

16

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A I think, as I have testified, that in January of 1979, I took action myself to answer Don's questions.

19

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Q You have also testified that you had asked somebody else to do the work to respond to his questions.

21

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Did you ever check and see that things were happening as expected for that person to respond to Don Hallman's questions?

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A I think I have testified that I don't recall.

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Q On page 29 of your President's Commission deposition, beginning at line 17, you were talking about the communications from Hallman to you before the end of 1978.

Do you see the testimony beginning with the words, "On both of those occasions"?

A Yes, I have that.

Q You stated there, "On both of those occasions, I did not follow up after the phone call or the casual conversation with Don in the hall. I am quite sure I did not then go back and talk to Art or Eric," and I think there is a word "ask" missing, "if they followed up."

MR. FISKE: Do you want to keep reading, please?

MR. SELTZER: Period, close quote.

Q Did you --

MR. FISKE: Aren't you going to read further?

MR. SELTZER: I will read the rest in a minute.

Q Did you give the testimony that I just read?

A To the best of my knowledge.

Q To the best of your knowledge what?

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A To the best of my knowledge, yes.

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Q Is there a word "ask" that is missing at the point where I suggest that it was missing?

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A I don't know.

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MR. SELTZER: Well, I am not going to read that. The record speaks for itself on the rest of it. He has already testified that notwithstanding the other work they were doing he was seeing these people two and three times a week and there was no reason why he couldn't have talked to them and followed it up.

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MR. FISKE: If you don't want to read it, I would like the record to be clear that if this portion of this deposition is ever read at a trial, I will insist that at this point the rest of this answer be read into the record. If you don't want to do it now and go on with another question subject to that, that is perfectly all right.

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Q Did you hold meetings of your Plant Integration Unit during the second half of 1978?

23

A I don't recall.

24

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Q Was it your practice as the Manager of Integration to hold unit meetings?

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2 A Yes, it was my practice.

3 Q How frequently would you hold them?

4 A Once every two months, approximately.

5 Q Did you ever raise at any of the Plant
6 Integration meetings that were held after August 3, 1978
7 and before February 1979, the subject of Don Hallman's
8 memo, GPU Exhibit 80?

9 A I don't recall if I had any meetings during that
10 time period because things were very busy in my group
11 so therefore I don't recall bringing up Don Hallman's
12 letter at any meetings of that nature.

13 Q In the second half of 1978, did you require
14 that the supervisors who reported to you give you
15 periodic reports of their activities?

16 A Yes, I did.

17 Q How frequently did you request that they
18 give you such reports?

19 A Once per month.

20 Q Was Eric Swanson required to give you a
21 monthly report?

22 A Yes, I believe he was.

23 Q Was Art McBride required to give you a
24 monthly report?

25 A Yes.

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Q Have you ever reviewed Erick or Art's

monthly reports to see if they indicated that they had any assignment from you with respect to Hallman's memo, GPU Exhibit 80?

A No, I did not normally keep their monthly reports.

Q What did you do with them?

A I would read them, I would use them as input to prepare my monthly report and I would either send them back to them with a comment or two or I would throw them away.

Q Do you recall their monthly reports after August 3, 1978 indicating that either of them was doing any work to respond to Hallman's memo?

A I do not recall.

Q After you claim you asked one of those two to respond to Hallman's memo, did you look at their monthly reports to see if they were doing any work to prepare such a response?

A Yes, I looked at their monthly reports and read them.

Q Did you look at their reports to determine whether they were doing any work to respond to Hallman's memo?

A I don't recall.

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Q Between the time that Don Hallman first sent you his memo, GPU Exhibit 80, and the time when he next spoke to you and asked you "Where's the response," how much time elapsed?

A I don't know.

Q When he first asked you "Where's the response, Bruce," is it something that you had given any thought to between August 3rd when you got his memo and the date that he asked you "Where is the response"?

A I really don't remember thinking about this memorandum after I sent it to Swanson or McBride with the note on it for them to take action.

Q Hallman spoke to you and said, "Where's my answer, Bruce?"

Did you do anything that you can recall to get an answer for him?

A I really have been unable to remember any action on my part during the fall of 1978.

Q He spoke to you again at least one more time before year end 1978, that's getting into the winter.

When he spoke to you at least that second time, do you remember doing anything to get a response to his memo?

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2 A I don't remember whether I did anything or not.

3 Q If you did do something, there is no record
4 of your doing something, is there?

5 A I have been unable to locate any record.

6 Q There is no record of anybody in your unit
7 doing anything to respond to Don Hallman's memo during
8 1978, is there?

9 A Not to the best of my knowledge.

10 Q You claim that you told Don Hallman in
11 response to one of his inquiries that somebody is
12 working on it.

13 Did you tell him that in response to the
14 first time he came to you or a subsequent time?

15 A I really don't remember what my response was
16 to Don on each occasion.

17 I do remember that on one of the occasions
18 or maybe even both of them, that I told him somebody
19 is working on it and he should be receiving a response.

20 Q After Don Hallman got in touch with you in
21 1978 to press you for a response, did you write a note
22 to yourself to remind yourself to get on it and respond?

23 MR. FISKE: I object to the form of the
24 question. I don't think there has been any
25 testimony that Mr. Hallman was pressing him for

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a response.

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Q Wasn't Don Hallman pressing you for a response?

5

MR. FISKE: You asked him whether -- go ahead.

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Q Didn't you have at least two conversations with Don Hallman in 1978 after he had sent you the memo in which he was pressing you to respond to the memo?

9

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A On two occasions between August and December of 1978, Don asked me if I had taken any action.

11

12

I would not say that he was pressing me to respond to his memo.

13

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Q He wanted a response, didn't he? Didn't he let you know that he wanted a response?

15

A Yes, he asked me.

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Q Did you make any note to yourself after any of these conversations with Don Hallman in 1978 to remind yourself to get on it and do it?

19

A I don't know whether I did or not.

20

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Q You haven't found any such notes in your files, have you?

22

A No, I have not found any such notes.

23

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Q Did you sometimes put notes in your files to give yourself a tickler or a reminder to do things in 1978?

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A As I testified yesterday, I kept a list of things to do on a desk pad in front of me.

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Q In 1978?

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A Yes.

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Q Do you recall any other memoranda seeking your resolution that you received in 1978 that talked about the possibility of uncovering the core of a nuclear power plant?

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MR. FISKE: I'm sorry, I was writing something.

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Could I hear that question back, please.

14

(Record was read back.)

15

A Do you mean memoranda requesting my action?

16

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Q Yes. Like GPU Exhibit 80.

18

A I really don't recall any specific memorandum.

19

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I do recall a high level of activity on other safety concerns on safety-related matters.

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Q Did it ever trouble you at any time during the second half of 1978 that you had not responded to Don Hallman's memo raising the possibility of uncovering the nuclear core?

23

A I really don't remember.

24

Q You don't have any recollection of being troubled about that?

25

Karrasch

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2 A I don't know whether I was or not.

3 Q Did you ever come into the office at the
4 beginning of a week and say, "This is the week that I am
5 going to answer Don Hallman's memo"?

6 A I don't remember.

7 Q Do you remember ever putting responding to
8 Don Hallman's memo down on your list of things to do?

9 A I don't remember.

10 Q What did you mean when you testified that you
11 took the matters in Hallman's memo "too lightly"?

12 MR. FISKE: Where is that?

13 MR. SELTZER: Page 248 of the testimony
14 before the full Kemeny Commission.

15 THE WITNESS: I would like to see it.

16 (Transcript handed to the witness.)

17 MR. FISKE: Let's read the whole question
18 and answer, please.

19 MR. SELTZER: "Chairman Kemeny: Therefore,
20 would you now in retrospect -- and I do realize
21 this is in retrospect -- feel that perhaps your
22 taking of the matter of Dr. Hallman's memorandum
23 perhaps may have been too light?

24 "Mr. Karrasch: Yes, sir."

25 Q Were you asked that question by Chairman

1

2 Kemeny and did you give that answer?

3 A Yes, I believe that is -- I believe that testimony
4 is accurate.

5 Q Did you believe it was truthful at the time
6 you gave it?

7 A Yes, sir.

8 Q Do you still believe it is an accurate and
9 truthful answer?

10 A The context in which I answered Dr. Kemeny was
11 purely in hindsight with full knowledge of the sequence
12 of events and the operator actions during the Three Mile
13 Island accident.

14 Q What makes you think you took the Hallman
15 memorandum too lightly?

16 MR. FISKE: You mean "perhaps he may have
17 taken it too lightly"?

18 MR. SELZTER: Right.

19 A I testified also that I thought the procedures
20 that the operators had were adequate to keep them from
21 uncovering the core.

22 The fact that those procedures were not
23 followed at Three Mile Island leads me to believe that
24 additional clarification might have been helpful to
25 them. It would have given them another piece of

1
2 information.

3 In retrospect, taking the matter lightly --
4 I don't have any more to say on that.

5 Q In what way were you admitting to Chairman
6 Kemeny that perhaps you had taken the memo too lightly?

7 MR. FISKE: Perhaps he might have taken the
8 memo too lightly.

9 MR. SELTZER: That is what I just said.

10 Q What was there in your handling of the
11 Don Hallman memo that you believed when you testified
12 before the full commission may perhaps have been too
13 light?

14 MR. FISKE: In retrospect.

15 A I think that I meant to say that the amount of
16 time that it took me to respond to Mr. Hallman was
17 somewhat longer than it could have been.

18 Q In other words, you could have responded
19 much faster, right?

20 A I don't know if I could have responded much faster
21 because the questions that Don was asking were getting
22 answered on another project during the fall of 1978.

23 My taking of the matter too lightly could
24 be construed to mean that I waited for the answers to
25 the questions to come about rather than going and getting

1

2 them answered.

3

Q Going and getting them answered faster?

4

A That is correct.

5

6 Q You feel that you could have gone and gotten
7 them answered faster if you followed up?

7

A I really don't know.

8

Q Who was doing work on the ATWS?

9

A Mr. McBride.

10

Q When did he start work on it?

11

12 A I don't recall when he started. He was working
13 on it during the last half of 1978.

13

14 Q Was he working on other things in the last
15 half of 1978?

15

A Yes, sir.

16

17 Q Were other people working with him on
18 ATWS?

18

A Yes.

19

20 Q Could you have assigned a higher priority
21 to the work on ATWS?

21

22 MR. FISKE: You mean than it was already
23 receiving?

23

MR. SELTZER: Right.

24

A It was already receiving a very high priority.

25

Q Could you have given it higher priority?

1
2 MR. FISKE: Well, Mr. Seltzer, are you
3 asking him whether it was theoretically possible
4 to give it a higher priority or --

5 MR. SELTZER: I am asking whether it would
6 have been possible to hurry that work up and get
7 the answer to Hallman's memo faster.

8 MR. FISKE: You mean taking into account
9 the other things that would have to have been put
10 aside?

11 MR. SELTZER: Not put aside or kicked back.
12 We at Kaye, Scholer work nights and weekends when
13 there is a serious problem.

14 MR. FISKE: Bully for you.

15 MR. SELTZER: I am sure your firm does, too.
16 I am not talking about putting anything
17 aside. I am asking whether they could do their
18 work faster and respond to Hallman's memo faster.

19 MR. FISKE: I think it is important that
20 Mr. Karrasch understands what you are asking him.

21 MR. SELTZER: I am sure he understands.

22 MR. FISKE: If you are asking theoretically
23 was it possible to give it high priority, we
24 could give high priority to this deposition if
25 we work 24 hours a day.

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Do you understand the question, Mr. Karrasch?

THE WITNESS: I think I do.

A All I recall is that ATWS had a very, very high priority within the B&W Company.

Q Was McBride taking time out to work on other things at the same time he was working on ATWS?

A Yes, he was.

Q Was McBride working nights and weekends during the second half of 1978?

A Yes, sir, we all were.

Q Every night and every weekend?

A No.

Q You don't know when McBride started working on ATWS?

A I really can't give you a date. I don't know.

Q Did he start working on it before or after August 3, 1978?

A He was working on it before August 3, 1978.

Q When did it occur to you for the first time that the work on ATWS might contribute something to the resolution of Don Hallman's question?

A To the best of my recollection, I think it was after January 1, 1979.

Q So it did not occur to you until after the

2 last time Hallman asked you, "Where's my answer"?

3 A I don't know that for sure. I know that there was
4 high activity on ATWS and the issue of water relief
5 through safety valves was important to ATWS and that
6 near the end of 1978 or early in 1979, I recall that
7 those issues were getting resolved as part of the ATWS
8 project but that's as close as I can put it.

9 Q You don't remember where you were when you
10 gave Hallman the response to his August 3rd memo, do
11 you?

12 A No, I don't remember exactly.

13 Q Do you know whether you communicated face
14 to face with him or over the telephone?

15 A I am pretty sure it was face to face.

16 Q Are you positive?

17 A No, I am not.

18 Q It could have been over the telephone?

19 A I don't know for sure.

20 Q Was it a planned meeting that you had with
21 Don to discuss your response to his August 3rd memo?

22 A I don't believe it was.

23 Q How did your meeting at which you discussed
24 your response to his memo take place?

25 A To the best of my recollection, I met Don somewhere

1
2 in the hallway at B&W and I told him --

3 Q Wait a second. That's the answer to the
4 question.

5 Somewhere in the hallway, were you out in
6 the halls looking for him at that time?

7 A I don't recall.

8 Q Had you put on your calendar for that day,
9 "Go find Don Hallman and give him an answer"?

10 A I may have.

11 Q Do you have any recollection of doing that?

12 A I really don't recall.

13 Q Had you formulated any plan in your mind
14 about how you were going to communicate a response to
15 Don Hallman before you coincidentally bumped into him
16 in the hall?

17 A I really don't remember.

18 Q Do you normally respond to important requests
19 by making a remark in passing in the hallway and then
20 never following it up with a written memo?

21 A That is not my normal practice.

22 Q Your normal practice is to send a written
23 response, isn't that right?

24 A No, that is not my normal practice either.

25 Q You say that responding orally at a chance

1
2 meeting in the hallway and not following it up with a
3 writing would not be your normal procedure.

4 What was your normal procedure?

5 A I would say my normal procedure in responding to
6 a request is to either plan a meeting, to sit down
7 and verbally answer the question or to call the person
8 on the telephone and respond to the question or to write
9 a memorandum.

10 Q Why didn't you write a memorandum in response
11 to Don Hallman's requests?

12 A I really can't remember the thought process I went
13 through to decide which way to respond to Don's letter.

14 Q Which way did you decide to respond to Don's
15 memo?

16 A I don't recall going through the thought process
17 of making a decision on how to respond.

18 I do recall the response.

19 Q How much time elapsed between the last time
20 Hallman asked you, "Are you ever going to answer my
21 memo," and when you bumped into him in the hallway?

22 A I don't know exactly.

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

25 Q Was it a week, a month, two months?

1
2 A I don't know.

3 Q You have no idea whether it was weeks or
4 months, which of those time parameters is closer to being
5 accurate?

6 A I would say in less than weeks is an accurate
7 description of the time frame.

8 Q What do you mean by "less than weeks"?

9 A Let me just say on the order of a week or two.

10 MR. FISKE: Whenever you are at a logical
11 stopping point, Mr. Seltzer. I have to be
12 somewhere at 12:30.

13 MR. SELTZER: So do I.

14 MR. FISKE: And I might add it is more than
15 five minutes away but I don't want to interrupt
16 you at this point.

17 Q If you hadn't bumped into Don Hallman in
18 the hallway, would it have taken longer for you to
19 respond to his request?

20 MR. FISKE: I am going to object to that,
21 Mr. Seltzer. That is just hypothetical.

22 MR. SELTZER: It doesn't seem hypothetical
23 to me.

24 MR. FISKE: Sure. If he hadn't bumped
25 into him. The fact is he did meet him in the

1 hallway and answer his question.

2 Q You did not have a typed-up memorandum ready
3 to go to Hallman sitting on your desk at the time you
4 bumped into him in the hall, did you?

5 A No, sir, I did not.

6 Q There wasn't a memo that was on its way to
7 Don Hallman at the time you bumped into him in the hall,
8 was there?

9 A No, there was not.

10 Q If you hadn't bumped into him in the hall
11 at that point and given him a response, it would have
12 taken longer for you to respond to Don Hallman's
13 request, wouldn't it?

14 MR. FISKE: I will object to that.

15 MR. SELTZER: I think it is a logical
16 question that has a very definite answer and there
17 is no speculation whatsoever involved.

18 MR. FISKE: Well, I mean we can all agree
19 that by some matter of seconds, minutes or hours,
20 it would have taken longer if he hadn't seen him
21 in the hall.

22 MR. SELTZER: Fine, that is my immedaite
23 question.

24 MR. FISKE: But how much longer is clearly
25

a matter of speculation.

MR. SELTZER: Let's just take the first part which you say is not speculation.

MR. FISKE: I will agree that that is a matter of logic.

MR. SELTZER: Now, let's have Bruce A. Karrasch's response.

MR. FISKE: The point is simply yes or no, if you hadn't met him in the hallway and given him the answer then, would it have taken you some point in time longer to have given him the answer?

A Yes.

Q Did you have any intention on that day that you bumped into Don Hallman in the hall to arrange to give him an answer?

MR. FISKE: You mean did he have in his mind he was going to give Mr. Hallman an answer?

MR. SELTZER: Yes.

A Again, I really don't recall.

MR. SELTZER: O.K. Would you like to take a lunch break right now?

THE WITNESS: Yes, sir.

(Whereupon, a luncheon recess was taken at 12:28 p.m.)

(AFTERNOON SESSION)

(Date: June 17, 1981)

(Time noted: 2:15 p.m.)

B R U C E A D O L P H K A R R A S C H,

resumed, having been previously duly sworn by
a Notary Public, was examined and testified
further as follows:

EXAMINATION (Cont'd.)

BY MR. SELTZER:

Q You received a degree in Nuclear Engineering
from the University of Wisconsin, is that correct?

A Yes, sir, that is correct.

Q Did you go to the University of Wisconsin
knowing that you wanted to concentrate in nuclear
engineering?

A I think so.

Q How much of your curriculum was devoted
to nuclear engineering?

A I would say a large majority of it.

Q Were any of the courses that you took
courses that dealt with the design of nuclear power
plants?

A Yes.

Q What were the principal areas of study in

1

2

nuclear engineering that you took at the University of Wisconsin?

3

4

A I don't recall specific courses right now but I do know there was a --

5

6

Q I don't mean specific courses, I mean areas of study.

7

8

A Yes.

9

10

Q What do you remember studying is the question.

11

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A I remember there was an emphasis on mathematics, heat transfer and fluid flow, nuclear physics, nuclear power plant design, there was a laboratory which had an experimental reactor, and I chose electives in the areas of English and economics.

16

17

Q Did you study both pressurized water reactors and boiling water reactors?

18

A Yes.

19

20

Q Did you study in any of your courses anything about loss of coolant accidents?

21

A I don't recall exactly but I don't believe so.

22

Q Did you study emergency core cooling systems?

23

A Again, I do not recall exactly.

24

25

Q Do you think that the University of Wisconsin gave you courses in nuclear power plant design that did

1

2 not include emergency core cooling systems?

3 A I don't know.

4 Q Do you know of any nuclear power plants
5 designed and built in the United States that could not
6 have emergency core cooling systems?

7 A I am not aware of any.

8 Q Do you believe that they all do have
9 emergency core cooling systems?

10 A To the best of my knowledge, yes.

11 Q But you don't remember learning anything
12 about ECCS at the University of Wisconsin, is that right?

13 MR. FISKE: What year are we talking about?
14 How long ago is this?

15 THE WITNESS: Do you want me to answer?

16 MR. FISKE: Yes.

17 THE WITNESS: I was at the University of
18 Wisconsin from 1963 to 1967.

19 Q Four years you were there, right?

20 A Yes.

21 Q So I am talking about --

22 MR. FISKE: Fifteen years ago.

23 Q At any time during those four years, you
24 don't remember learning anything about emergency core
25 cooling systems, is that right?

1

2 A That is correct.

3 MR. FISKE: He said he didn't recall one
4 way or the other.

5 THE WITNESS: Yes.

6 Q Anything that you learned at the University
7 of Wisconsin about emergency core cooling systems you
8 have forgotten, is that right?

9 MR. FISKE: I will object to that.

10 MR. SELTZER: You want to inject he doesn't
11 recall one way or the other. He said he couldn't
12 recall learning anything. You are suggesting
13 that maybe he did learn it but didn't recall it
14 so now I am asking to complete that loop.

15 MR. FISKE: It is also possible he learned
16 it and retained it and still knows it today but
17 doesn't remember whether it came from the
18 University of Wisconsin or some place else.

19 Q What items were covered in nuclear power
20 plant design?

21 A I recall learning about the theory of the nuclear
22 chain reaction, I recall the theory about removal of
23 heat from the fuel assemblies during normal power
24 operation and I recall studying the steam generators and
25 the process of heat transfer that goes on in a steam

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2

generator as you take water and boil it into steam.

3

That's all.

4

Q Was the experimental reactor a PWR or a BWR?

5

A It was neither. It was called a pool reactor.

6

Q You mean you could lean over the railing

7

and look down into the pool and see the core?

8

A That is correct.

9

Q Was there shielding around the core to

10

prevent people who were working with the experimental

11

reactor from being irradiated?

12

A Yes, there was.

13

Q What kind of shielding?

14

A Around the sides of the core was thick walls of

15

concrete and on the top of the core was 15 or 20 feet

16

of water.

17

Q Heavy water?

18

A No, I don't believe so.

19

Q Did you learn anything at the University of

20

Wisconsin about the dangers of exposing people to

21

radioactivity?

22

A I just don't recall if the subject matter

23

specifically covered that, that subject.

24

Q Did you learn --

25

A It may have or it may not have. I just don't

1
2 remember.

3 Q Did you learn anything about that in high
4 school?

5 A I really don't recall that either.

6 Q Do you recall ever learning anything about
7 the dangers of exposing people to radiation?

8 MR. FISKE: You mean beyond what he has
9 already testified about?

10 MR. SELTZER: Yes.

11 A I can't remember, I just don't remember specific
12 subject matter pertaining to the effects of radiation
13 on the human body. It may have been there and it may
14 not have.

15 Q Does B&W have any training courses for its
16 employees on the effects of radiation on homosapiens?

17 MR. FISKE: I think you asked him that before
18 and he said they didn't.

19 A I don't recall taking any courses at B&W, and
20 to answer your last question, I don't know if B&W has a
21 course or not.

22 Q Do you know of anybody at B&W whom you believe
23 is expert in the effects of radiation on people?

24 A There is a Radiation Analysis Group in the Plant
25 Engineering Section. Their analysis goes beyond the

1
2 reactor building and analyzes the effects of radiation
3 releases -- potential radiation releases from the
4 reactor building.

5 That's all.

6 Q Have you ever done any work with that group?

7 A No, I have not.

8 Q Have you ever heard any of them testify?

9 A Have I heard any of them testify?

10 Q Yes.

11 A No, sir, I have not.

12 Q You go and testify on behalf of B&W, don't
13 you, at SMUD hearings and other ASLB hearings?

14 A I have, yes.

15 Q You have heard other B&W employees giving
16 testimony at those hearings, haven't you?

17 A Yes.

18 Q So don't look so puzzled.

19 I am asking you whether you have ever heard
20 anybody from the section that deals with the radiological
21 impact on human beings give testimony.

22 A I don't believe I have.

23 Q Did you graduate with any honors from the
24 University of Wisconsin?

25 A No, sir, I did not.

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Q Did they award degrees cum laude, magna cum laude, summa cum laude?

A I think so.

Q But you didn't get any of those honors?

A No, sir.

Q You weren't a member of Phi Beta Kappa?

A No, sir.

Q What was your graduate point average?

MR. FISKE: Mr. Seltzer, are you kidding?

MR. SELTZER: No, I am not.

MR. FISKE: This is really ridiculous.

His graduate point average in college 20 years ago? Come on.

He is not answering that.

MR. SELTZER: Are you embarrassed about it?

MR. FISKE: No, I just think it is absurd.

I am embarrassed to be sitting through a deposition which is a colossal waste of time. If you are serious about asking him -- do you want to find out what his grades were in high school and kindergarten, too?

MR. SELTZER: No, I am not interested in that but since this man concentrated in nuclear engineering, it is not irrelevant whether he

1
2 nearly flunked out, barely squeaked through or
3 got through honorably.

4 MR. FISKE: You know, I find this really
5 extraordinarily difficult to believe that you
6 seriously think his grade point average 20 years
7 ago is relevant.

8 MR. SELTZER: It is not 20 years.

9 MR. FISKE: All right, let's make it 14.

10 MR. SELTZER: Closer to 10 years ago than 20.

11 MR. FISKE: 10 years ago, whatever.

12 Go ahead and answer it. If this is the
13 last question it is simpler to let you answer it
14 than waste any more time arguing about it.

15 A My grade point average as an undergraduate at
16 the University of Wisconsin was about 2.5 out of 4. I
17 might add that in graduate school at Lynchburg College,
18 I got straight A's in my Masters program.

19 MR. FISKE: He probably wasn't going to ask
20 you about that.

21 Q Did you write a thesis in your senior year
22 at the University of Wisconsin?

23 A I don't believe so.

24 Q Did you have a senior project?

25 A I vaguely recall a special project associated with

1

2 the laboratory and the pool reactor but the specifics
3 of what it was I do not remember.

4 Q Have you ever served in the Armed Forces?

5 A No, sir.

6 Q Have you ever had any work experience in
7 connection with the nuclear Navy?

8 A No, I have not.

9 Q Did you apply to other people for employment
10 besides B&W when you were graduated from the University
11 of Wisconsin?

12 MR. FISKE: What is the relevance of that?

13 MR. SELTZER: I want to find out how he
14 ended up at B&W.

15 MR. FISKE: He applied at B&W and was
16 accepted. I don't see what relevance it has
17 whether he applied some place else.

18 Q Did you apply at other places?

19 A I applied at Combustion Engineering, Westinghouse
20 Corporation and B&W. I had offers from all three of
21 them and I accepted the one at B&W.

22 Q Why did you accept the B&W offer?

23 A I guess two main reasons. I wanted to work with a
24 smaller rather than a larger company and I like the
25 location in Virginia.

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Q Has B&W been your only employer since graduating from college?

A Yes, sir.

Q Did you take time off from work at B&W to study for your Masters degree at Lynchburg College?

A No, sir, I didn't.

Q Does Lynchburg College give undergraduate degrees?

A Yes.

Q How long did you study at Lynchburg College?

A I think it was four years.

Q What time of the day were your courses given?

A They were always after work on weekdays.

Q Did you write a Masters thesis?

A No, I did not.

Q They don't require a Masters thesis for a Masters degree?

A No. They required 36 credits of course material.

Q Was there any particular area in nuclear physics in which you concentrated at Lynchburg?

A The subject matter was mostly related to applications of theory to power plant design. Many of the courses were taught by B&W people who had advanced

1

2

degrees in nuclear engineering. It was a good practical applications course.

3

4

Q What areas were covered?

5

6

A There was a heavy emphasis on advanced reactor theory, reactor controls was taught, there was a re-emphasis of mathematics, advanced mathematics and applications to reactor design.

7

8

9

10

Q Was anyone from the Plant Design Section teaching at Lynchburg College when you were there?

11

12

A When I was there, I don't think the Plant Design Section was a part of the organization.

13

14

15

Q Were any people who were later to become members of Plant Design teaching at Lynchburg when you were there?

16

17

18

A I guess the only instructor I can recall is a fellow named Jim Mallay who was Manager of the Safety Analysis Unit for some time.

19

Q Did he precede Danny LaBelle?

20

21

A No, there was another person in there named Cliff Russo after Jim Mallay and then Danny LaBelle.

22

23

24

Q Since you got your Masters degree, have other people from the Plant Design Section been instructors at Lynchburg?

25

A I really don't know.

1

2 Q You don't know of any?

3 A I do not know of any.

4 Q You have never taught there?

5 A No, sir, I have not.

6 Q A lot of the A grades that you got were
7 grades that were given to you by B&W instructors, is
8 that right?

9 A I got all A's and approximately 20 percent of the
10 course material was taught by B&W instructors, the
11 remainder by Lynchburg College professors.

12 Q From your experience, did they grade more
13 easily at Lynchburg College than they did at the
14 University of Wisconsin?

15 MR. FISKE: I am going to object to this.

16 I think this has gone far enough.

17 As a matter of fact, I will let you answer
18 that, Mr. Karrasch. Maybe you can help
19 Mr. Seltzer by answering this and we can get on
20 to something else.

21 A I have no basis to compare the two. I really
22 don't.

23 Q You worked for a while in the Plant Analysis
24 Section at B&W.

25 Was there also at that time a Plant

1

2 Design Section?

3

A If you are alluding to any time prior to 1974,
4 there was not a Plant Design Section.

5

Q You were the Manager of a unit called
6 Core Integration, is that right?

7

A Yes.

8

Q Did you ever have to deal with any problem
9 of core uncovering during the year that you were in charge
10 of Core Integration?

11

A I don't recall dealing with a problem of core
12 uncovering when I was Manager of Core Integration.

13

Q I started this deposition by asking you
14 what position you assumed when you left your position as
15 Unit Manager of Plant Integration and you told me about
16 becoming the Manager of Customer Engineering programs.

17

Wasn't there a period of time in between
18 the Plant Integration and Customer Engineering programs
19 when you were on special assignment to the Manager of
20 the Plant Design Section?

21

A Yes, sir, there was.

22

Q Did you forget to tell me about that
23 yesterday?

24

A Yes, I did forget to tell you about that
25 yesterday.

1
2 Q From whom did you take over as the Unit
3 Manager of Plant Integration?

4 MR. FISKE: From whom?

5 MR. SELTZER: I think that is what I said.

6 MR. FISKE: Yes, I just didn't hear.

7 Q Or was the unit newly created just for you?

8 A In 1976 when I became Manager of Plant Integration,
9 Integration was three separate groups of which I was the
10 Manager of one of them called Core Integration so the
11 three units in '76 were combined into one and I was
12 named Manager of the one unit.

13 Q How were you advised that you were going
14 to be made the Manager of the Plant Integration Unit?

15 A I guess I recall suggesting it to Dr. Roy as an
16 improvement in organization and after some thought he
17 decided to do it and give me the job.

18 MR. FISKE: You suggested what to Dr. Roy?

19 THE WITNESS: That the three groups be
20 combined into one.

21 Q You talked yourself into a job?

22 A Yes, sir.

23 Q Roy was then the Manager of the Plant
24 Integration Section?

25 A Yes.

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Q Why did you think the three groups should be combined into one?

A The duties and responsibilities of the three groups were very similar and there was a lot of interface and communication which had to occur among the three in order for them to be effective.

I thought they could more effectively perform their role if they were therefore combined into one.

Q At your Kemeny deposition, you were asked to explain your responsibilities as Unit Manager of Plant Integration and at page 4, you said, "Within the Engineering Department here at B&W, our responsibility is to make sure that people talk to each other."

Why was it important to make sure that people talk to each other?

MR. FISKE: Well, let him read his answer.

(Transcript handed to the witness.)

MR. FISKE: Which is considerably longer than the portion you read.

A I think the rest of the testimony to the Kemeny Commission explains that.

Q Where does it explain why it is important to make sure that people talk to each other?

A It's important that the analytical groups

1
2 communicate with the hardware groups so that we can
3 deliver a product which was hardware, which was
4 consistent with the analysis.

5 Q Why was that important?

6 A The Safety Analysis models the hardware and makes
7 certain assumptions about how the hardware performs
8 in an accident condition and it is very important that
9 the hardware that we deliver meet the requirements as
10 set forth by the people in Safety Analysis.

11 The job of Integration was to assure,
12 through documentation, that that interface was well
13 controlled.

14 Q You referred to the work done in Safety
15 Analysis.

16 Does that include the work done in ECCS
17 Analysis or do you want to broaden your answer to
18 include work done in ECCS Analysis?

19 A When I gave that answer to your question on the
20 Integration responsibility, I included both Safety
21 Analysis and ECCS Analysis.

22 Q So it was important to assure that the
23 product that B&W delivered to its customers conformed
24 to what Safety Analysis and ECCS Analysis said it should
25 be?

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2 A I think I would put that a little differently.
3 I would say that the way it worked was that ECCS
4 Analysis and Safety Analysis accurately modeled the
5 performance of hardware which was procured and delivered
6 to the field.

7 Q You said that it was part of Integration's
8 job to assure through documentation that the interface
9 was well controlled.

10 What did you mean by "assure through
11 documentation"?

12 MR. FISKE: Where is that?

13 MR. SELTZER: That's in Charlie Shapiro's
14 typewriter. He just recorded that.

15 THE WITNESS: I understand that.

16 MR. FISKE: Can I hear the question again,
17 please.

18 (Record was read back.)

19 A The Plant Integration Group had responsibility
20 to prepare what was called system requirement
21 specifications for those plants which were still under
22 construction.

23 Our primary job for the plants under
24 construction was to prepare requirements based upon
25 inputs which we received from the analytical groups and

Karrasch

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then forward those requirements to the hardware

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designers.

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The hardware designers then bought equipment based upon the requirements that the Integration people prepared and gave to them.

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Q Now, when you used the words "through

8

documentation," does that mean that you would communicate

9

the requirements through written documents?

10

A Yes.

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Q Did you think that it was important to do it

12

through written documents?

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A Yes.

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Q Why?

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A For those plants where we had contract obligations to deliver quality hardware, we were required to meet a commitment on the part of B&W to Quality Assurance and our Quality Assurance program outlines a hierarchy of documentation which we use to show that the design meets the requirements.

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Q Are you saying that it was a Quality

22

Assurance requirement that the work of your section be in writing?

23

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A I think that's accurate, yes.

25

MR. FISKE: The work that he has just

Karrasch

described.

Q At page 4, the bottom of the page of your Kemeny transcript, the last three lines, you state, "it requires a lot of paper work. We have a lot of documentation which we prepare to make sure that things are properly communicated to other areas within engineering."

Should that be Engineering with a capital E?

A Yes. I meant the Engineering Department.

Q How did you use documentation to make sure that things were properly communicated?

A Again, for those plants where we still had hardware to deliver, my group prepared specifications to document the requirements for the hardware. Those specifications were then controlled so that if changes took place, the same people who had received the original also received the change.

It was a design control function.

Q And part of the control was to keep things in writing?

A Yes.

Q Why wouldn't oral communication have been as effective as a means of control?

A Because it is not traceable.

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Q When the Plant Integration Section prepared documentation of system requirements, did you keep a copy in the Plant Integration Section of the documents you prepared?

A Yes, we did.

Q Why did you keep a copy in Plant Integration rather than just sending it to the person you wanted to communicate with?

A We used the documentation as the basis for assessing the desirability of change.

When an engineer wanted to make a change to a requirement, we could go back to the base document and determine what would have to be impacted.

Q In saying that it was Integration's responsibility to make sure that people talk to each other, how did Integration make sure that people talk to each other?

A As a result of our role as an interface organization, if you will, we were often asked to take the lead to resolve problems.

In order to fully resolve most problems with a nuclear plant, you have to assure that all affected disciplines are involved in the decision. Our job was to make sure they all got informed, attended any

meetings required to resolve the problem and then to make sure that future action was taken by all the people who were affected by the change.

Q After your testimony on the bottom of page 4 about documentation, at the top of page 5, you say, "That also requires a lot of review of the work of others, so on the one hand we are preparing it to tell somebody to do something, and then reviewing his work to make sure that he has done it."

Let me ask you first, am I correct in reading the word in line 4 to be "reviewing" instead of "revealing"?

A Yes, you are.

Q Whose work was the Plant Integration Section reviewing to make sure that what you had told somebody to do had been done?

A We reviewed and signed off the equipment specifications which were prepared by the hardware sections to buy hardware.

Q Before they prepared the equipment specifications, had you told them what needed to be specified?

A Yes, we did that with the system requirement specifications I alluded to earlier.

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Q Since you had already told them what to do, why did you have to review it?

A As a Quality Assurance check to help to make sure it -- they did comply with the requirements.

Q Did you think that reviewing people's work to see that they had done what they had been asked to do was a good management technique?

A Yes, I think it was.

Q But you never reviewed Eric Swanson's or Art McBride's work to see that they had done what you asked them to do in connection with Don Hallman's memo, did you?

A I guess during the fall of '78 I became very involved in the ATWS issue and was reviewing the work that Art was doing with respect to the operation of the pressurizer during that event.

Q But you said it didn't occur to you until 1979 that ATWS had anything to do with Don Hallman's memo, right?

MR. FISKE: Late '78, '79.

A I think that's what I stated, yes.

Q Have you ever written a description of what you think the role of the Plant Integration Section is and what the role of the Manager of the Plant

2 Integration Section is?

3 A Yes, I think I have.

4 Q For what purpose?

5 A I prepared a job description for myself when I
6 first took over Plant Integration really for purposes
7 of communicating what the Integration role was to other
8 people from without my organization so that they would
9 know and I recall preparing some amount of correspondence
10 to the people who worked for me to communicate to them
11 my understanding of what their role was.

12 MR. SELTZER: I would like to mark as
13 GPU Exhibit 304, a position description prepared
14 by Mr. Karrasch in or about February 1977.

15 (Position description prepared by
16 Mr. Karrasch in or about February 1977 marked
17 GPU Exhibit No. 304 for identification, as of
18 this date.)

19 Q Is GPU Exhibit 304 a copy of a document
20 which you prepared in or about February 1977?

21 A Yes, I believe it is.

22 Q Was this in addition to the documents you
23 were describing two minutes ago?

24 A No, I believe this is the position description
25 that I alluded to earlier.

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Q Did anyone assist you in the preparation of this?

A I believe I received input from Dr. Roy prior to preparing it.

Q What is the difference between major responsibilities and representative responsibilities?

A I think the major responsibilities were intended to provide a very short description of the overall objective of the unit and the representative responsibilities broke that down into more specific duties in order to accomplish those objectives.

Q In the beginning of the first sentence of major responsibilities for Plant Integration, you said that the unit "identifies the goals, objectives and standards of performance for several groups which establish design requirements for the nuclear steam supply system," et cetera.

What were the several groups to which you were referring?

A Those were the three Integration groups which had supervisors who reported to me.

Q What were the names of those groups?

A One was called Core Integration, one was called Nuclear Steam System Design and the last was called --

1
2 I believe it was C&I and Fluid Systems Integration.

3 Q In 1978, did you still have those three
4 groups within Plant Integration?

5 A There was a fourth group within Integration. It
6 was called Reactor Coolant System Component Integration.

7 Q Did you have another group called Plant
8 Integrators?

9 A Yes, but that was really not a group like the
10 other ones. Those were individuals who each reported to
11 me.

12 Q Which group did Eric Swanson head?

13 A His was the NSS Design Group.

14 Q Which group did Art McBride head?

15 A The C&I and Fluid Systems Integration Group.

16 Q Who headed RCS Components?

17 A I believe it was Mike Henig.

18 Q Who headed Core Integration?

19 A Jim Smotrel.

20 Q Was Joe Kelly in the NSS Design Group?

21 A Yes.

22 Q While you were the head of Plant Integration,
23 did you ever recommend that Kelly be given a higher
24 position within the company?

25 A I recall suggesting to Allan Womack that Joe be

1
2 promoted.

3 I don't know if it was when I was Manager
4 of Plant Integration or a manager on special assignment
5 to Allan Womack. I don't know what the timing of the
6 discussion with Allan Womack was.

7 Q Has Joe Kelly ever been promoted to a higher
8 position?

9 A I think now he is a supervisory engineer in the
10 Plant Performance Unit of Plant Engineering. That would
11 be a promotion from where he was in my organization.

12 Q He is also one of the top people in the
13 ATOG program, right?

14 A Yes, sir.

15 Q That would be a promotion, also, wouldn't
16 it?

17 A No, it really wouldn't.

18 Q Why isn't being one of the top honchos on
19 the ATOG program a promotion?

20 A In the context of the way I am defining promotion,
21 it is moving up the ladder in the boxes on an
22 organization chart.

23 Q I meant in terms of responsibility.

24 A In terms of responsibility, Joe does have more
25 responsibility and possibly even a higher level, but as

far as promotion to a higher point on an organization chart, leading a program doesn't necessarily do that at B&W.

Q Let me direct your attention to the section on representative responsibilities in GPU Exhibit 304 marked for identification.

Will you take a look at the next to the last item on the first page.

A Oh.

Q "Reviews and approves selected test specifications and drafts operating procedures for systems and equipment for which Plant Integration prepares criteria."

What systems were you referring to?

A All the systems within the B&W scope of supply for the plants under construction which I had responsibility for.

Q In 1977, did that include Three Mile Island Unit 2?

A No, it did not. We had delivered all the hardware to that plant and it was no longer part of the Plant Integration responsibilities to maintain design control.

Q Were there any 177 plants on which you had responsibility for maintaining design control?

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A Yes, I believe the Consumer's job was part of my responsibility in Plant Integration.

3

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Q What do you mean "draft operating procedures" for those systems?

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6

In other words, what was Plant Integration's role in drafting operating procedures? I mean at the time you wrote this and had it signed by Roy and Deddens and everybody else.

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THE WITNESS: Excuse me a minute?

11

MR. SELTZER: Yes. Off the record.

12

(Discussion off the record.)

13

A I was just pointing out to Mr. Fiske that the word "drafts" in that sentence should not be plural and therefore the meaning of the sentence changes.

14

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16

It should read "Reviews and approves selected test specifications and draft operating procedures for systems and equipment for which Plant Integration prepares criteria."

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So our role was one of reviewing the draft procedures prepared by Nuclear Service.

21

22

Q These were draft operating procedures for the systems and equipment supplied by B&W, right?

23

24

A Yes.

25

Q You didn't review operating procedures for

1
2 the balance of the plant supplied by other vendors?

3 A That is correct.

4 Q Which group or groups within Plant
5 Integration reviewed and approved draft operating
6 procedures?

7 A The way we were organized was such that each of
8 the groups under me had responsibility for equipment and
9 systems so if that group had responsibility for a
10 system, they would be delegated to review the test
11 specifications and operating procedures.

12 Q Which group under you had responsibility
13 for ECCS systems and equipment?

14 A That would be the group under Mr. McBride, C&I
15 and Fluid Systems Integration.

16 Q Did Art McBride's group review draft
17 operating procedures for the functioning of emergency
18 core cooling systems?

19 Let me ask a background question first. Was
20 that within their area of responsibility?

21 MR. FISKE: Was what?

22 MR. SELTZER: Was reviewing draft operating
23 procedures regarding emergency core cooling systems
24 within the area of responsibility of Art McBride's
25 group.

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A The way that the system worked was Nuclear Service made a choice as to who in Engineering they thought could give the most value-added review of their procedures. They, at their discretion, would ask Integration at times, they would ask Analysis at times and they would ask the equipment designers at times to review test specifications and operating procedures.

It was very dependent on what the actual procedure was.

Q Do you know whether anybody in your unit ever reviewed procedures for the operation of emergency safety features?

A No, I do not.

Q Would you have any records that were created in the section that would show that?

A No, I would not keep records of those reviews.

Q You mean your unit could review and approve a draft operating procedure and yet retain no record of the fact that you had done so?

A There was no requirement to retain the procedure. The requirement was to sign it, that you had reviewed it and send it back to Nuclear Service.

The individual may have elected to keep a copy but he was not required to do so. The records

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would be in Nuclear Service.

3

Q The fourth item of representative

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responsibilities which you included is "Coordinates

5

the overall resolution of critical product problems."

6

Is it under that category that handling

7

the Don Hallman memo, GPU Exhibit 80, would fall?

8

A Our role as an interface organization which

9

provided a communication channel within the Engineering

10

Department resulted in Integration being asked to

11

resolve many problems.

12

When one came up, a decision was made many

13

times by Don Roy or Allan Womack that that problem

14

would best be resolved in Integration as opposed to one

15

of the other units.

16

My impression of Don's letter was that he

17

was asking two questions more than he was asking to

18

resolve a critical problem.

19

MR. FISKE: Excuse me, can we take five

20

minutes?

21

MR. SELTZER: Just let me finish.

22

MR. FISKE: Sure.

23

Q Don Hallman uses the word "resolve" in his

24

memo and says, "We request that Integration resolve the

25

issue of how the high pressure injection system should

1
2 be used."

3 Do you recall that?

4 A Yes.

5 Q Did you understand that he was asking
6 Integration to help resolve a problem? Does what I have
7 just reminded you of refresh your recollection that you
8 were being asked to resolve a problem by Don Hallman?

9 Take a look at the memo if you like. I am
10 really not trying to play a memory game with you.

11 THE WITNESS: Could you please repeat the
12 question.

13 (Record was read back.)

14 A I recall, when I read Don's letter in August of
15 1978, that he was asking me to answer two questions.

16 Q Do you think that is any different, are you
17 drawing a distinction between answering questions and
18 resolving a problem?

19 A Yes, I think I am.

20 Q Did you know that he was asking you to
21 resolve an issue or problem of how the HPI system should
22 be used?

23 A I did not understand that request in August of
24 '78.

25 Q What about in January or February or March

1
2 of 1979 when you finally focused on the memo? Did you
3 understand then that Don Hallman was requesting that
4 Integration resolve the issue of how the high pressure
5 injection system should be used as he says in the last
6 paragraph?

7 A All I can remember at that time in early 1979 was
8 that I compared the concern that Bert had versus the
9 questions that Don was asking and I responded positively
10 to Don in response to his questions.

11 I didn't really think there was conflict
12 or a problem. I don't recall looking at this as a
13 conflict between Bert and Don which to me -- or a big
14 problem.

15 MR. SELTZER: All right, let's take a break.

16 (Recess taken.)

17 BY MR. SELTZER:

18 Q When you read GPU Exhibit 80 before your
19 Kemeny Commission deposition, did you understand then
20 that Hallman was raising an issue regarding "how the
21 high pressure injection system should be used"?

22 A Yes, I did.

23 Q What was the issue?

24 A The issue was additional clarification to the
25 operator to give him guidance on when to turn off high

1
2 pressure injection.

3 Q This is how the system should be used. What
4 was the issue, on the one hand it should be operated one
5 way and on the other hand it should be operated the
6 other way, but what are the ways that should be used that
7 are being contrasted?

8 A I interpret the request on, quote, how the HPI
9 system should be used, close quote, to mean is it the
10 right thing to leave it running until subcooled conditions
11 are achieved in the reactor coolant system with a
12 possibility of the pressurizer going solid.

13 Q Was it your understanding that under the
14 mode of operation of high pressure injection that was
15 being recommended by B&W before Bert Dunn's
16 recommendations, that high pressure injection would not
17 be left on to the point where the pressurizer would
18 go solid?

19 MR. FISKE: That is the question, did he
20 have any understanding?

21 A I really don't recall ever considering that issue.

22 Q Take a look at the first sentence of the
23 second paragraph where Don Hallman says to you, "Nuclear
24 Service believes this mode can cause the reactor coolant
25 system including the pressurizer to go solid."

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Do you see that?

A Yes.

Q Did you understand from the successive readings of this memorandum that the phrase "this mode" referred to the Bert Dunn recommendations summarized in paragraph 1?

MR. FISKE: You are talking about what point in time now, Mr. Seltzer?

MR. SELTZER: At any time up through his Kemeny testimony.

Q All I am asking is what do you understand is the antecedent of the phrase "this mode"? What mode is he referring to?

MR. FISKE: You mean what did Mr. Karrasch understand at the time he read this before he testified before the Kemeny Commission?

MR. SELTZER: Right. Nuclear Service believes this mode can cause the reactor coolant system to be solid.

Q What is the "this mode"?

A "This mode" means to me to leave high pressure injection on until it can be determined that the hot leg temperature is more than 50 degrees F below Tsat for the RCS's pressure.

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2 Q You understood that that was a recommendation
3 that had been made by Bert Dunn, is that right?

4 A Yes.

5 Q Nuclear Service in the guise of Don Hallman
6 was telling you that it believed that operating the high
7 pressure injection in that manner could lead to taking
8 the entire reactor coolant system, including the
9 pressurizer, solid, right?

10 A Yes.

11 Q And taking the whole system solid led them
12 to pose two questions on which they wanted your
13 evaluation, right?

14 A Yes, I believe that's correct.

15 Q Did you understand that they wanted you to
16 evaluate this because under the existing mode of
17 operation of high pressure injection, Nuclear Service,
18 to your understanding, did not believe that there was
19 as much of a likelihood, if any likelihood, of the
20 pressurizer and the whole RCS going solid?

21 MR. FISKE: If you had any understanding.

22 This is again at the time he testified
23 before the Kemeny Commission?

24 MR. SELTZER: Yes, based on three or four
25 successive readings of this memo now.

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MR. FISKE: Did you have any such

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understanding?

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MR. SELTZER: Let me break it up into

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pieces.

6

Q You knew that he was raising these questions

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in light of the mode of operation being recommended by

8

Bert Dunn, right?

9

A Yes.

10

Q You knew that the mode of operation being

11

recommended by Bert Dunn was a change in mode of

12

operation of high pressure injection, right?

13

MR. FISKE: I don't think he said that.

14

MR. SELTZER: Why are you saying you don't

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think he said it? I am just asking. It is a

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simple leading question. Why do you have to

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answer for him?

18

MR. FISKE: I thought you were putting it

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to him as though he had said that.

20

A I am having a very difficult time relating my

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understanding of this memo as it changed from August

22

of '78 till the Kemeny Commission.

23

Q All --

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A And I don't know -- I am having a hard time --

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Q I don't want to confuse you. I think your

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2 counsel and I have tried to simplify it by saying I am
3 not searching for the flipflopping of your understanding
4 between August 3rd and July 1979, I am asking for what
5 do you think you understood by the time you walked into
6 the deposition by the Kemeny Commission in July 1979,
7 what your understanding matured into by that date, and
8 I am specifically asking -- do you understand that part?
9 Do you understand so far where I am?

10 MR. FISKE: I think part of the problem--
11 and Mr. Karrasch is shaking his head indicating
12 no--I think part of the problem is that it is a
13 little confusing by its very nature because what
14 you are asking him, I gather, is what was his
15 understanding in July of 1979 as to what Nuclear
16 Service might have been thinking back in August
17 of 1978 when they wrote the memo.

18 MR. SELTZER: Well, I think that confuses
19 it more than --

20 MR. FISKE: That is what it seems to me is
21 essentially what you are doing.

22 MR. SELTZER: I am not asking him to
23 psychoanalyze Nuclear Service. I am asking him
24 what did Bruce Karrash understand.

25 Q I don't want you to tell me what you think

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2 somebody else thought. I want to find out what you
3 understood. Do you understand that? And then I will ask
4 you the question if you understand that.

5 MR. FISKE: I think a part of the problem
6 is that Mr. Karrasch has testified his understanding
7 of this memorandum changed from one point of time
8 to another so when you say "Did you at any point
9 in time understand something," you are covering a
10 great deal of time.

11 MR. SELTZER: I didn't ask that. That is
12 not the question. The question is:

13 Q When you walked into the Kemeny deposition,
14 what was your understanding?

15 MR. SELTZER: I have explicitly made my
16 question be his understanding at that point in
17 time. I don't think it is helpful or constructive
18 to suggest that I am asking any different question.

19 MR. FISKE: I agree that's the last one but
20 there have been a series.

21 Q Do you understand at what point in time
22 I am asking for your understanding?

23 A Yes, I do.

24 Q What point in time?

25 A Approximately July 1979.

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Q O.K. By July of 1979, you had had Hallman's memo in your hands several times, right?

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A I believe I had read it several times.

5

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Q You read it when you got it in August of 1978, right?

7

A Yes.

8

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Q You read it again when Hallman asked you for the third or more time, "Please answer my questions," right?

10

11

A I read it again in January or in early 1979.

12

13

Q It might have been February 1979?

A I don't recall one way or the other.

14

15

Q All you know it was before March 15, 1979, right?

16

A Yes.

17

18

Q It could have been as late as March of 1979?

A I really don't know.

19

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Q So you don't know whether it was January, February or March of 1979 that you finally answered Don Hallman's questions, is that right?

21

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A I think that's right.

23

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Q So it took you between six and eight months to respond to Don Hallman's questions, as best you can recall, right?

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2 MR. FISKE: I don't think your mathematics
3 is correct, Mr. Seltzer. August to January isn't
4 six months.

5 MR. SELTZER: What is it, five to seven
6 months?

7 Q Is it your recollection that it took you
8 between five and seven months to answer Don Hallman's
9 questions?

10 A Yes.

11 Q No one was specifically working on an
12 assignment to answer those questions before you finally
13 turned to them in 1979, is that right? You don't know
14 of anybody doing work actually to respond to Don
15 Hallman's question until you did something in 1979,
16 right?

17 A I made an assignment to Art McBride to answer the
18 questions and he does not recall that assignment and,
19 in addition, there was action under way on related
20 issues which led up to the answer to the questions.

21 Q But --

22 A So work was under way.

23 Q But it was not work focused on responding
24 specifically to GPU Exhibit 80, was it?

25 A It was work that could answer the questions about

1
2 the pressurizer going solid.

3 Q But it was not work that was being performed
4 in order to answer those questions, was it? That was not
5 the purpose for which the work was being done, was it?

6 A I am not sure I understand the distinction.

7 Q Whoever was working on the transient-without-
8 scram problem was not doing that work because he was
9 instructed to do it to answer Hallman's questions in
10 GPU Exhibit 80, was he?

11 A I don't know.

12 Q Nobody has ever told you that he was doing
13 it in order to answer Hallman's questions in GPU Exhibit
14 80, has he?

15 A Art McBride has not told me that he was working
16 in the fall of '78 to answer Don Hallman's questions.

17 Q Now, you have testified just now that it
18 was Art McBride that you asked answer the questions
19 in Hallman's memo.

20 In earlier testimony that you have given,
21 you said it was either Eric Swanson or Art McBride.

22 Has your recollection somehow been
23 refreshed so that you now only recollect asking Art
24 McBride to do work on it?

25 A No.

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Q Why did you leave out Eric Swanson when you answered just a minute ago?

A Because we were discussing ATWS and I know that Art was working on a related issue which would answer these two questions but I still don't recall whether it was Art or Eric to whom I forwarded this memo for action (indicating).

Q You read the memo in August of 1978, you read it again sometime in January, February or March 1979 and you don't remember which of those three months it was, is that right?

A That is right.

Q You read it again in July 1979 before giving your Kemeny testimony, right?

A Yes.

Q Before giving your Kemeny testimony, with whom, if anyone, did you discuss GPU Exhibit 80?

MR. FISKE: You mean outside the presence of counsel?

MR. SELTZER: Well, I would like to find out if he discussed it with counsel, too. Maybe counsel is telling him what to say.

MR. FISKE: Mr. Seltzer, you know that is inappropriate.

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2 MR. SELTZER: That is not an inappropriate
3 comment. I never heard anybody say that the fact
4 of meeting with counsel is not an appropriate
5 subject for examination.

6 MR. FISKE: I wasn't referring to that.
7 I was referring to the comment you made, not to
8 the question you asked.

9 Can you answer the question?

10 Q The question was: With whom, if anyone,
11 did you discuss GPU Exhibit 80 before you gave your
12 Kemeny Commission testimony?

13 A I recall discussing my disposition of Exhibit 80
14 with Bert Dunn, Allan Womack, possibly with Joe Kelly,
15 although I don't recall exactly, and with counsel.

16 Q What counsel, what was counsel's name?

17 A I know I discussed it with George Edgar.

18 Q Was anybody else present when you discussed
19 it with Edgar?

20 A That's what I am trying to think -- that's what
21 I am trying to recall and I don't recall.

22 Q Womack, Dunn and Kelly weren't present when
23 you were talking with Edgar, were they?

24 A I am quite sure they were not.

25 Q Focusing now on your understanding of GPU

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Exhibit 80, at the time you walked into the room and gave your Kemeny Commission testimony, is it correct that you understood at that point in time that Nuclear Service in GPU Exhibit 80 was concerned that operating the high pressure injection system in the mode recommended by Bert Dunn could lead to taking the reactor coolant system solid? I think you have already answered this question.

A Yes.

Q Did you understand at the time that you were walking into the Kemeny deposition that the mode of operation of high pressure injection recommended by Dunn was a change in the method or mode of operation of high pressure injection from what B&W had been recommending before Bert Dunn?

A Yes, I think I did.

Q Did you understand that, as Nuclear Service was expressing it, they believed that the prior B&W method of operation of high pressure injection would not lead to taking the system solid whereas Bert Dunn's recommended method would lead to taking the system solid?

A I don't recall reviewing the previous recommended procedure with respect to the potential for taking the system solid.

Q You have already testified, and I don't want to go over it again unless you want us to go through it again, that the previous recommended method for operating high pressure injection called for terminating high pressure injection when reactor coolant system pressure hit 1600 psi and other temperature conditions were present.

MR. FISKE: That isn't what he said, Mr. Seltzer. He said that he hadn't seen the procedures but he assumed that they would require the operator to leave HPI on at least until the pressure reached 1600 psi, not that they required them to terminate HPI when it reached 1600, but he said he had not seen the procedures.

Q I am not asking whether you saw the procedures or not, I am asking whether just from Hallman's memo, GPU Exhibit 80, did you have an understanding just from this memo that Bert Dunn's method of operation created a greater likelihood of taking the system solid than the previous B&W recommended mode of operation of high pressure injection?

Take your time to read GPU Exhibit 80 if you want to.

A I don't recall ever making that comparison or

1
2 thinking about the potential for the pressurizer going
3 solid with the original procedure.

4 Q If the original procedure had the same
5 likelihood of taking the system solid as Bert Dunn's
6 procedure, why would Don Hallman be asking you these
7 questions?

8 MR. FISKE: Mr. Seltzer, that may be a
9 perfectly fair point for you to make at some
10 point but Mr. Karrasch is now testifying about
11 what his recollection is as to what he understood
12 at some past point in time.

13 MR. SELTZER: All right.

14 Q Didn't you understand it was because Bert
15 Dunn's procedures were a change Hallman was now asking
16 you some questions about going solid?

17 A I understood that Bert's recommended change had
18 a potential for causing the system to go solid.

19 I do not recall ever thinking to myself
20 about the potential for the original procedure to
21 cause the pressurizer to go solid or not.

22 Q You understood that it was because of Bert
23 Dunn's recommended change that Hallman was asking you
24 to evaluate the effects of going solid, right?

25 A Yes.

1

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Q You also understood, did you not, that

3

Bert Dunn's recommended change in mode of operation of

4

high pressure injection could result in leaving the high

5

pressure injection system on once it had been initiated

6

where the prior B&W instructions would have permitted

7

the system to be shut off, did you not?

8

Let me withdraw that.

9

You understood, did you not, that it was

10

the element of leaving the high pressure injection system

11

on in Bert Dunn's recommendation that led to the

12

possibility of the system going solid?

13

A Yes, I understood that.

14

Q You also understood it was that change to

15

leaving the high pressure injection system on under the

16

Bert Dunn recommendations that was a change in the mode

17

of operation of the high pressure injection system,

18

right?

19

A No. It really wasn't a change in the mode of

20

operation. It was an additional clarification to the

21

operator to give him criteria on when it is desirable

22

to turn it off.

23

The original procedure did not preclude him

24

from achieving 50 degrees subcooling.

25

Q Are you saying that the phrase "change in

1
2 B&W's philosophy for HPI system use" had no meaning for
3 you when you read this memo?

4 A My interpretation of those words, "change in
5 philosophy," is that we were discussing here a
6 clarification to the procedures so that the operator
7 would have more guidance on when to turn off HPI.

8 My original understanding of the intent
9 of the original procedures was that they told the
10 operator to leave it on at least until you get to a
11 certain point. Beyond that, it was up to him when to
12 turn it off and my guess would be he used saturation
13 margin.

14 Q You don't know?

15 A I don't know but...

16 Q Is there anything about saturation margin
17 in the B&W recommended procedures before Three Mile
18 Island?

19 A I don't know.

20 Q You call Bert Dunn's recommendations just
21 a clarification.

22 Do you have any idea what the change in
23 B&W's philosophy or the change in high pressure injection
24 policy is that Don Hallman is referring to in GPU
25 Exhibit 80?

1

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A He's referring to the additional guidance that the HPI pumps must be left on until subcooling is reached.

4

5

We may be having a semantics problem. I think that's some additional help for the operator.

6

It's not a big change in philosophy.

7

8

Q You never asked Don Hallman what he meant about a change in B&W's philosophy for HPI system use, did you?

9

10

A No, sir, I did not.

11

12

Q You never asked him what he meant by a "change in high pressure injection policy," did you?

13

A No, sir, I did not.

14

15

Q Did you know in 1978 and early 1979 that Don Hallman's group was the group that wrote draft operating procedures?

16

17

A Yes, I think I did.

18

19

Q How frequently were you seeing Bert Dunn professionally and socially during the second half of 1978?

20

21

A Professionally, I saw him in the office several times a week and probably was involved in meetings with him two or three times a month.

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Socially, I would guess we saw each other outside the office once a month.

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Q Even with all of the professional and social contact that you had with Bert Dunn, you never discussed his recommendations for the operation of high pressure injection before the Three Mile Island accident?

A That is correct.

Q Did you find it difficult to discuss technical subjects with Bert Dunn?

A No, sir.

Q Was there any embarrassment on your part about raising the operation of high pressure injection with Mr. Dunn before the Three Mile Island accident?

A No, I don't believe there would have been.

Q Is there any impediment that occurs to you that prevented your discussing the high pressure injection issue with Bert Dunn even for five minutes prior to the Three Mile Island accident?

A There would not have been, no.

Q Did you see Jim Taylor from time to time during late 1978 or early 1979?

A I don't recall at all how frequently I saw Jim Taylor during that time period.

Q Did you see him from time to time during that period?

A I really don't recall.

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Q Did you ever discuss the issue of operator interruption of high pressure injection with Jim Taylor prior to the Three Mile Island accident?

A I do not recall.

Q You have no recollection of having such a conversation with him?

A I do not recall any conversation with Jim Taylor.

Q Al Womack had periodic meetings of the Plant Design Section between August 3, 1978 and the Three Mile Island accident, right?

A It was his normal practice to have regular staff meetings with the members of his staff.

Q You were on his staff, right?

A Yes.

Q All of the unit managers in the Plant Design Section were invited to attend these regular staff meetings, right?

A That is right.

Q If you and Bert were both in town on the date of a staff meeting, you would both be there, right?

A That is right.

Q Did either you or Bert ever raise the subject of operator interruption of high pressure

1
2 injection at any of the staff meetings before the Three
3 Mile Island accident?

4 A No, sir, I don't believe we did.

5 Q Did anyone else raise it?

6 A Not to my knowledge.

7 MR. SELTZER: Why don't we adjourn for the
8 day.

9 (Time noted: 4:35 o'clock p.m.)
10
11

12 Bruce Adolph Karrasch
13 Subscribed and sworn to before me
14 this day of 1981.
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CERTIFICATE

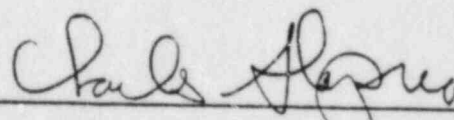
STATE OF NEW YORK)
 : ss.:
COUNTY OF NEW YORK)

I, CHARLES SHAPIRO, C.S.R. and, a Notary
Public of the State of New York, do hereby
certify that the continued deposition of
BRUCE ADOLPH KARRASCH was taken before
me on Wednesday, June 17, 1981 consisting
of pages 99 through 217;

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 30th day of JUNE, 1981.



CHARLES SHAPIRO, C.S.R.

I N D E X

WITNESS

PAGE

Bruce Adolph Karrasch (resumed)

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E X H I B I T S

GPU
NUMBER

FOR IDENT.

304

Position description prepared
by Mr. Karrasch in or about
February 1977

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* * *