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UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

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

Plaintiffs, :

-against- :

80 Civ. 1683

(R.O.)

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

Defendants. :

- - - - -x

Continued deposition of General Public
Utilities by JOHN G. HERBEIN, taken by Defendants
pursuant to adjournment, at the offices of
Davis Polk & Wardwell, Esqs., One Chase
Manhattan Plaza, New York, New York, on Thursday,
July 1, 1982, at 12:15 o'clock in the afternoon,
before Nancy A. Rudolph, a Shorthand Reporter
and Notary Public within and for the State of
New York.

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PDR ADCK 05000289
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* * *

1
2 J O H N G. H E R B E I N, resumed, having
3 been previously duly sworn by the Notary
4 Public, was examined and testified further
5 as follows:

6 EXAMINATION (Continued)

7 BY MR. FISKE:

8 Q Mr. Herbein, you realize you continue
9 today under oath?

10 A Yes, sir, I realize today I continue
11 under other.

12 Q And throughout the rest of this
13 deposition?

14 A Yes, sir, I realize that.

15 Q Let me show you a document which has
16 been marked as B&W Exhibit 802 and direct your
17 attention to what appears to be the fourth page
18 in that collection of documents, the one numbered
19 1528.

20 Then I would like to ask you whether
21 you recognize that page which has got the number 1528
22 at the bottom as a copy of a one-page memorandum,
23 handwritten, from you to Gary Miller.

24 MR. SELTZER: Did you read the entire
25 document?

MR. FISKE: Yes, if you want to read the rest of this exhibit, which I believe consists of a memorandum from Mr. Miller back to you, you are free to do that because we will be getting to that in a minute.

A O.K., I have looked through the document.

Q You have had a chance to read now your memorandum to Mr. Miller and Mr. Miller's memorandum back to you?

A Yes, I have a little difficulty recognizing the time sequence and flow of the document that I am looking at.

The cover page, 1524, Miller to Herbein, is dated 3/9/75. As you have pointed out, there is a 1528 page, Herbein to Miller, and I am not quite sure which came first. Perhaps you could clarify that for me.

Q Well, why don't you look at the first page of this exhibit, which is 1524. You recognize that as the first page of a memorandum from Mr. Miller to you?

MR. SELTZER: When you say "You recognize it," are you asking him does he recall getting

1
2 this from Mr. Miller? Is that what you are
3 asking him?

4 MR. FISKE: Yes, all right.

5 MR. SELTZER: Do you recall getting
6 this from Gary Miller?

7 A No, I do not.

8 Q Let's look at Exhibit 1528.

9 Is that in your handwriting?

10 A Yes, it is.

11 Q And that is a memorandum which you sent
12 to Gary Miller, is it not?

13 A It's indicated in my handwriting as to
14 Miller, and it's from Herbein.

15 Q Now, could you look at what is written
16 after the number 2 on that page and read that for us
17 into the record?

18 A Item No. 3 circled?

19 Q No, item No. 2.

20 A Item No. 2 circled, "New subject -- Please
21 keep me constantly advised on Unit 2 procedure and
22 where we are on your schedule.

23 Q Could you read what it says after the
24 number 5?

25 A Circle 4 says, on page 1528, "Don't

1
2 know if I said anything before, but you should plan
3 on me approving procedures initially. If you have
4 problems with this, see me. Naturally, I would expect
5 you to initial indicating you concur with the approval.
6 Jack."

7 Q Now, let's look at the document which
8 is Mr. Miller's memorandum to you, which is dated
9 March 9, 1975. I would like to direct your
10 attention to paragraph 4 on what is the second page
11 of this memo that reads, "Last and most important to me,
12 I have no problem with assuring you initially
13 approve my procedures. I do have some concern
14 and I express it directly" -- continuing over to the
15 next page, and then you see five separate paragraphs
16 on 1526 under the heading "Procedure Ground Rules
17 GPM/JGH."

18 A Yes, sir, I see that.

19 Q Then paragraph C says, "At what point
20 should we hand the procedure to you -- if it's last
21 and you provide a complete change of direction, it'll
22 be hard on schedule."

23 Paragraph D says, "If you try not to
24 cause rewrite, I'll give you final typed procedure.
25 Remember Unit 2 is" -- maybe you can read that for me.

1
2 What's the next word?

3 A "Remember Unit 2 is using magcard
4 system, et cetera."

5 Q And then paragraph E says, "If you want,
6 I'll give you first draft and you can review hard.
7 But I'd like to" -- can you read the next word?

8 A "Agree."

9 Q -- "agree that if I resolve your
10 comments, no second review -- Yes, sign final
11 based on resolving comments."

12 A Yes.

13 Q And then the final page in paragraph
14 G, "I have a suggestion. 1, You and I review
15 Unit 2 procedure index -- we agree on X number of
16 procedures which must be Herbein reviewed.

17 "2. For those procedures -- You get
18 shot at first draft so that we get max benefit from
19 your review.

20 "3, Other procedure then flow" -- can you
21 read what it says?

22 A I think it says "via me" --

23 Q -- "and Seelinger"?

24 MR. SELTZER: It doesn't look like
25 "Seelinger."

1
2 A That's "as I signed."

3 Q -- "and we get the most from your
4 experience and knowledge."

5 A O.K.

6 Q And the last sentence of the memo says,
7 "Let me know when we can sit down. G. P. Miller
8 3/9/75."

9 Now, did you talk to Mr. Miller after
10 you received this memorandum?

11 A First let me state that I don't
12 remember receiving this particular memorandum, but
13 I would say that in the relationship Mr. Miller and
14 I had in March of 1975 which appears to be the general
15 time frame that this exchange took place, Mr. Miller
16 was in the process of developing the Three Mile
17 Island Unit 2 procedures. I was the manager of nuclear
18 operations in charge of Three Mile Island Units 1
19 and 2. I am not sure if I at this point shifted
20 my base to Reading. I sensed that I may not have.

21 In fact, I still may have been
22 superintendent in charge of Three Mile Island, but
23 at any rate, I was responsible for both nuclear
24 units at Three Mile Island and Mr. Miller was
25 charged with the oversight of the Three Mile Island

1
2 Unit 2 operation at that point. Recognize this
3 was 1975. The unit didn't go commercial until
4 December of 1978, so it seems entirely reasonable
5 to me that Mr. Miller and I would have been
6 discussing procedures. We would have been discussing
7 utilizing the benefit of my previous experience on
8 Unit 1 and my knowledge in reactor operations to
9 assist in the management and preparation,
10 review, comment, final approval on the TMI-2
11 procedures, so this documentation that I have
12 before me, while I don't particularly remember it,
13 seems to be in keeping with the situation which
14 I have just described as it existed in March of '75.

15 Q And it is correct, is it not, that you
16 expressed the request to Mr. Miller that he should
17 plan on having you approve the procedures?

18 A Again, I said that I was not
19 specifically able to recall receiving this particular
20 piece of documentation, that we had discussed the
21 issue, and if you will kindly show me this
22 specific statement that you are referring to, it
23 may --

24 Q Yes, the statement that I am referring
25 to is in your memo to him, Mr. Herbein, paragraph 4,

as I believe I read it into the record, "You should plan on me approving procedures," and you have underlined the words "me approving procedures."

Do you see that?

A Yes, I see that, and that is my handwriting, and I believe it reasonable to assume that I not only wrote it but I underlined those three words.

Q And it is correct, is it not, that after you told Mr. Miller that he responded to you in substance that he was perfectly willing to have you involved in reviewing and approving procedures but that he wanted to work out a modus operandi under which it would not slow up the schedule?

MR. SELTZER: Now, that is contrary to what he previously testified. He said he couldn't recall any specifics of the communication. Are you asking him now, notwithstanding that prior testimony, if this refreshes his recollection?

MR. FISKE: Yes.

A I think I may be able to go and perhaps give an interpretation on some of Miller's language here because I understand Gary and I can read the

1
2 communication.

3 Q I don't think Mr. Seltzer nor I are
4 interested in having you interpret a memorandum
5 if you don't recall having received it back at
6 the time.

7 I am simply asking you on a more general
8 basis if having reviewed your memo to Mr. Miller
9 and Mr. Miller's memo back to you that now refreshes
10 your memory that you did have a discussion with
11 Mr. Miller about working out between you a modus
12 operandi for your participation in the process of
13 preparing and reviewing procedures.

14 A I believe the documentation indicates
15 that we discussed that.

16 I would also point out that these are
17 handwritten communications and as such are not
18 necessarily formal documented position. This
19 is the example of day-to-day communication, the
20 continuing dialogue that one would have with the
21 immediate level of supervision underneath management
22 position, so I think you may be trying to imply
23 or elicit a more formal interpretation of the
24 handwritten notes than the situation warranted at
25 the time.

I would point out, though, one thing that does ring a bell is the concern that I expressed on page 1528 where in item 3 I do indicate that there is a tendency with one of these large projects to have a number of things bunch up at the tail end, and I had that concern in 1975 where we were beginning to recognize that at the end of the pipe procedures needed to be sent to the NRC; SRO exams would be coming, there would be hot functional testing, there would be preparation for fuel load, so procedures was one aspect of the kinds of concerns that a manager would naturally have two to three years away from commercial operation.

Q The question I asked you really didn't call for a long dissertation, and it did not involve, it did not ask you to interpret or pass judgment on the question of whether there is more significance or less significance to a memorandum because it is handwritten as opposed to being presented in some other form.

My question was whether, after this exchange of memoranda had taken place, you worked out with Mr. Miller some sort of modus operandi between you which would establish the relationship

1
2 or the procedures under which you participated in
3 the preparation in review of the Unit 2 procedures.
4 That's all I asked you.

5 MR. SELTZER: Mr. Fiske, I think that
6 it is improper for you to in any way criticize
7 or imply a criticism of Mr. Herbein for the
8 explanation that you were given.

9 The reason I say that is you had already
10 asked him once before after this exchange of
11 memoranda, did you and Mr. Miller discuss
12 how you were going to review procedures,
13 and you had already gotten the answer from
14 Mr. Herbein that "I don't recall any such
15 conversation but it seems logical that Gary
16 Miller and I would have been reviewing
17 procedures together to work out some method
18 for getting the benefit of my experience from
19 Unit 1."

20 Now, I think that since you already had
21 that answer to your question, for you to put the
22 same question again three minutes later had
23 to make Mr. Herbein think that you wanted to
24 hear something else.

25 In the attempt to be helpful, he was

1
2 giving you some more background and context.

3 If you don't want it, don't ask the same
4 question two and three times.

5 Q Mr. Herbein, in the interests of moving
6 along, let me read you some testimony that Mr. Miller
7 gave just last week in this case.

8 Reading from page 1028 of Mr. Miller's
9 deposition, starting at line 24 -- and this is
10 referring to the same memos we have just been
11 discussing -- "Question" In your memo to him, your
12 last point, No. 4, says, "Last and most important to
13 me."

14 "What was that all about?

15 "Answer: At that time, which was within
16 six to nine months of me becoming the Unit 2
17 superintendent, Jack indicated a desire to review every
18 Unit 2 procedure, and I felt, as I state here, that
19 I wanted some of his guidance, but I felt, as
20 I stated, that he could better focus his efforts by
21 agreeing to the procedures that he must review,
22 as opposed to all 2,000 of them.

23 "Question: So as I understand it, you
24 laid out some procedure ground rules for your
25 relationship with Mr. Herbein on this subject?

1
2 "Answer: Yes. In addition to all the
3 procedural approval circuits.

4 "Question: Would you read your first
5 item, A, under the procedural ground rules?"

6 MR. SELTZER: It's already in the
7 transcript as part of the record. This seems
8 to be taking up more time than it's worth.

9 MR. FISKE: No, I will read it.

10 Q "Answer: 'I don't think we need perfect
11 procedures.'"

12 MR. SELTZER: You already read it into
13 the record once already from the letter.

14 MR. FISKE: Please, Mr. Seltzer, let me
15 proceed.

16 Q "'I feel if, 1, we use Unit 1 procedure
17 as it is today, 2, we do proper technical homework,
18 and, 3, do a good one-time review, that will have
19 good enough procedures. As we run the plant,
20 revisions will occur.'

21 "Question: What was your second point?

22 "Answer: 'Many procedures can get
23 reviewed to death, if we are not careful.'

24 "Question: On the next page, your item G,
25 you wrote, 'I have a suggestion.' Would you read the

2 first one?

3 "Answer: 'You and I review Unit 2
4 procedure index and we agree on X number of
5 procedures, which must be Herbein reviewed.'

6 "Question: Did you ever agree with
7 Mr. Herbein on a certain number of procedures
8 for him to review?

9 "Answer: I think we did.

10 "Question: Approximately how many
11 procedures did Mr. Herbein review?

12 "Answer: In the early days, every one
13 of them. The only ones he wouldn't have
14 reviewed were the ones like chemistry or HP which
15 might have just had a minor change. All the operating
16 and emergency."

17 The question, Mr. Herbein, is, having
18 listened to that testimony which Mr. Miller gave
19 last week, does that refresh your recollection that
20 you reached an agreement with Mr. Miller on the
21 relationship between you in your participation
22 in the review of TMI Unit 2 procedures?

23 A It tells me, sir, that Mr. Miller in
24 the context in which we are speaking, which was
25 March '75, was first of all interested in obtaining

1
2 my input to procedures. He recognized that I felt
3 I had a contribution to make in the early days
4 in the Unit 2 procedure preparation effort, and that
5 he knew handwritten memorandums had communicated
6 those thoughts with me.

7 And I think he indicated that he believed
8 that I had had strong input on the Three Mile Island
9 Unit 1 procedures.

10 MR. SELTZER: Jack, I think the question
11 is did you ever reach a formal agreement
12 with Miller about procedures --

13 MR. FISKE: I am not asking about any
14 formal agreement. My question is simply:

15 Q Having listened to Mr. Miller's testimony,
16 does that refresh your recollection that you worked
17 out an arrangement with Mr. Miller under which you
18 would review certain procedures but not, as he put
19 it, all 2,000 of them?

20 A Not really.

21 It reinforces my recollection that
22 I was interested in the Unit 2 procedures. It didn't
23 bring back an understanding of a formal agreement.

24 Q Well, I am not asking you about a formal
25 agreement. I am not trying to formalize it in any way.

2 A I don't mean to be difficult. The words
3 clearly indicate there that Miller felt that the
4 communications that we have reviewed indicated
5 that he and I had reached some preliminary
6 understanding on what my role would be in the 1975
7 time frame on the Unit 2 procedures.

8 Q And he says in his testimony that
9 you reviewed all the operating and emergency
10 procedures?

11 MR. SELTZER: Wait a second. I think
12 he says in the early days only.

13 MR. FISKE: That's right.

14 A And I indicated previously in the
15 testimony that I have given to you within the last
16 five or ten minutes that I believed that this refers
17 to my involvement with the Three Mile Island Unit 1
18 procedures which was quite extensive, and, in fact,
19 did take place through the 1971, '72, '73 and '74
20 time frame, and, in fact, probably was still taking
21 place in the 3/75 time frame.

22 Q Is it your testimony, Mr. Herbein, that
23 the statements which Mr. Miller made which were
24 just read to you referred to a review of Unit 1
25 procedures?

2

MR. SELTZER: I am going to object.

3

This is not a proper way to proceed.

4

MR. FISKE: It certainly is.

5

MR. SELTZER: You know, I particularly

6

object to your interrupting me. I don't

7

understand why you constantly feel that that

8

is something that is necessary for you to do

9

in the confines of this room.

10

MR. FISKE: I don't know why you

11

constantly have to raise your voice.

12

MR. SELTZER: Because I am very

13

insulted that you don't see fit to let me say

14

what I want to say.

15

Whenever I take an exception, you make

16

speeches. You make objections when you want

17

to and I don't presume to tell you that you

18

shouldn't say what you want to say or

19

interrupt you while you are in the middle of

20

saying it.

21

Now, may I have what I just said read

22

back?

23

(Record read back.)

24

MR. SELTZER: You are reading him

25

somebody else's testimony. You have given

1
2 him an excerpt from it, and you are asking
3 him to comment on testimony that was given
4 out of his presence in a context that may not
5 be apparently from what you have chosen to
6 let him read. I don't recall everything that
7 Gary Miller said about the work on procedures
8 and conversations with Mr. Herbein, and I think
9 it's not proper to be asking Mr. Herbein
10 to review Mr. Miller's testimony and give you
11 an interpretation of Mr. Miller's testimony.

12 BY MR. FISKE:

13 Q Let me just put it to you this way,
14 Mr. Herbein, and let me just read three questions
15 and answers from the testimony we just read; it's
16 at page 1030.

17 "Question: On the next page, your item
18 G, you wrote, 'I have a suggestion.' Would you read
19 the first one?

20 "Answer: 'You and I review Unit 2
21 procedure index and we agree on X number of procedures,
22 which must be Herbein reviewed.'

23 "Question: Did you ever agree with
24 Mr. Herbein on a certain number of procedures for
25 him to review?

1 "Answer: I think we did.

2 "Question: Approximately how many
3 procedures did Mr. Herbein review?

4 "Answer: In the early days, every one
5 of them. The only ones he wouldn't have reviewed
6 were the ones like chemistry or HP, which might have
7 just had a minor change. All the operating
8 and emergency."

9 Now, is it your testimony, Mr. Herbein,
10 that you did not reach that kind of arrangement
11 with Mr. Miller on the review of proposed Unit 2
12 procedures?

13 MR. SELTZER: Specifically what kind
14 of arrangement?

15 MR. FISKE: The one that Mr. Miller
16 described in his testimony.

17 MR. SELTZER: Namely, that Mr. Herbein
18 would review a certain number of procedures?

19 MR. FISKE: Yes, and exactly as
20 Mr. Miller stated it.

21 A I would like to clarify one point, and it
22 is the particular issue that I am having a problem
23 with.

24 I have stated previously that from the
25 documents here it appears that Mr. Miller and I worked

1
2 out some kind of an agreement on obtaining my input
3 to Unit 2 procedures, and I don't have a problem
4 with that. That seems to me completely in the
5 context with my memory regarding my position and the
6 relationship I had with Mr. Miller in 1975. The

7 The thing that is bothering me and which
8 I think is incorrect is the statement, "In the early days,
9 every one of them. The only ones he wouldn't
10 have reviewed were the ones like chemistry or HP,
11 which might have just had a minor change. All the
12 operating and emergency."

13 I do not believe that it's correct
14 that I reviewed in the 1975-74 time frame all of
15 the Unit 2 operating and emergency procedures.
16 I distinctly do not recall. That's the problem I am
17 having. That is not correct.

18 In my opinion, those words apply to the
19 Unit 1 involvement that I had with operating and
20 emergency procedures.

21 Q So is it your testimony, Mr. Herbein,
22 that you did not then review all of the procedures
23 for Unit 2?

24 A That is correct, I did not review all of
25 the procedures for Three Mile Island Unit 2.

1
2 Q And is it also fair to say that you
3 made the judgment as to which ones you would review
4 and which ones you wouldn't review?

5 A I don't specifically remember making
6 that judgment. It appears from the documents
7 you have shown that that was discussed.

8 MR. SELTZER: This will go faster if
9 you testify from your recollection; don't
10 construe documents today and come up with
11 interpretations today unless it's refreshing
12 your recollection.

13 THE WITNESS: Well, it isn't. I have
14 tried to indicate that.

15 Q And in the section, Mr. Herbein, of
16 the procedures that you decided that you wanted to
17 have your own personal input into, did you give
18 consideration to the question of whether it might
19 be important for you to provide that kind of input
20 for emergency procedures?

21 MR. SELTZER: Could you read that again?

22 (Question read back.)

23 MR. SELTZER: What are you referring to
24 in connection with Mr. Herbein's desire to have
25 input on particular procedures.

MR. FISKE: Well, I am referring first to Mr. Herbein's written expressed desire for approval of all procedures and as modified by the arrangements as he had described previously that he worked out with Mr. Miller under which he would review certain procedures.

MR. SELTZER: Where does it say "all procedures"? What are you referring to?

MR. FISKE: I am referring to the sentence that says, reading it for the third time from page 1528 of Exhibit 802, "you should plan on me approving procedures," underlined.

MR. SELTZER: All right, it doesn't say "approving all procedures," so I think you misspoke.

Q What procedures did you have in mind when you wrote that?

A I don't remember specifically, but I can give you what I believe I meant to the best of my recollection.

Q That's fine.

A I would have been concerned with the procedures that governed major evolutions, for instance, heatup, cooldown, initial criticality,

1
2 rise to power at power operations, these kinds of
3 things, and I believe that I would have indicated
4 an interest in looking at certain emergency
5 procedures.

6 Q And you had that desire at the time
7 you wrote the memo to Mr. Miller, right?

8 A I believe it's reasonable to assume that
9 I did. I don't specifically remember, though.

10 Q And after you had your discussions with
11 Mr. Miller and worked out the relationship, did you
12 feel at that time that the desire that you had had
13 when you wrote this memo had been accomplished?

14 MR. SELTZER: I think we are off into
15 the realm of specific --

16 MR. FISKE: I am simply asking.

17 MR. SELTZER: Why don't you let me
18 finish?

19 He said that he thinks it's reasonable
20 to assume that that is what he meant about
21 wanting to approve procedures, and he says
22 he doesn't have any specific recollection.

23 Then you have asked him after you had a
24 discussion with Mr. Miller, and all he said on
25 that is, "It seems logical that Mr. Miller

1
2 and I would have had a discussion," but he
3 couldn't remember a specific discussion.

4 Now you are going to pile speculation
5 on an assumption and try to get a conclusion.
6 I think that is improper.

7 Q Can you answer the question, Mr. Herbein?

8 A You have to ask it again. I have lost
9 where you are.

10 Q I'm not surprised.

11 MR. FISKE: Would you read it back?

12 (Question read back.)

13 A Sir, being unable to specifically
14 recall this entire exchange, it's difficult for me
15 to somehow conjure up the state of mind that I may have
16 had after this exchange of handwritten memorandums
17 with Mr. Miller. There is nothing to indicate
18 in my recollection that I may have had some kind of
19 a problem with whatever Gary and I finally agreed on.
20 But I don't specifically remember what that was.

21 Q Let me show you a document which has been
22 marked previously as Exhibit 305 which is the
23 pressurizer system failure procedure for Unit 2.

24 Were you familiar with this procedure at
25 any time up to the time of the Three Mile Island

2 accident?

3 A I was familiar that a procedure having
4 to do with pressurizer system failure existed on
5 Three Mile Island Unit 1 in the '73-74 time frame.
6 It's reasonable to assume that I was aware that we
7 had a procedure like this on Three Mile Island
8 Unit 2.

9 I would point out that this procedure
10 is dated 9/29/78, so I would have some basic
11 familiarity with the procedure, although I would
12 not be very familiar with the details in the '78-79
13 time frame.

14 Q The pressurizer system failure procedure
15 is an emergency procedure, is it not?

16 A That's true.

17 Q And it was also at Unit 1?

18 A To the best of my knowledge, it was.

19 Q And as you recall the general arrangement
20 that you worked out with Mr. Miller, would the
21 pressurizer system failure emergency procedures be
22 included in the group of procedures that you would
23 review?

24 MR. SELTZER: Objection.

25 Q Was it?

2 MR. SELTZER: Do you understand he is
3 asking you do you now have a recollection --

4 A The implication that you made is
5 disturbing to me. We sat down and looked at a
6 group of handwritten memos that were prepared in
7 March 1975.

8 Now you show me another procedure
9 that is dated 9/29/78, three years after those
10 handwritten memorandums were exchanged.

11 I told you in the context of those
12 handwritten memorandums, I could not specifically
13 remember the details of any kind of an agreement
14 that Miller and I may have worked out.

15 I told you specifically that it was
16 reasonable to assume that Miller and I would have
17 talked about that in the context of the plant
18 superintendent and the Unit 2 superintendent working
19 out the details for the preparation of the initial
20 operating and emergency procedures on Three Mile
21 Island Unit 2, and the years subsequent to that
22 3/75 memorandum, a number of things took place.

23 I changed my position in the organization
24 several times and in no way in September of 1978 was
25 reviewing the details of Three Mile Island Unit 2

1
2 emergency procedures, and I think that it's
3 unconscienable to have made that implication in the
4 manner in which you just did.

5 Q First of all, it was a question.
6 All you had to do was answer it.

7 Secondly, the portion of the procedures
8 that I was going to be questioning you about are
9 Revision 1, which bear a date of June 22, 1977.
10 Presumably there was a Revision 0 before that, and
11 presumably there was a draft some time before that
12 that led to the revision.

13 I am simply asking you whether you
14 participated at any time in the process of preparing
15 the procedure which eventually became Revision 1 on
16 June 22, 1977, including whatever you may have done
17 in working on or reviewing drafts of this particular
18 procedure back in 1975, under whatever arrangements
19 you may have made with Mr. Miller.

20 A Through lengthy discussion we have just
21 established that I was involved in procedures in
22 March of 1975.

23 I do not recall the specific details of
24 the arrangement that Miller and I worked out. I am
25 almost positive that I was not involved in procedure

1
2 review after 1976.

3 You must recall from having reviewed
4 my resume that in the '75-76 time frame, my
5 position changed a number of times, and in this
6 time period, 1977-78, I was back in the corporate
7 office in Reading and was designated as vice president
8 in June of 1977.

9 Q This is a question very simply which
10 is, did you participate at any time in reviewing
11 any draft of a pressurizer system failure procedure
12 for Unit 2?

13 A I don't specifically remember, but I may
14 have.

15 (Recess taken.)

16 BY MR. FISKE:

17 Q You were aware, were you not, before
18 the Three Mile Island accident, Mr. Herbein,
19 that there was leakage from the top of the pressurizer?

20 A I am not sure if I was or not.

21 Q Let me just read you from page 815
22 of the testimony of Gary Miller just last week.
23 The question is line 9. "You mentioned before lunch
24 that you had conversations" --

25 MR. SELTZER: I don't think it was last

1
2 week.

3 MR. FISKE: Well, June 10. Correction,
4 that Mr. Miller gave was June 10, 1981.

5 Q Question by Mr. Weiss. "You mentioned
6 before lunch that you had conversations with
7 Mr. Logan and Mr. Herbein concerning the increased
8 amount of leakage at TMI-2 before the March 1979
9 accident. We have discussed the conversations you
10 had with Mr. Logan. I would like to clean up this
11 area by asking what conversations you had with
12 Mr. Herbein on that subject.

13 "Answer: That status that I discussed
14 that I obtained both verbally and -- verbally if I was on
15 the Island and also the status sheets for the units
16 went to Mr. Herbein and Mr. Lawyer. I am sure that we
17 discussed that item. I can't remember specific
18 conversations but I am sure Jack was aware we
19 suspected some leakage. It was common for us to
20 go through that sheet in the morning, both with
21 Herbein and with Lawyer."

22 Does that question and answer from
23 Mr. Miller's testimony in any way refresh your
24 recollection, Mr. Herbein, as to whether you were
25 aware before the Three Mile Island accident that

2 there was leakage?

3 A That doesn't improve my recollection
4 ability, sir, but I would assume that it's
5 reasonable to postulate that I probably knew
6 there was leakage from code safety valves on
7 the pressurizer of TMI Unit 2.

8 Q Well, is it your testimony that you
9 don't recall now whether you knew anything about
10 leakage?

11 A I told you previously that I didn't
12 remember whether I at that time knew that the
13 valves on the top of the TMI-2 pressurizer were leaking.
14 We have looked at Mr. Miller's testimony. He has
15 told us that it was a matter of course that he
16 discussed operations with Lawyer and Herbein.
17 I have indicated that based on that, it seems
18 reasonable to assume that I probably knew that
19 we had leaking valves on the TMI-2 pressurizer prior
20 to the March '79 accident.

21 Q Is it correct that you don't remember
22 now whether you learned which valve the leakage
23 was coming from?

24 MR. SELTZER: You mean as between code
25 safeties and pilot operated relief valves?

1

2

MR. FISKE: Well, there are three valves, correct, which one of the three.

3

4

MR. SELTZER: I think he previously testified he was probably aware there was some code safety valve leakage.

5

6

7

MR. FISKE: No, he said he didn't recall. He was postulating.

8

9

MR. SELTZER: He said he was probably aware there was code safety valve leakage.

10

11

MR. FISKE: You wrote down "probably" instead of "postulating."

12

13

A Sir, I was probably aware there was some code safety valve leakage.

14

15

Q I am not interested, Mr. Herbein, in what you think you might have known now or probably known or postulate you knew.

16

17

18

As you sit here today, can you tell us whether you recall learning prior to the accident which of the three valves was leaking.

19

20

21

A I think I have answered that question.

22

Q What is your recollection?

23

A Let's just restate the question to get things straight.

24

25

Q Sure.

2 As you sit here now, thinking back
3 before the accident, do you have a recollection
4 of having learned before the accident which one of the
5 the three valves was leaking?

6 A I don't recall that.

7 Q Now, there is a procedure, it is part
8 of the emergency procedure for the pressurizer system
9 failure to take certain actions in the event that
10 either the pilot operated relief valve or the
11 code safeties were leaking, isn't that correct?

12 A Are you saying that this procedure has
13 different parts depending on what is leaking?

14 Q Yes.

15 A That's correct.

16 Q Did you understand before the accident
17 that in the event there was a leaking pilot operated
18 relief valve, the procedure called for the block
19 valve to be closed and that if the code safeties
20 were leaking, the procedure called for the code
21 safeties to be placed on an analogue trend recorder,
22 that is called for the code relief discharge line
23 temperatures to be placed on an analogue trend
24 recorder?

25 A I would like a chance to quickly look

2 through the procedure to see if I agree with that
3 interpretation.

4 Q Sure, you are welcome to look through
5 it.

6 Let me just make it clear. We are not
7 asking you to interpret it today. It is simply a
8 question that before the accident, you were aware
9 that those things were in the procedure, but you are
10 certainly welcome to look through it in order to
11 answer that question.

12 MR. SELTZER: Why don't we take it in
13 parts so that it's not an unfair compound
14 question.

15 With respect to a leaking pilot
16 operated relief valve, what were you asking?

17 Q Did you know before the accident the
18 manual action prescribed by the procedure for a
19 leaking pilot operated electromatic relief valve was
20 to close the block valve?

21 A I don't know that I did know that or
22 that I agree with that interpretation of the
23 procedure or would have agreed with that interpretation
24 of the procedure in the '77-78-79 time frame.

25 We ran with a leaking electromatic relief

1
2 valve on Three Mile Island Unit 1. To run with
3 a leaking electromatic relief valve was acceptable
4 on TMI-2. There was no technical specification
5 requirement dealing with the electromatic relief
6 valve and whether it leaked or not.

7 The only requirement we were bound to
8 was the less than one gallon a minute unidentified
9 leakage requirement with the greater than ten GPM
10 identified leakage requirement, so to state that
11 I understood that the electromatic relief isolation
12 valve had to be closed when the electromatic
13 leaked, it seems to me is not correct.

14 Q Did you understand that the block valve
15 didn't have to be closed unless the leakage exceeded
16 one gallon per minute of identified or ten gallons
17 per minute of unidentified?

18 MR. SELTZER: I think you have got it
19 backwards, Bob. I think it's one gallon
20 unidentified and ten identified.

21 Q Did you understand that the block valve
22 did not have to be closed unless the identified
23 leakage exceeded ten gallons per minute or the
24 unidentified leakage exceeded one gallon per minute?

25 A Well, even in those particular cases,

1
2 there was no specific requirement just for a
3 one gallon a minute unidentified or ten GPM identified
4 leakage to go close the block valve.

5 It was in the context of overall leakage,
6 though, that the block valve could be used as a
7 diagnostic tool to determine where the leakage was
8 coming from since the pilot operated relief valve
9 discharges into the reactor coolant drain tank, one
10 could use the block valve to assist in reducing leakage
11 from the PORV to the drain tank.

12 Q I am not sure I understand that answer.

13 Closing the block valve had the
14 function of stopping whatever leakage might be
15 occurring through the pilot operated relief valve,
16 correct?

17 A That's correct.

18 Q Did you understand that the block
19 valve did not have to be closed to perform that
20 function until the leak rate exceeded the
21 limitations we had been discussing earlier?

22 A The point I was trying to make was
23 that it doesn't have to be closed even then. The
24 action required by the technical specifications
25 on the greater than ten gallons a minute or greater

1
2 than one gallon a minute was that the plant had
3 to be shut down within a specific time period if the
4 leakages were not reduced below that ten gallon
5 a minute and one gallon a minute value.

6 Q Did you understand also that the
7 procedure required that if there was a leaking
8 code relief valve or code relief valves, the code
9 relief discharge line temperatures should be placed
10 on an analogue trend recorder?

11 A I didn't really have that knowledge
12 or understanding.

13 Q Did you ever make any inquiry before
14 the Three Mile Island accident as to whether or not
15 the code relief discharge line temperatures had been
16 put on an analogue trend recorder?

17 A I don't believe that I would have
18 asked that precise a question based on my position
19 and understanding of events at the time.

20 Q Let me show you a document which has
21 not been previously marked which we will mark as
22 Exhibit 880, and ask you if you recognize this as
23 the copy of the pressurizer system failure procedure
24 for Unit 1 as of June 2, 1975.

25 (Multipage document entitled "Three Mile

1
2 Island Nuclear Station Unit #1 Emergency
3 Procedure 1202-29 Pressurizer System
4 Failure" dated 06/02/75, Revision 2, marked
5 B&W Exhibit No. 880 for identification as
6 of this date.)

7 A Yes, sir, I have the procedure.

8 Q And I guess the question is do you
9 recognize that as a copy of the procedure for Unit 1
10 as of that point in time?

11 A It's signed by Joe Colitz and dated
12 6/2/75. I believe it's reasonable to assume this is
13 a 1975 version of the pressurizer system failure
14 procedure on Unit 1.

15 Q There was a portion of the pressurizer
16 system failure procedure for both Unit 1 and Unit 2
17 that dealt with an inoperative pilot operated
18 electromatic relief valve, isn't that correct?

19 A You asked if that particular section
20 having to do with an inoperative pilot operated
21 relief valve existed in both the 1975 version of the
22 Unit 1 procedure and the 9/29/78 version of the Unit
23 2 procedure, is that a correct understanding of your
24 question?

25 Q Yes.

1
2 A Making the comparison for you that you
3 just requested, sir, I find that on the exhibit page
4 11136 of the 1975 Unit 1 procedure, the words in
5 Section B, "Inoperative Pilot operated Relief Valve."
6 I also find on the Unit 2 version of the pressurizer
7 system failure procedure dated 6/22/77 the words
8 "Section B, Inoperative Pilot operated (electromatic)
9 Relief Valve, RC-RV2."

10 Q Now, it is correct, isn't it, Mr. Herbein,
11 that you participated in the preparation or review
12 of the Unit 1 procedure which has been marked Exhibit
13 880?

14 A I believe we have established that I was
15 involved in the Unit 1 procedure review preparation
16 process. Yes, sir, we have established that.

17 I don't specifically remember that I was
18 involved with this particular procedure that was
19 approved in June of '75 by Joe Colitz.

20 Q Looking at the section that's marked
21 29.B.1, "Symptoms," you understood, didn't you --

22 MR. SELTZER: In which procedure?

23 MR. FISKE: In Exhibit 880, which is the
24 Unit 1 procedure.

25 Q You understood, didn't you, that those

2 were stated to be symptoms of an inoperative
3 pilot operated relief valve?

4 A I believe it's reasonable to assume that
5 I understood that, yes.

6 Q Now, No. 2 says, "Reactor coolant
7 system pressure is below 2205 psig and valve fails
8 to close."

9 Do you see that?

10 A Yes, I see that.

11 Q It is correct, isn't it, that the 2205
12 psig was the setpoint at which the valve was supposed
13 to close once it had opened and pressure had fallen
14 back below that point?

15 A That's reasonable.

16 Q Now, paragraph 3 says, "RC-RV2 discharge
17 line temperature is above the 200 degree Fahrenheit
18 alarm."

19 Do you see that sentence?

20 A Yes.

21 Q There was a monitoring device, was
22 there not, for the pilot-operated relief valve on
23 Unit 1 which gave you the temperatures on the discharge
24 line from the valve?

25 A We measured tailpipe temperature on

2 Three Mile Island Unit 1 electromatic discharge,
3 yes, sir.

4 Q Did you understand that temperature
5 above the 200 degree Fahrenheit alarm on that
6 discharge line was a symptom that the pilot operated
7 relief valve had opened and failed to close?

8 A That is not necessarily the case.
9 It could certainly be that the code safeties or
10 perhaps a reactor coolant pump seal could leak
11 into the drain tank, cause the tank temperature to
12 rise and feed back up that tailpipe and in turn
13 cause that temperature indication to reach alarm.
14 It was also very possible that the electromatic
15 relief valve would open and properly close on a
16 turbine trip and that in so doing, provide that
17 indication of tailpipe temperature in the vicinity of
18 200 degrees.

19 So it is not conclusive that tailpipe
20 temperature indication of 200 degrees meant specifically
21 that there was an inoperative pilot operated relief
22 valve. That's not correct.

23 We relied on Unit 1 as we did on
24 Unit 2 on the light wired to the solenoid valve to
25 tell us the position of the pilot operated relief

2 valve. The indication of temperature was not
3 something that we relied on in a great degree of detail,
4 as I have just described.

5 Q We will get to the light in a few
6 minutes, Mr. Herbein, and my question wasn't whether
7 a temperature at the discharge line above 200 degrees
8 was a conclusive indication that the pilot operated
9 relief valve was open.

10 I simply asked you whether, as you
11 understood this procedure, the fact that if a
12 temperature was above 200 degrees Fahrenheit was
13 a symptom that the pilot operated relief valve might
14 be open.

15 A It's listed here on the procedure as a
16 symptom that might indicate the valve is open.

17 Q Now, the next sentence says, "The reactor
18 coolant drain tank temperature/pressure is above
19 ambient as indicated on the control room radioactive
20 waste panel."

21 Do you see that?

22 A Yes, I do.

23 Q Did you understand when you reviewed this
24 procedure that an increase in drain tank temperature
25 and/or pressure above ambient was a symptom of an

1
2 open pilot operated relief valve.

3 A I have just indicated previously that
4 the high drain tank temperature/pressure could be
5 indicative of a number of leakage items into
6 that tank, not just a discharge of a code safety
7 valve or an electromatic relief valve, but I will
8 state that it's listed here as 29.B.1.3 in the 1975
9 version of the Unit 1 procedure.

10 Q Now, going down the page, there is a
11 section that refers to "Immediate Action."

12 Do you see that?

13 A Yes, sir.

14 Q And then there is an "Automatic Action,"
15 right?

16 A Yes, sir.

17 Q I take it that was intended to refer
18 to things that happened automatically?

19 A Yes, sir.

20 Q Can you see under 2 that if there is a
21 failed open pilot operated relief valve, under "a,"
22 all pressurizer heater banks will go on full below
23 2105 psig, the reactor will trip at 1800 psig, and
24 high pressure injection will be actuated at 1500 psig?

25 Do you see that?

2 A Yes, sir, I see that.

3 Q Did you understand in your review and
4 use of that procedure, that those automatic actions
5 themselves were symptoms that there might be
6 a pilot operated relief valve?

7 A They are listed as symptoms --

8 MR. SELTZER: No, they are not listed
9 as symptoms.

10 A I'm sorry. They are listed as automatic
11 actions, but I would also state that these automatic
12 actions occur on a number of plant transients, not
13 just an electromatic relief valve problem, so having
14 these particular symptoms is not necessarily --
15 correction. Having these particular automatic
16 actions occur is certainly not conclusive evidence
17 that there is a failed open RC-Rv2, and I think it's
18 taken out of context to imply that it might be.

19 Q Well, Mr. Herbein, maybe we are
20 having a little problem with the use of the word
21 "symptom" as it is used in my questions, as I assume
22 it is used in the procedures, and certainly as it has
23 been used in earlier depositions.

24 The word "symptom" is not intended to
25 me that the occurrence of the particular symptom is

1
2 conclusive, that a particular event has occurred.
3 It is used in the context that that event is a symptom
4 of, although it might also be a symptom of other
5 events.

6 MR. SELTZER: That is not a question.

7 Q So none of my questions have implied
8 that in the use of the word "symptom" that the
9 particular event is conclusive.

10 MR. SELTZER: What is this, a seminar
11 or do you have a question?

12 MR. FISKE: Well, I think we will save
13 a lot of time because Mr. Herbein keeps
14 coming back to that in response to every
15 question.

16 THE WITNESS: Sir, I can read the
17 procedure to you. It says "29.2.1, Immediate
18 Action."

19 Q All I am trying to say, Mr. Herbein,
20 is that you did understand at the time you were
21 working with these procedures that tailpipe
22 temperatures above 200 degrees for the pilot operated
23 relief valve, an increase in drain tank temperature
24 or pressure and a drop in pressure to the point
25 where HPI became automatically actuated were all

1
2 symptoms of an open PORV?

3 A I have stated previously that the symptoms
4 and automatic actions you have just described were
5 indicators of a number of events.

6 Q Yes, one of which for each one was an
7 open pilot operated relief valve, isn't that correct?

8 A I have given you my answer, sir.

9 Q And just so we understand it, there isn't
10 any question, is there, that each one of those
11 three things was an indication of an open pilot
12 operated relief valve?

13 MR. SELTZER: You are saying HPI actuation
14 is an indication of an open pilot operated
15 relief valve?

16 MR. FISKE: Yes, it comes on automatically
17 when there is an open pilot operated relief
18 valve.

19 MR. SELTZER: It's not listed as a
20 symptom.

21 MR. FISKE: You don't have to tell him
22 what to say.

23 MR. SELTZER: I know I don't. He has
24 given you the answer five times already.

25 MR. FISKE: Well, you seem to be trying

2 very hard to do that. Mr. Herbein seems
3 perfectly capable of answering questions.

4 MR. SELTZER: If you would just move
5 on after you get an answer, just because you
6 don't like an answer, I don't think that's
7 ground for coming back five times and
8 asking the same question.

9 MR. FISKE: I am trying to get him to
10 confirm what I believe his own procedure says.

11 MR. SELTZER: Well, I object. There is
12 no foundation that high pressure injection
13 actuation is a symptom for this or that his
14 procedure says it as you have just represented.

15 Q Didn't you understand, Mr. Herbein, that
16 if one automatic action that follows from an
17 open pilot operated relief valve is the automatic
18 actuation of HPI at 1500 psig that in that sense,
19 the actuation of HPI at that pressure level is
20 a symptom as we have previously defined the term
21 of an open pilot operated relief valve?

22 A I think we are having a problem with
23 terminology here.

24 There are immediate actions and they have
25 as a subheader automatic actions in this 1975

2 procedure, and reading specifically 29.B.2.A.2, "For
3 a failed open RC-RV-2: All pressurizer heater
4 banks on full below 2105 psig, reactor trips at 1800
5 psig, high pressure injection is actuated at 1500
6 psig," they are listed as automatic actions in the
7 1975 Three Mile Island Unit 1 procedure.

8 I have stated previously that is what the
9 procedure says, that I have tried to put it in the
10 proper context, the symptoms listed here, the automatic
11 actions, the things we have just been talking about,
12 are symptoms of a number of transients that could take
13 place on Babcock & Wilcox reactors, and as such are
14 not conclusive, all knowing indicators of a particular
15 event.

16 These particular symptoms and automatic
17 actions could be indicative of a number of things.

18 Q When was the light installed at Unit 1?

19 A We installed that light following a
20 transient that we had March the 29th, 1978.

21 MR. SELTZER: He said Unit 1. I think
22 you are focusing on Unit 2.

23 Q Yes, the question was Unit 1.

24 A I'm sorry. The light on Unit 1, to the
25 best of my knowledge, was provided as part of the

1
2 basic NSS. It came with the plant.

3 Q How did that light work?

4 A It was hooked up to the solenoid on the
5 electromatic relief valve. When the light was on,
6 the valve was open -- correction. When the light
7 was off, the valve was closed.

8 Q Was that light a direct indication
9 of position of the valve?

10 A We certainly utilized it that way. We
11 believed that when the light was on, the valve was
12 open, and when the light was off, the valve was
13 shut.

14 Q That isn't my question.

15 My question is, was it?

16 MR. SELTZER. You are asking him for
17 his understanding of --

18 MR. FISKE: Sure.

19 MR. SELTZER: You are really impatient
20 today.

21 Are you asking him for his understanding
22 before the Three Mile Island accident?

23 MR. FISKE: I am asking him for his
24 understanding now.

25 MR. SELTZER: Well, I object. That is

1
2 not relevant. What he understands today
3 in light of the Three Mile Island
4 accident and studies since then is not
5 probative.

6 MR. FISKE: I am simply asking Mr.
7 Herbein to tell us as a fact --

8 MR. SELTZER: And you frequently
9 objected to my asking your witnesses for their
10 post-accident analyses and understandings of
11 things.

12 I think that it is far more probative
13 to ask Mr. Herbein when he was responsible for
14 Unit 1 and was aware that they had a PORV
15 indicator light, did he understand then that
16 it was a direct indicator for valve position.

17 MR. FISKE: I will certainly ask him
18 what his understanding was then. If it's
19 any different from what it is now, I would like
20 to know as a simple fact whenever Mr. Herbein
21 learned it, what kind of a light they in fact
22 had at Unit 1, and I certainly think that
23 is a pretty basic question and that is
24 what I am asking you now, Mr. Herbein.

25 Q I will ask you in a few minutes in

2 connection with some other questions what your
3 understanding was before the accident, but I am simply
4 now trying to find out as a matter of discovery what
5 kind of light did you in fact have at Unit 1.

6 MR. SELTZER: What do you mean, "what
7 kind of light"?

8 Q Is it the same light there now that
9 was there from the beginning?

10 A To the best of my knowledge, it is, sir,
11 and to the best of my knowledge, it is a light that
12 is wired to the solenoid, and when the light is on,
13 the valve is open and when the light is off, the
14 valve is closed.

15 I must add, relative to what is there
16 right now, we now know that the light is not the
17 best indicator of valve position, and, in fact, have
18 installed elbow tap DP cells on the tailpipes of the
19 PORV and code safety valves. That is the conclusive
20 way to measure valve position, i.e., the measurement
21 of specific downstream flow tells us whether the
22 valve is open or closed.

23 Q Is the mechanism that activates the
24 light at TMI-1 exactly the same as the mechanism that
25 activates the light that was installed at TMI-2 after

2 the March 29, 1978 accident?

3 A I really can't answer that.

4 I can state that Three Mile Island Unit 1
5 today does rely on those elbow tap DP cells.

6 Q I am not asking you about that.

7 A I can't answer the question.

8 My understanding is that prior to the
9 accident, Unit 1 had a light that was wired to the
10 solenoids.

11 Q So that means, just so we understand
12 each other, that when power goes to the solenoid --

13 A -- the light goes on.

14 Q -- the light is on, and when power stops
15 flowing to the solenoid, the light is off?

16 A And the valve is shut.

17 Q Well, whether or not the valve is shut --

18 A Let me qualify my response.

19 To the best of my knowledge, I am fairly
20 certain that I understood in the TMI Unit 1 time
21 frame -- and by that I mean '74, '75 -- that
22 we had a light that indicated PORV position, and
23 that that light was wired to the solenoid and as such,
24 when it was on, indicated the valve was open, and
25 when it was closed, the light was off.

1
2 There may be one other feature on the
3 Unit 1 light that I may have neglected to mention.
4 I believe the Unit 1 light had a red/green indicating
5 feature along with it, so in trying to remember what
6 my recollection was, I may not have accurately
7 described the way that Unit 1 light functioned;
8 thinking back on it as you have asked the question,
9 it may not have worked quite the way I have described
10 it.

11 I am fairly certain that the Unit 1 light
12 was not a direct system position indication of the valve,
13 but, in fact, had to do with power application to
14 the valve. I am not sure about the red/green
15 indication. I seem to remember that that was present.

16 Q Well, let me just make clear what I am
17 asking you. I am really not asking you what kind of
18 a light they had, whether it was one light that went
19 on or off or whether it was a green light or red
20 light.

21 I am also not asking you what conclusions
22 you drew before the accident from the fact that the
23 light was on or off or red or green or whatever.

24 I am simply asking you, is it correct
25 that the mechanism which activated the light at

2 TMI-1 was power flowing to the solenoid or not
3 flowing to the solenoid?

4 A Sir, I think that's generally correct,
5 but I am not positive. It's my belief, to the
6 best of my knowledge and understanding.

7 Q Were you aware of the consideration that
8 was given at Unit 2 to the installation of a light
9 after the March 29, 1978 accident?

10 A I knew we felt we needed a position
11 indicator and we went to Babcock & Wilcox and asked
12 them for their input regarding the kind of position
13 indication we should have, and they came back
14 conclusively and put in this type of an indicator
15 light and it was from them that we obtained the
16 specific recommendation on the kind of light
17 to install on Three Mile Island Unit 2.

18 MR. SELTZER: May we avoid going into
19 this? I can't believe you are going to finish
20 this subject in one minute.

21 MR. FISKE: We are not, but let me just
22 ask a couple of questions in light of
23 Mr. Herbein's last answer.

24 Q Did you have any conversations direct
25 with anybody from B&W on the subject of that light?

2

A No, I didn't, but I feel fairly certain
3 that my people did.

4

Q So the answer that you just gave is
5 not based on any discussions that you personally had
6 with anybody at Babcock & Wilcox?

7

MR. SELTZER: He just answered that.

8

Why do you have to ask it again?

9

MR. FISKE: I will withdraw the last
10 question. I agree, it's unnecessary.

11

(Whereupon, at 1:45 o'clock p.m. a lunch
12 recess was taken.)

13

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AFTERNOON SESSION

(2:30 p.m.)

J O H N G. H E R B E I N, resumed.

EXAMINATION (Continued)

BY MR. FISKE:

Q Mr. Herbein, you just indicated off the record that during the luncheon break you had checked with Three Mile Island and you were in a position to give us some more information about the light at Unit 1.

A Yes, sir, I did check and Unit 1's PORV indicating light does come off the power application to the solenoid. It does have a red/green indication, red indicating the valve is open and green indicating the valve is off, but for all practical purposes, it is very similar to the indicator that we had on Unit 2, i.e., the light is an indication of power application to the valve.

Q Power application to the solenoid?

A Power application to the solenoid which in turn operates the PORV.

Q Now, it is correct, is it not, Mr. Herbein, that at the time the TMI-2 pressurizer system failure procedure was being prepared, there was no

1
2 light at all on Unit 2?

3 A To the best of my knowledge, that's
4 correct, yes, sir.

5 Q Did you understand that one of the
6 purposes of the pressurizer system failure procedure
7 at Unit 2 was to enable the operators to be able to
8 diagnose the existence of a stuck open or failed
9 open pilot operated relief valve?

10 A No, I did not understand that.

11 Q It is correct, is it not, that at
12 Unit 1 there had been more than one incident in which a
13 pilot operated relief valve had opened and the rupture
14 disk on the drain tank had blown?

15 (Question read back.)

16 A That's correct, we had on occasion
17 lifted the PORV and blown the RCDT rupture disk on
18 TMI Unit 1.

19 Q And were those situations in which the
20 pilot operated relief valve had opened and closed as
21 it was supposed to?

22 A I believe that was the case. I am not
23 sure we had a situation where the PORV may have
24 stayed open when it should have been closed.
25 I am not aware specifically that that was a cause.

Q Following those incidents, were there changes made in the drain tank at Unit 1?

A I am not sure what you mean by "changes." We replaced the torn rupture disk.

Q Were there changes made in the design of the tank so that the system would be able to survive a normal opening and closing of the PORV without having the rupture disk blow?

A I don't recall that we made changes in the drain tank on Unit 1.

Q Is it your undersatnding that as of the time of the Three Mile Island accident, the condition of the drain tank or the design of the drain tank at Unit 1 was such that every time there was a normal opening and closing of the PORV, the rupture disk would blow?

A That's not my understanding.

Q Had there been situations before the Three Mile Island accident where at Unit 1 the PORV had opened and closed the way it was supposed to where the rupture disk had not blown?

A I don't specifically recall, but I assume there were times that the PORV opened and closed and the rupture disk did not blow on TMI Unit 1's drain

1
2 tank.

3 Q What kind of a problem does it cause
4 for the company if the rupture disk blows on the
5 drain tank?

6 A Additional downtime while maintenance
7 personnal install a new rupture disk on the drain
8 tank.

9 Q Did you have any idea in 1974 through 1979
10 as to what it cost Metropolitan Edison if TMI Unit 1
11 was shut down for a day?

12 A I believe we have to differentiate
13 between cost to our customers and the operating
14 and maintenance costs experienced by the company
15 for particular repairs.

16 Q O.K.

17 MR. SELTZER: Which were you asking him
18 about?

19 MR. FISKE: I will now ask him about both.

20 MR. SELTZER: Which do you want him to
21 start with?

22 MR. FISKE: Either one.

23 A Replacement power costs for a nuclear
24 unit apply principally to the difference in energy
25 generated by fossil fuel as opposed to nuclear fuel

2 and could run on the order of -- in the '74, '75
3 time frame, a half million dollars a day.

4 The other kinds of costs that I mentioned
5 were operating and maintenance expenses which, when
6 applied specifically to the reactor coolant drain
7 tank rupture disk, might have involved a single day's
8 effort by five or six men to replace a rupture disk.

9 Q Did you keep a spare rupture disk around
10 for Unit 1?

11 A I don't remember.

12 Q The reactor coolant drain tank for Unit 2
13 was designed by Burns & Roe, was it not?

14 A That's correct.

15 Q And isn't it a fact that the drain tank
16 for Unit 2 was designed so that the rupture disk
17 would not blow in the event of a normal opening
18 and closing of the PORV?

19 A I would say that the drain tank on Unit 2
20 could withstand a higher temperature/pressure
21 relationship than the drain tank on Unit 1. That's not
22 to indicate that there wouldn't be a blowing of the
23 rupture disk when the PORV opened.

24 Q Did you ever review the FSAR for Unit 2
25 which describes the capacity of the drain tank and

2 also the amount of flow that would be expected
3 through the PORV while it was open?

4 A I don't recall that I did.

5 Q Before the Three Mile Island accident,
6 you were aware, were you not, of incidents at other
7 plants in which the PORV had failed or stuck open and
8 the rupture disk had blown?

9 A I don't know whether or not I was aware
10 of the rupture disk blowing at other B&W facilities.

11 Q Let me show you this document which
12 has been marked B&W Exhibit 212, which is the
13 minutes of the meeting of the users group of
14 November 15, 1977.

15 I direct your attention to the third
16 page.

17 Does that indicate you as one of the
18 persons who was on the distribution list?

19 A Yes, it indicates that I am listed on
20 the distribution.

21 Q Directing your attention to page 0947,
22 which is page 11 --

23 A Yes, sir, 0947.

24 Q Turning back one page, do you see the
25 reference to Davis-Besse 1 Toledo Edison Company?

1
2 A Yes, sir, I see that, and a report to
3 Mr. Tony Murray.

4 Q And on page 11, "9/24/77 - Electromatic
5 relief valve stuck open. Rupture disc ruptured,"
6 do you see that?

7 A Yes, sir, I see that.

8 Q Did you review those minutes at or
9 about the time you received them?

10 A I don't recall.

11 Q Let me show you another document which
12 has been previously marked as B&W Exhibit ,
13 and we will just fill in the blank later.

14 Do you recognize this as a copy of a
15 letter written to you by Mr. Rogers in or about
16 July 30, 1975?

17 A I see that it's sent to me. It's signed
18 by Lee Rogers. I see that it's got what I recognize
19 to be my handwriting on the memorandum, so I believe
20 that I received it and wrote those notes.

21 Q Do you see the second sentence which
22 says, "This failure prevented valve closing which
23 caused overpressurization of the RCDT and rupture
24 disk actuation"?

25 A Yes, I see that.

1
2 Q Did you circulate this letter to the
3 training department at Met Ed?

4 A I can't tell if I did. It's difficult
5 for me to make out the distribution of my memorandum.

6 MR. FISKE: Let me just note for the
7 record that this particular copy of this letter
8 with Mr. Herbein's handwriting has not been
9 previously marked, although a copy without
10 his handwriting has, so why don't we mark this
11 as the next B&W exhibit.

12 (Copy of a letter dated July 30, 1975
13 to J. G. Herbein from L. C. Rogers with
14 handwriting in the upper right-hand corner
15 marked B&W Exhibit No. 881 for
16 identification as of this date.)

17 Q Mr. Herbein, going back to the pressurizer
18 system failure procedure for Unit 2 that we were
19 talking about before, did you understand before the
20 accident that that procedure provided a basis for
21 the operators to distinguish between a pilot operated
22 relief valve that had opened and closed as it was
23 supposed to do as opposed to a pilot operated relief
24 valve that had stuck open or failed open?

25 A Please ask the question again?

2

MR. FISKE: Read it back.

3

(Record read back.)

4

Q Going back to the period of time, Mr. Herbein, before the accident, and particularly the period of time in which you were participating in the preparation or review of emergency procedures, did at any time during that period you have any understanding as to whether the pressurizer system failure procedure for Unit 2 would enable the operators to distinguish between a pilot operated relief valve that had opened and closed as it was supposed to on the onehand and a pilot operated relief valve that had stuck open or failed open on the other hand?

16

17

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25

MR. SELTZER: This is before the indicator light on Unit 2?

MR. FISKE: Yes. That's precisely the period I am talking about.

A Well, symptom 2 on this procedure, on page 2.0, indicates that an inoperative electromatic relief valve has as a symptom a system pressure below 2205 and the fact that RC-RV-2 failed to close prior to the installation of the light on Unit 2, we had no real way to determine that that valve was in fact

2 required to be closed but had failed to close.

3 We relied on the light to give us an
4 indication of the valve position.

5 Q Well, did it occur to you, Mr. Herbein,
6 before the open PORV transient on March 29, 1978,
7 that it would be a good idea to have a procedure
8 which enabled the operators to determine whether or
9 not they had a failed open or stuck open PORV?

10 A I think that particular event brought
11 into sharp focus the need for a PORV indication,
12 and we went to Babcock & Wilcox and asked them
13 for a device that would give us a good indication
14 of valve position, and they --

15 MR. SELTZER: O.K., he knows that story.

16 A -- asked us to install the light.

17 Q My question, Mr. Herbein --

18 MR. FISKE: I move to strike the last
19 part of the last answer.

20 MR. SELTZER: Why don't you listen to
21 the first part. It was fully responsive.

22 Q My question was directed to the period
23 of time before the light was installed, and maybe
24 you could read it back or I will put it again.

25 MR. SELTZER: Let's read it back. I think

1 he did answer the question for the period.

2 (Record read back.)

3 Q Having heard the question and the answer
4 again, could I ask you now what is the answer to my
5 question?
6

7 A I believe your question is did we know
8 before March 28 that we needed a PORV indicator light
9 on TMI-2?

10 Q No. That isn't the question.

11 The point is this, Mr. Herbein, and then
12 I will put the question:

13 There was a period of time during which
14 procedures were being drafted for Unit 2 starting,
15 as you said yourself, back in '74 and 1975, going
16 right through the time in 1977 when procedures were
17 finalized.

18 During all of that period of time there
19 was no light on Unit 2, and I am asking you whether
20 during that period of time you thought that it was
21 important that the operators have a procedure which
22 would enable them to tell whether or not there was
23 a failed open or stuck open PORV.

24 A Sir, I don't believe I had any particular
25 reason to focus on that issue, and the time frame

1
2 we are talking about, this was a unit that was
3 under construction. We hadn't really gone through
4 the operations, startup and test period, the shakedown
5 period that a plant goes through before it goes into
6 official commercial operation.

7 It was during that shakedown period,
8 i.e., the startup and test period, that we determined
9 things like the need for additional valve position
10 indication, so the answer to your question is
11 there was no real reason to focus on that.

12 Q When did the plant start operating?

13 A I believe criticality would have occurred
14 early in 1978.

15 Q And early in 1978 there was no light,
16 correct?

17 A We didn't put the light in until after
18 the March '78 event.

19 Q How did you think before the light was
20 installed and while the plant was in the early stages
21 of its criticality the operators were supposed to
22 determine whether or not they had an open PORV?

23 MR. SELTZER: Objection; asked and
24 answered. He said he didn't focus on that
25 before the March 29, 1978 event.

1
2 Q Is that your answer, you didn't think
3 about that one way or the other?

4 A I didn't focus on that before the
5 March '78 event.

6 Q I take it you focused on it after the
7 March 28, 1979 event?

8 A I believe in my previous testimony
9 I indicated that our people recognized the need for
10 an indicator light and went to Babcock & Wilcox for
11 the particular type of indication, and we were told
12 to put in the light similar to the one at Davis-Besse.

13 Q I think we are going to save a lot of time,
14 Mr. Herbein, if you and I understand that every time
15 you say that, I am going to move to strike it, and
16 I think you have said it three times already, and
17 if that's a legitimate thing for you to say, you have
18 said it enough times. If it isn't a proper thing for
19 you to say under the rules of evidence, it isn't going
20 to help to keep saying it, so I would just like to
21 move on, and unless I ask you a question that is
22 directed specifically at that, we are going to save
23 a lot of time if you would just answer my questions.

24 MR. SELTZER: I thought what he was
25 saying was helpful, in context with what he was

2 saying and was responsive.

3 I will also suggest that now that
4 you have made that point, which I think is
5 important for context, you probably don't have
6 to keep reminding Mr. Fiske of it.

7 MR. FISKE: I move to strike it for
8 what I think are fairly obvious reasons.

9 Q Now, let's continue, Mr. Herbein.

10 You did become aware, did you not, that
11 the light that was installed at Unit 2 was a light
12 which was activated by power to the solenoid?

13 A I believe that I became aware of that
14 fact.

15 Q Did you become aware at any time prior
16 to the Three Mile Island accident of anyone at
17 Metropolitan Edison who suggested that it would be
18 desirable to have a light that gave a more direct
19 indication of the position of the pilot operated
20 relief valve?

21 A We had no reason to believe that. We
22 relied on Babcock & Wilcox.

23 Q Is the answer to my question no?

24 A The answer to your question is no.

25 Q Prior to the Three Mile Island accident,

2 did you know someone by the name of D. M. Shovlin?

3 A Yes.

4 Q Was his position superintendent of
5 maintenance at Three Mile Island Unit 2?

6 A As I recall, he was in charge of
7 maintenance for both units.

8 Q Did you know someone before the
9 accident by the name of R. C. Noll?

10 A I knew a Larry Noll.

11 Q Let me show you a collection of documents
12 that has been marked B&W Exhibit 767 and ask you
13 whether you saw any of these documents before the
14 Three Mile Island accident.

15 A I don't recall ever seeing these
16 documents.

17 Q Did it come to your attention before
18 the Three Mile Island accident that anybody within
19 the Met Ed organization had made a recommendation
20 that there be installed at Unit 2 a device which
21 would provide a better indication, a more direct
22 indication of PORV position than the light that
23 was then installed?

24 A No, it did not, and to put my answer
25 in context, we relied on Babcock & Wilcox for that

1
2 position indication as I previously stated.

3 MR. FISKE: Well, I am going to move
4 to strike the answer beginning with "to put
5 my answer in context."

6 Q Did it come to your attention at
7 any time before the accident, Mr. Herbein, that
8 anyone at Met Ed was recommending that any kind
9 of a different indication for the position of the
10 valve be supplied to Unit 2?

11 A Sir, I don't believe it did.

12 Q Is it correct that in terms of your
13 understanding before the accident that when power
14 was put on to the solenoid that that activated a
15 plunger which went down and pressed on a lever
16 which in turn opened the pilot valve to allow the
17 steam to escape?

18 MR. SELTZER: Doesn't the pilot valve
19 open the main valve which allows the steam to
20 escape?

21 MR. FISKE: Yes.

22 MR. SELTZER: So you left out a step.

23 MR. FISKE: Mr. Seltzer has been helpful.

24 Q Is it correct that as you understood it
25 before the accident, the way the pilot operated relief

1
2 valve worked in a very general way was that when the
3 power came on, activating the solenoid, the solenoid
4 plunger went down, pressed on a lever, which in
5 turn activated the pilot valve, which in turn
6 opened the main valve?

7 A That's true, but operators don't think
8 in that context and I --

9 MR. SELTZER: Wait a second. He didn't
10 ask you about that.

11 Q And you understood, did you not, that
12 when the power was on to the solenoid, that then
13 the light would go on, is that correct?

14 A I didn't understand that.

15 Q You didn't understand that that's
16 the way it worked?

17 A There is a difference between understanding
18 the way it worked and the way in the course of
19 operations one views indications.

20 Q Well, that's exactly the difference
21 I am trying to get at, Mr. Herbein.

22 MR. SELTZER: That's what I think he
23 is responding to right now.

24 Q I am asking you not how you construed
25 the light at the time. I am asking you as to what

Herbein

you understood in fact activated the light, and isn't it correct that what activated the light was power going to the solenoid?

A Power going to the solenoid activated the light.

Q And when the light was off, that meant that power was no longer flowing to the solenoid, isn't that correct?

A There is a difference, and the difference is you asked what it meant when the light was off, and what it meant when the light was off was that the valve in fact was shut.

Q You knew, didn't you, that what caused the light to go off was power no longer flowing to the solenoid?

MR. SELTZER: You mean would energize the circuit to the light?

Q In other words, when power stopped flowing to the solenoid, the light would go off, isn't that correct?

A It was supposed to work that way, yes.

Q You knew before the accident, didn't you, Mr. Herbein, that there could be mechanical problems with the valve that could cause it to stay

2 open even though power was no longer flowing to the
3 solenoid?

4 MR. SELTZER: Are you asking him is that
5 something he thought about before the Three
6 Mile Island accident?

7 MR. FISKE: Something that he knew.

8 MR. SELTZER: Knew because he focused
9 his mental powers on that, right?

10 MR. FISKE: I don't want to draw a
11 lot of fine semantical lines --

12 MR. SELTZER: I am asking you to say
13 is this something he thought about.

14 A Sir, when my speedometer says I am going
15 50 miles an hour, I believe it can fail. I believe
16 there is a direct parallel, a direct tie between
17 what I have stated and what I was discussing. We
18 believed that that light told us that the valve
19 was open or the valve was closed.

20 Now you are asking me in the context
21 of the entire Three Mile Island accident to go
22 back and review whether I in some fashion or form
23 went through the diagnostic process as a vice president
24 of generation to develop in my own mind the fact that
25 since this solenoid was an opener of the valve and in

1
2 fact tied to a position indication light that
3 I recognized that the position indication light
4 could in fact be off when there was power on the
5 solenoid, I can't recall that I ever had occasion
6 to go through that kind of developmental logic.

7 Q Would you have expected from your
8 managerial position that there would be brought to
9 the attention of the training department and the
10 operators situations in which the pilot operated
11 relief valve had stuck open for mechanical reasons?

12 MR. SELTZER: I object to the hypothetical
13 nature of that. If you want to ask him did he
14 think about that before the accident, I will
15 permit him to answer it.

16 A I don't recall that I did.

17 Q Would you have expected there to be
18 procedures in effect for the training department
19 to be advised of situations in which actual
20 experience with the light showed that it didn't
21 indicate the position of the valve?

22 MR. SELTZER: I have the same objection
23 I made before. It's hypothetical.

24 A I would have expected that those
25 procedures were in place, and, in fact, quite heavily

2 involved the site B&W team who was tied back to the
3 front office in Lynchburg and in turn able and
4 ready to tie directly into our plant site the
5 experiences that were present at other B&W plant
6 sites in this particular regard, i.e., PORV
7 difficulties.

8 Q I am talking about procedures,
9 Mr. Herbein, whereby Met Ed would bring to the
10 attention of the Met Ed training department experiences
11 on the Met Ed PORV at the Met Ed Unit 2 which
12 indicated that the Met Ed light did not accurately
13 indicate the position of the Met Ed valve or the
14 valve on the Met Ed unit?

15 MR. SELTZER: I object. There is no
16 foundation that Mr. Herbein was ever informed
17 that there was such an incident at Unit 2 or
18 that he thought about the hypothetical
19 possibility of a valve failing and its failure
20 not being indicated by the light.

21 MR. FISKE: You may answer the
22 question.

23 A My answer is very similar to the one
24 I just gave you. The site team was there. We relied
25 on the site team to help us with things that were

2 directly related to the nuclear steam supply systems.

3 B&W was involved with that. They had
4 input to the site training program and into the various
5 departments in Met Ed, and the opportunity was
6 certainly there, and we relied on them to provide us
7 with that kind of information.

8 Q To the exclusion of your own people?

9 A In a commentary fashion, certainly not
10 to exclude our own people. They were part of the team.
11 We relied heavily on them. We relied on their
12 technical expertise and detailed knowledge of B&W's
13 knowledge of pressurized water systems.

14 Q I take it nobody at Met Ed brought to
15 your attention the fact that there had been an
16 event in November 1978 in which the pressure reached
17 the setpoint at which the valve was supposed to
18 open, the power went on to the solenoid, the light
19 went on, and the valve remained closed?

20 A I don't recall that that was brought
21 to my attention.

22 Q Mr. Herbein, you referred to an
23 incident in March 1978 when the pilot operated relief
24 valve failed to open, is that correct?

25 A Yes, that is correct. We --

1
2 MR. SELTZER: Just wait until he asks
3 you a question.

4 Q Do you know whether an investigation
5 was conducted by GPUSC of that event?

6 MR. SELTZER: When you say "investigation,"
7 what do you mean, a full blown task force?

8 Q Do you know whether anyone at GPUSC was
9 asked by Met Ed to review the events in that transient?

10 A Sir, I believe we may have, but there
11 were other transients that we asked the service
12 company to come in and help us review.

13 I know specifically they helped us on
14 4/23/78. I am not sure if they helped us on the
15 March '78 transient or not.

16 Q Do you remember Mr. Wilson at GPUSC
17 being asked to conduct an investigation into that
18 transient?

19 A I don't specifically remember that.
20 That is not to say that it didn't happen.

21 Q At any time before the Three Mile
22 Island accident, Mr. Herbein, did it come to your
23 attention that there had been any incidents at Unit 2
24 involving the closing of the discharge valves on the
25 condensate polishers?

2 A Sir, I remember that there was an
3 incident where an operator went into the control
4 cabinet on the Unit 2 polishers and thought he
5 went for the light switch but threw another
6 switch which completely isolated the polishers.
7 I vaguely remember that particular incident, and I
8 believe I was made aware of that in close proximity
9 to the time it occurred and I further believe that
10 that happened in the '78 time frame.

11 Q Do you remember learning of a
12 transient at Unit 2 in the spring of 1978 which
13 resulted from water from the service air lines
14 getting into the instrument air lines and causing
15 the valves to close?

16 A I don't remember that one, sir.

17 Q Let me show you a document which has
18 been marked Exhibit B&W 166, a copy of a memorandum
19 from Mr. Zewe to Mr. Seelinger dated May 1978.

20 Do you want to take a moment to look at
21 that?

22 A I have the document before me that you
23 referred to from Bill Zewe to Jim Seelinger.

24 Q Did you see that document at any time
25 before the Three Mile Island accident?

1
2 A No, I don't believe I did.

3 Q Did it come to your attention at any
4 time before the Three Mile Island accident that
5 Mr. Zewe had made any of the three recommendations
6 which appear at the bottom of that page?

7 A I generally remember that someone prior
8 to the Three Mile Island accident thought it
9 would be a good idea to have the automatic actuation
10 of COV-12 in the event of high polisher differential.
11 That particular item corresponds to No. 1 of the
12 Bill Zewe recommendations on the 5/15/78 memo to
13 Seelinger.

14 However, I don't recall any of the other
15 items which are listed.

16 Q Did it come to your attention before the
17 accident that anyone had expressed concern that unless
18 something was done about a problem involving water
19 in the instrument air lines that a very serious
20 accident could occur?

21 A Sir, I am not sure where you get the
22 connotation "accident," but no one did give me
23 that information or make me aware of that concern.

24 Q Now, there was an automatic bypass, was
25 there not, on Unit 1?

2 A Yes, sir, there is a high differential
3 signal that opens a demineralizer bypass valve on
4 Unit 1.

5 Q How soon after May 15, 1978 did it come
6 to your attention that someone was recommending
7 that the same kind of automatic bypass valve be
8 installed on Unit 2?

9 MR. SELTZER: I don't think he testified
10 that it was after May '78. You are making
11 the assumption that the only catalyst for
12 his learning about that suggestion was Zewe's
13 memo, which might be correct.

14 MR. FISKE: I am willing to assume
15 that that's a fair assumption based on prior
16 testimony by other witnesses, but if you want
17 me to rephrase it, I will be happy to.

18 THE WITNESS: Yes, please rephrase it.

19 Q When did it first come to your attention
20 that someone was recommending that there be an
21 automatic bypass valve for the condensate polishers
22 on Unit 2?

23 A I don't recall.

24 Q What action did you take, Mr. Herbein,
25 to see to it that that recommendation was followed

1
2 through to its conclusion?

3 MR. SELTZER: Objection; there is
4 no foundation.

5 A I just stated that I told you I was
6 generally aware of some concerns at Three Mile
7 Island regarding the needs for a bypass valve at
8 Unit 2 around the demineralizers that would be
9 actuated on a differential pressure signal or some
10 automatic device, but I in no way had knowledge
11 that some accident could be caused or initiated by
12 the absence of such an automatic feature.

13 Q Were you aware of any steps that were
14 taken before the Three Mile Island accident to try
15 to resolve that recommendation?

16 MR. SELTZER: Could we hear that again?

17 (Question read back.)

18 A Not specifically, but I know that the
19 Three Mile Island staff had a variety of problem
20 reports and field questionnaires that they were able
21 to submit when they had specific concerns about the
22 design or operation of the plant.

23 Q I am not asking you about the general
24 procedures. I am asking you if you know anything
25 specifically that was done on this particular problem.

1
2 A I can't recall now that I knew that.

3 Q Mr. Herbein, I would like to ask you a
4 few questions about the training department at
5 Met Ed, if we can switch gears for a second.

6 (Recess taken.)

7 BY MR. FISKE:

8 Q Mr. Herbein, directing your attention
9 to the period September 1977 through the date of
10 the accident, is it correct that Mr. Troffer
11 reported to you during that period of time?

12 A It's correct that Mr. Troffer reported
13 to me.

14 Q Did the head of the training department
15 at Met Ed report to Mr. Troffer during that period
16 of time?

17 A That's true.

18 Q Did you yourself take an interest in
19 the performance of the training department during
20 that period of time?

21 A I was interested in the training function
22 at Met Ed. Obviously that's an important function
23 and as vice president generation, I was concerned
24 about it.

25 Q Were you satisfied during that period

1
2 of time that there were enough instructors in
3 the training department to provide the kind of
4 training that you felt the operators should receive
5 at Met Ed?

6 A At the time I thought we had sufficient
7 number of instructors and would point out that
8 the number of instructors we had then for operators
9 and auxiliary operators was not appreciably different
10 from what we have now.

11 Q How many instructors did you have
12 in the training department during the period September
13 '77 through the Three Mile Island accident?

14 A Are you speaking now in the whole
15 training department or are you speaking for operators
16 or just what are you referring to?

17 Q That's a fair question. For operators,
18 both licensed and unlicensed.

19 A I believe that we probably had four or
20 five people that focused on the operator licensed
21 and non-operator licensed training programs for
22 Unit 2.

23 Q Did you ever become aware of a request
24 from anybody in the training department during that
25 period of time to have more instructors?

2 A I can't specifically recall that kind
3 of a request, but I know that all of the departments
4 within the generation function were interested in
5 adding additional people at budget time. That's
6 typical of any organization, i.e., the development of
7 new programs and desire to have more people.

8 Q Well, I am not asking you, again, about
9 the general practice.

10 I am asking you specifically about
11 the training department.

12 Do you remember at any time in this
13 period, September '77 to the date of the accident,
14 a specific request from the training department
15 that they be allowed to add more instructors for
16 the training of licensed and unlicensed operators?

17 A I indicated I generally recall that
18 all of the departments wanted to add people
19 when we assembled the annual budget, so I believe
20 that probably the Three Mile Island training
21 department would show as requesting additional people
22 at budget time during this '77-79 time frame.

23 Q What was the reason which they gave
24 for wanting more instructors?

25 (Record read back.)

1
2 MR. SELTZER: I object. There is no
3 foundation that he has a recollection of the
4 training department's specific request as
5 distinct from every unit at budget time
6 generally wanting more staff.

7 MR. FISKE: I guess that is specifically
8 what I was trying to find out, Mr. Seltzer.

9 MR. SELTZER: Well, you had a rather
10 oblique way of doing it.

11 MR. FISKE: I thought I was kind of
12 direct.

13 Q Do you want to answer the question,
14 Mr. Herbein?

15 A As I previously stated, many of the
16 departments in the Met Ed generation wanted to add
17 people, and I believe that very probably the Three
18 Mile Island training department wanted to add people
19 also, and this came to my knowledge on an annual
20 basis at budget time.

21 Q My question was, what were the
22 reasons that they gave for wanting more people?

23 A I can't recall specifically, but I could
24 probably speculate fairly accurately what the reasons
25 would be.

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2 Q Well, I don't think anybody is
3 interested in that.

4 Did you reject those requests?

5 A I don't know that I specifically ever
6 rejected on a personal basis particular departments'
7 requests for additional personnel.

8 But we went through a fairly complex
9 process that evolved from a general consensus first
10 among supervisors, then managers, and ultimately
11 myself on the personnel priorities; which meant
12 that if a hundred people were requested, we
13 didn't necessarily include a hundred people in the
14 budget addition.

15 Q Did it ever come to your attention
16 that people in the training department were saying
17 that unless they got more instructors, they didn't
18 think they could do the proper job in training your
19 operators?

20 A You are asking me did that come to my
21 attention?

22 Q Yes.

23 A I don't know that it specifically did in
24 the context which I believe you are inferring that
25 it may have.

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Q Now, in September 1977, Mr. Zechman was made acting supervisor of the training department, is that correct?

A I am not sure.

Q Well, there came a time when he was made acting supervisor, right?

A That's true.

Q Who did he replace as head of the training department?

MR. SELTZER: You mean whom did he succeed?

MR. FISKE: Yes.

A Well, Jim Seelinger initially was quite heavily involved in the Three Mile Island training program and did a lot of work on Unit 1 and Unit 2 initial programs. He was relieved by Mr. Tsaggaris and I believe when we moved Mr. Tsaggaris into corporate training as manager of Met Ed training, Mr. Zechman was installed on an acting basis as the acting supervisor training at Three Mile Island.

Q Did you participate in that decision?

A Yes, I'm sure I did.

Q A year later Mr. Zechman was made

2 supervisor, was he not?

3 A Yes, I believe that's correct.

4 Q And did you participate in that decision?

5 A I am sure that I was made aware of the
6 proposed moves with regard to Mr. Zechman and
7 having been made aware, indicated my concurrence.

8 Q Did you think that the person who was
9 the head of the training department should be
10 a licensed operator?

11 A I believe I may have indicated it would
12 be good for Dick Zechman to get an SRO license.

13 Q Were you aware of the fact that during
14 the approximately one year when he was serving
15 as acting supervisor that Mr. Zechman was spending
16 a substantial amount of his time studying and being
17 trained to obtain a license instead of spending that
18 amount of time running the training department?

19 MR. SELTZER: You mean his time studying
20 for the license was taking time away from what
21 he would have otherwise devoted to the
22 training department?

23 MR. FISKE: Yes.

24 A I wouldn't state it in that context.

25 I believe I knew that Zechman was spending some period

1
2 of time working on a license, and I believe that
3 Marshall Beers was assisting with the training
4 in such a way that the time Dick was spending on
5 license activities wouldn't detract from the
6 training effort.

7 Q Isn't it a fact, Mr. Herbein, that
8 Mr. Beers didn't join the Met Ed training department
9 until some time in the summer of 1978?

10 A I can't really recall the time frames
11 that these events took place.

12 I, just to the best of my ability,
13 can give you my recollection of particular
14 circumstances.

15 Q I am talking now about the time
16 period while Mr. Zechman held the position of acting
17 supervisor which is roughly September '77 to roughly
18 September '78, and I guess the question I asked
19 before, which I am not sure has been completely
20 answered is, did you understand that the time that
21 he was spending on his own personal studying and
22 training was taking a substantial amount of time
23 away from what he would otherwise have devoted to
24 the responsibilities of running the training
25 department?

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2 A I don't believe that I had particular
3 occasion to develop that understanding.

4 I might add that Mr. Zechman had been
5 with the company for a number of years and had been
6 assigned to Three Mile Island, and, in my opinion
7 at least, in the course of his assignment had
8 developed a fair degree of knowledge about the
9 facility and how it operated, and I also feel Dick
10 had a pretty good handle on the reactor technology
11 and the core physics and particularly the
12 reactor side of the operation at Three Mile Island,
13 so it didn't seem to me that asking Dick to obtain
14 a senior license would have had an undue impact
15 or created problems with the administration of the
16 training program.

17 Q Did you understand that Mr. Zechman,
18 as you put it, had a pretty good handle on how the
19 reactor worked?

20 A In my opinion, he did, yes.

21 Q Did you understand he had a pretty
22 good handle on the operating and emergency procedures
23 that were used to run the reactor?

24 A I wouldn't go so far as to say that.

25 My remarks were meant to be fairly general

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2 and applied to the amount of time that Dick spent
3 at Three Mile Island and his basic background from
4 Penn State and knowledge in the reactor theory
5 and the reactor technology.

6

Q Did it make any difference to you
7 in selecting someone who was going to run the
8 training department whether that person had any
9 familiarity with the operating and emergency
10 procedures?

11

A I am not sure I understand that question.

12

Certainly someone who is going to run
13 the training department would have to have some
14 familiarity and knowledge of the station procedures.

15

Q Did you understand that Mr. Zechman had
16 that requisite understanding?

17

A I just stated previously that I felt
18 that Dick had a good knowledge of reactor technology.
19 I can't specifically state just what he knew about
20 the emergency procedures at Three Mile Island.

21

Q In September '78, Mr. Zechman was
22 promoted to the position of supervisor as we
23 indicated before.

24

MR. SELTZER: Well, he had been acting
25 supervisor previously, so I don't know if it's

Herbein

a promotion.

Q He was given the official designation of supervisor, is that a better way to put it, Mr. Herbein?

A Sir, if your records indicate that that's the time the change in title took place, I have no reason to believe that it didn't occur then.

I don't have the specific knowledge that can put a particular date on when that occurred.

Q Did you understand at the time that decision was made, Mr. Zechman still did not have his license?

A I believe that I generally understood that, yes.

Q Did you understand at the time that decision was made that Mr. Zechman was going to be relieved of any responsibilities for running the department in order that he could study and be trained full-time in order to try to obtain his license?

A I believe I had that understanding.

Q From a point of view of management, Mr. Herbein, did you think that it was a desirable thing to have the person who was the head of the

2 training department spending full time being
3 trained by the people in the training department
4 he was supposed to be supervising?

5 A I think I have indicated previously that
6 with Dick's background and knowledge, I didn't see
7 that there was a particular problem with trying
8 to get Dick up to speed to the point where he could
9 take a senior reactor operator's license, and I saw
10 no reason that we were creating a hardship on the
11 training department by having Dick spend several weeks,
12 a month or two, making final preparations to sit for a
13 license.

14 Q And it's a fact, isn't it, Mr. Herbein,
15 that as of the date of the Three Mile Island accident,
16 he still had not received his license?

17 A I think that's a fact.

18 Q And it's a fact, isn't it, that in the
19 fall of 1978, he took the examination for the senior
20 reactor operator's license and didn't pass?

21 A That's true.

22 Q After that event occurred, was any
23 change made in the situation where Mr. Zechman, instead
24 of running the training department, was spending full
25 time studying as a trainee?

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MR. SELTZER: I didn't understand that
question.

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(Question read back.)

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MR. SELTZER: I object. There is no
foundation that Zechman was not running the
training department.

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MR. FISKE: I think Mr. Zechman's
testimony is good enough foundation.

9

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MR. SELTZER: I don't have that in front
of me and the witness doesn't have that in front
of him.

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MR. FISKE: I will take my chances on
the foundation.

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Q Do you want to hear the question again,
Mr. Herbein?

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A Are you asking me was I aware that
Zechman after he flunked his fall '78 exam was
working full time on studying for a license?

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Q Yes, instead of running the training
department.

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A The thing that is giving me the problem
that instead of running the training department,
indicating that the inference there that we took the
person in charge and sent him off to work on a

2 license while someone else ran the program, I don't
3 know that that inference is necessarily correct.

4 Q Is that something that you wouldn't have
5 done?

6 MR. SELTZER: I object. There is no
7 foundation that it's something that Mr. Herbein
8 considered, and there is no foundation that
9 he thought about that issue before the accident.
10 I don't want him to consider today whether that
11 is an action he would have taken back then.

12 MR. FISKE: Fine, let's just find out.

13 Q Are you testifying, Mr. Herbein, that you
14 weren't aware in the position that you held
15 whether or not between the period September '78 and
16 the day of the accident someone else for all practical
17 purposes was running the training department
18 instead of Mr. Zechman?

19 A I think I indicated previously that
20 during the time that Dick was involved with the
21 license preparation, and I am not sure whether that
22 was before or after he failed to pass his first
23 examination, that we had Marshall Beers standing in
24 and, for all practical purposes, taking care of the
25 day-to-day operation of the department. I indicated

2 that previously. I am fairly certain I did.

3 I would state with regard to Mr.
4 Zechman having failed to make it on the first exam,
5 yes, I believe I was aware of that. I believe that
6 I was aware that we afforded him the time to get
7 himself up to speed for a retry at that exam,
8 and it's I think probably reasonable to state
9 that that took place in this September through March
10 time frame, i.e., 9/78 through 3/79.

11 Q Now, during this period of time in July,
12 August '78 through the day of the accident,
13 Mr. Beers held the position of group supervisor
14 for licensed training, did he not?

15 A I don't recall his specific title.
16 It sounds like that would be the particular title
17 that he may have held.

18 If you tell me that that's the case,
19 I will accept that.

20 Q You knew there were two group
21 supervisors, one for licensed training and one for
22 non-licensed training, didn't you?

23 A I probably knew that.

24 Q Who did you understand was doing
25 Mr. Beers' job as group supervisor of licensed training

2 while he was doing Mr. Zechman' job as head of the
3 department?

4 A I don't know that I have an answer to
5 that or that it would make sense that Mr. Beers
6 would have to be replaced, that he wouldn't have
7 been fulfilling both functions.

8 Q He would be doing both jobs?

9 A That is a possibility. I can't recall
10 at that time whether someone was specifically designated
11 to fulfill his other function or not.

12 Q In terms of your understanding,
13 Mr. Herbein, as to what capability the head of the
14 training department should have at Met Ed, would
15 you have expected the person who is head of the
16 training department at Met Ed to know on which side
17 of the neatup/cooldown curves an operator was supposed
18 to stay on?

19 MR. SELTZER: I object. This sounds
20 very hypothetical. This isn't something
21 that Mr. Herbein thought of before the
22 accident and you are just asking him to make
23 some logical deduction today. That is not the
24 way we have conducted discovery in this case.

25 MR. FISKE: What I am asking, Mr. Seltzer,

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2 is Mr. Herbein's understanding of the
3 qualifications of the person that was
4 selected to be head of the training
5 department in Met Ed and I certainly think
6 it's a fair question as to whether he thought
7 the person who was head of the training
8 department should be able to know which side
9 of the curve, the heatup/cooldown curve, an
10 operator should stay on.

11 MR. SELTZER: All I am saying is if
12 there is a foundation that Mr. Herbein thought
13 about whether the head of training thought
14 about what side of the heatup/cooldown curve
15 people should be on, fine.

16 Why don't you operate from that premise
17 first.

18 2 You go ahead, Mr. Herbein.

19 A If you would like me to talk about
20 that heatup/cooldown curve and just how many curves
21 are in fact illustrated on a single diagram and the
22 input we got from B&W to create that heatup and
23 cooldown curve, I would be glad to talk about that
24 and shed that in the perspective one might wish to
25 discuss when we talk about who should know about

1
2 the heatup and cooldown curve. That's an extremely
3 complex curve.

4 Q Let's just talk about the net positive
5 suction head curve.

6 Do you understand what I am talking
7 about? Do you understand the curves I am talking
8 about?

9 A I believe you are talking about the
10 net positive suction head curve on the reactor
11 cooldown pump.

12 Q Would you expect the person who was head
13 of the training department at Met Ed to know
14 which side of that curve an operator should stay on
15 in following whatever procedures that curve appeared?

16 A We would have to get specifically into
17 the curve, the way it was displayed, the ordinate
18 and abscissa, the instructions that went along with
19 it. Certainly there are a number of ways to view
20 that net positive suction head curve. And a number
21 of inferences that can be made from that, such as
22 being to the right of that curve indicated there
23 was steam in the loops or not, a number of things
24 that could be drawn from looking at that curve,
25 and it's not very simply stated that well, it's a

1
2 single curve and there is a --

3 MR. SELTZER: I think you have pointed
4 out successfully that these hypothetical
5 questions are not an easy way to proceed, and
6 that's why they are not a proper way to proceed.

7 Q Didn't you personally, Mr. Herbein,
8 understand before the Three Mile Island accident
9 that an operator was supposed to try to maintain the
10 pressure/temperature relationship on one side or
11 the other of the net positive suction head curve in
12 following whatever procedures that curve was
13 contained in?

14 MR. SELTZER: So you are positing as
15 part of the assumption that the operator is
16 in a point in an evolution where it is
17 appropriate to be applying a procedure which
18 has one of those curves?

19 MR. FISKE: Sure, yes.

20 MR. SELTZER: Yes, when he has got the
21 curve out, the procedure out, he is looking
22 at the curve, the simple question is, did you,
23 Mr. Herbein, in that situation know which side
24 of the curve you were supposed to try to stay on?

25 A The reason I hesitate on the question is

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that I think back to the heatup and cooldown curve and these curves were not that simple. There were a number of curves that were --

Q No, I am just talking about the net positive suction head curve.

A But I don't believe that that curve was a single curve displayed on a single ordinate and abscissa with accompanying instructions that very clearly delineated just where one was supposed to be and not to be.

I believe that the curve that we are talking about, the one that was in the procedures, had to do with fuel clad compression limits, had to do with limitations on the decay heat heat exchanger, had at one point to do with the NDT limits that were applied to the PORV that in turn had a variable setpoint.

There were other limitations that I am not able to fully expound upon without the curve in front of me, but these curves were not simple curves, and these were the curves that were provided to us by Babcock & Wilcox and they weren't the easiest things to interpret or operate with.

Q Let me show you a document, Mr. Herbein,

1
2 which has been marked B&W Exhibit 261 which is a
3 copy of the reactor coolant pump operation
4 procedure, and I just direct your attention
5 to a page that has the heatup/cooldown curve on it.

6 MR. SELTZER: Do you have any better
7 copies of this?

8 THE WITNESS: No, it's all right.

9 Q I am pointing your attention specifically,
10 Mr. Herbein, to the curves, the net positive suction
11 head curves, which I believe are the two curves
12 which occur on the right-hand side of the chart.

13 Do you see those?

14 A I see two curves on the right-hand
15 side of the chart, sir, but I also see the complexity
16 of the curve that is presented before me, and it's
17 been some time since I was at the Babcock & Wilcox
18 simulator and actually had an opportunity to
19 utilize this procedure on the machine and I would
20 state that it's a simple, clear, concise ordinate and
21 abscissa circumstances where one immediately
22 understands just how the curve is supposed to be
23 used.

24 I see a very complex curve with a
25 number of points and a number of instructional

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2 memorabilia that are required to be interpreted
3 in order to utilize this curve.

4 This is not something that is extremely
5 simple or intuitively obvious to one who doesn't
6 operate with this curve on a routine basis.

7 Q Can you tell us whether you know which
8 side of those two curves the operator was supposed
9 to stay on?

10 MR. SELTZER: During evolutions to
11 which this procedure on reactor coolant
12 pump operation was applicable?

13 MR. FISKE: Yes. All this is on the
14 assumption that the operator is into the
15 procedure, he has got the curve out, and the
16 question is, now that I am looking at this
17 curve, which side of the curve am I
18 supposed to stay on.

19 Q Did you know before the accident,
20 Mr. Herbein, which side of the curve the operator
21 was supposed to stay on under those circumstances?

22 MR. SELTZER: Do you have another copy
23 of this?

24 Q You can take as long as you want to
25 study it, Mr. Herbein.

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MR. FISKE: I think the record should indicate that Mr. Herbein has been looking at this curve for a couple of minutes.

A Let's clarify that the curve that I am looking at in these two procedures is different.

On the one hand I had been given --

Q I am only showing you one curve, Mr. Herbein. It's the net positive suction head curve which is page 1663 in Exhibit 261. That's the one you have had in front of you all this time.

MR. SELTZER: I think that might be 1683 which only shows how illegible the page is which you have given the witness to try to puzzle out.

Q I think the curve is very clear.

A The curve is not clear.

This is an illegible diagram. There are three curves illustrated here that are in relatively close proximity. It's difficult to determine just which one of these is the NPSH curve.

Q I have told you they are the two on the right-hand side.

A Well, all right, I would say that staying to the left of the NPSH curve would be the

1
2 correct way to go.

3 Q Isn't it correct that you would
4 expect the head of the training department at
5 Met Ed to know which side of the net positive
6 suction head curve the operators should stay on?

7 A Not really. I think that's an unfair
8 characterization and analogy. This is a difficult
9 set of curves. It's not an awful lot more on it
10 than NPSH as we stated previously. We have got NDT
11 limits here. We have got heatup and cooldown math
12 that we were to follow. We have got probably some
13 limits on here due to the decay heat system, heat
14 exchanger design characteristics. We probably got some
15 things on here that have to do with control rod
16 drive, the temperature/pressure limits. It's an
17 extremely complex set of curves to follow, so I think
18 it's a little unfair to state that it's intuitively
19 obvious in this particular circumstance just where one
20 was supposed to operate and, you know, unless someone
21 had a good bit of experience using these curves,
22 why, I think it's unfair to make it seem as simple
23 as you have attempted to outline it.

24 Q Would you expect the head of the training
25 department at Met Ed to be aware of situations at

1
2 Met Ed in which ECCS had been automatically
3 actuated?

4 A To be aware of situations in which ECCS
5 had been automatically actuated?

6 Q Yes.

7 MR. SELTZER: I didn't understand that
8 question.

9 MR. FISKE: Let me start again.

10 Q Would you expect the head of the training
11 department at Met Ed to be aware of transients at
12 Met Ed in which the ECCS system was automatically
13 actuated?

14 A Not particularly.

15 Q Would you expect the training department
16 in general to be aware of those?

17 A Not necessarily.

18 MR. FISKE: I have got to run up to
19 Court, so we have got to stop. But I told
20 Mr. Burns that we wouldn't have any problem
21 finishing tomorrow.

22 (Time noted: 4:20 p.m.)

23
24 JOHN G. HERBEIN

25 Subscribed and sworn to
before me this day
of , 1982.

CERTIFICATE

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

I, NANCY A. RUDOLPH, a Notary
Public of the State of New York, do hereby
certify that the continued deposition of
JOHN G. HERBEIN was taken before
me on July 1, 1982 consisting
of pages through ;

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

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

IN WITNESS WHEREOF, I have hereunto set my
hand this 16th day of July, 1982.

Nancy A Rudolph
NANCY A. RUDOLPH

I N D E X

WITNESS

PAGE

John G. Herbein

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E X H I B I T S

B&W

FOR IDENT.

880

Multipage document entitled
"Three Mile Island Nuclear
Station Unit #1 Emergency
Procedure 1202-29 Pressurizer
System Failure" dated 6/02/75,
Revision 2

222

881

Copy of a letter dated July 30,
1975 to J. G. Herbein from
L. C. Rogers with handwriting
in the upper right-hand corner

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* * *