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NUCLEAR REGULATORY COMMISSION

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IN THE MATTER OF:  
  
THREE MILE ISLAND  
SPECIAL INTERVIEWS

INTERVIEW OF JAMES L. SEELINGER

Place - Middletown, Pennsylvania  
Date - Wednesday, September 5, 1979      Pages 1 - 143

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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THREE MILE ISLAND       :  
SPECIAL INTERVIEWS     :  
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INTERVIEW OF JAMES L. SEELINGER

Trailer No. 11  
Middletown, Pennsylvania  
Wednesday, September 5, 1979

BEFORE:

GEORGE T. FRAMPTON, JR., ESQ.  
RON HAYNES  
DENNIS ALLISON  
U.S. NRC Special Inquiry Group on Three Mile Island  
6935 Arlington Road  
Bethesda, Maryland

ALLAN R. YUSPEH, ESQ.  
Shaw, Pittman, Potts & Trowbridge  
1800 M Street, N.W.  
Washington, D. C. 20036  
Representing Metropolitan Edison

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C O N T E N T S

WITNESS:

EXAMINATION

James L. Seelinger

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E X H I B I T S

SEELINGER EXHIBIT NO.

IDENTIFIED

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P R O C E E D I N G S

1  
2 Whereupon,

3 JAMES L. SEELINGER

4 was called as a witness and, having first been duly sworn, was  
5 examined and testified as follows:

6 MR. FRAMPTON: Mr. Seelinger, this is a deposition  
7 being taken by the Nuclear Regulatory Commission, Special  
8 Inquiry Group, on Three Mile Island at the Three Mile Island  
9 Nuclear Plant site on September 5, 1979.

10 We have shown you a one-page witness notification form.  
11 Have you had a chance to read that?

12 MR. SEELINGER: Yes, I have.

13 MR. FRAMPTON: Do you understand that? Do you have  
14 any questions about it?

15 MR. SEELINGER: I understand it.

16 MR. FRAMPTON: Ron, would you swear in the witness?

17 DIRECT EXAMINATION

18 BY MR. FRAMPTON:

19 Q Mr. Seelinger, you have been the superintendent of  
20 Unit 1 since December, 1978; is that right?

21 A That is correct.

22 Q Before that, from January of 1977, you were the  
23 supervisor of the Technical Support for Unit 2.

24 A The title was Unit 2 Superintendent, Technical  
25 Support.



sls-2 1 Q You were first employed by Metropolitan Edison in  
2 1974, is that right?

3 A That is correct.

4 Q Between 1974 and the beginning of 1977, did you have  
5 responsibilities in connection with training?

6 A Yes.

7 Q Also, the writing of procedures?

8 A In general, no, not the writing of procedures.

9 Q Did you participate in reviewing or developing  
10 procedures?

11 A In general, no.

12 Q In 1974 and 1975, I think your position and title  
13 was Engineer, Senior 1; is that correct?

14 A That is correct.

15 Q What, briefly, were your responsibilities during  
16 that period of time in addition to training, if any?

17 A The time period again, please?

18 Q 1974 and 1975. 1976, let's take all three years.

19 A In 1974, it was solely training.

20 The first half of 1975 was solely training.

21 The second half of 1975 was both training and, also, I  
22 reported to the Manager of Generation Operations, Nuclear.

23 Q Who was that?

24 A Jack Herbein, for engineering management projects.

25 And those projects involved such things as the management of

sls-3  
1 TMI-1's first year turbine generator overhaul and coordination  
2 of the TMI-1 nuclear plant management review and development of  
3 budgeting techniques for TMI-1's first year refueling outage,  
4 and subsequently for TMI-1's operations and maintenance budget.

5 I might add that in some of these areas, I was involved in  
6 the development procedures. However, I was not one of the  
7 people who wrote the procedures for the normal operation of the  
8 plant.

9 Also, that covered 1974 and 1975. In 1976, and late in  
10 1975, I had no further training responsibilities and continued  
11 only in my position as an Engineer Senior 1 reporting to  
12 Mr. Herbein.

13 During the latter half of 1976, I was in training for a  
14 senior reactor operating license on TMI-1.

15 Q The latter part of 1976.

16 A Yes.

17 Q I will ask you about that in a second.

18 First, you mentioned some responsibilities for operations,  
19 management review. Was that the phrase?

20 A Nuclear plant management review.

21 Q Could you describe what that is and what you did?

22 A I coordinated the input from the various groups, the  
23 engineering groups, the administrative groups, I think the  
24 QC group, health-physics group, for something that we called a  
25 nuclear plant management review. That was the first nuclear

sls-4  
1 plant management review that TMI-1 had it involved a one-day  
2 meeting at the site with the senior GPU officers to review the  
3 operation of the unit, significant problem areas that the unit  
4 was experiencing, and to comment on those and provide an overall  
5 direction and philosophy as to how to resolve some of those  
6 particular problems.

7 In general, the nuclear plant management reviews were set  
8 up such that they were conducted once a year on each operating  
9 station. My job for that year was to coordinate the first  
10 one, to get input in the same form from each individual to  
11 review the input technically and administratively, to ensure  
12 that it was in the format and contained the types of things  
13 that we were trying to present to our management, and get it  
14 collated into a presentable form for that management review.

15 Q The review, itself, was a one-day project?

16 A The review, itself, was a one-day conference, that's  
17 correct.

18 Q How many people attended?

19 A I don't know.

20 Q Approximately?

21 A I don't remember.

22 Q If you recall.

23 A Approximate full-time attendees would have been in  
24 the neighborhood of 20. Approximate part-time attendees would  
25 have perhaps been another 20 to 30. The review was conducted

sls-5  
1 such that each specific group of people would come in and  
2 present their area to the company management, present the  
3 problem areas that they foresaw and were experiencing, and  
4 allow management to review those problem areas and comment on  
5 those areas and take direction from those comments.

6 Q If you can recall, how long did it take you to  
7 organize and prepare for this one-day review conference?

8 A I was probably involved in the project from three  
9 weeks to five weeks, but it was a long time ago so that's only  
10 a best recollection answer.

11 Q Was this a presentation, when you say "management,"  
12 what is meant by management? Was it really to the GPU engineering  
13 people?

14 A It was to the GPU president or vice-presidents and  
15 to the operating company presidents within the GPU structure,  
16 if I remember correctly. In other words, the respective  
17 presidents of Pennsylvania Electric Company, Metropolitan  
18 Edison, and Jersey Central Power & Light, as well as senior  
19 GPU management at the same level.

20 Q But these were presentations that related to  
21 operations, history and problems at TMI-1.

22 A That's correct.

23 Q You say this was the first one for TMI-1.

24 A In 1975 was the -- I don't remember the date, if it  
25 was '75 or early '76, but I think that it was held late summer

sls-6

1 to early fall of 1975.

2 Q Has TMI Unit 1 had subsequent conferences like this?

3 A Yes.

4 Q And was there ever any such conference for TMI-2?

5 A There was not a conference for TMI-2 that went under  
6 the same name as that because of TMI-2's relative time of  
7 commerciality.

8 Q Was there anything similar to TMI-2?

9 A There was a meeting called a Commercial Review  
10 Board held on TMI-2 that had significant involvement of the  
11 general public utilities management. Relative to TMI-2, for  
12 its state in life, it covered the types of things that were  
13 and should have been in focus at that time, versus the types  
14 of things that would normally be in focus a year into a unit's  
15 operation.

16 Q Did the Commercial Review Board, itself, develop the  
17 set of criteria for going into commercial operation? That is,  
18 the list of things that would have to be done or satisfied  
19 before commercial operation?

20 A I don't fully remember.

21 Q Did you participate in that board?

22 A I don't remember.

23 Q Do you recall when it first met?

24 A No.

25 Q Do you recall when a significant meeting or

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significant meetings of that board were held to review problems across the board?

A There were a series of meetings held in the fall of 1978, at least three, which reviewed the turnover of various items that had been administered by construction forces under GPU auspices to operating forces under Met Ed auspices. These meetings were held, at least two or three of them, in the fall of 1978.

The Commercial Review Board was operated -- I don't remember the sequence of the Commercial Review Board relative to those meetings. I don't remember whether it happened in the fall or whether it happened in the winter of 1978. My involvement with Unit 2 stopped somewhat abruptly in early December of 1978, more so from the fact that I was in the hospital and away from work for a period of about six or seven weeks and then moving up to Unit 1.

Q Was that in November-December of 1978?

A I was in the hospital -- off work almost all of December and a good share of January, 1979, December, 1978.

Q That was with a back problem?

A Yes.

Q Did you attend any of these Commercial Review Meetings in the fall of 1978 that you can recall?

A The meetings -- I think you have used the wrong title. I did attend the meetings that discussed the turnover



sls-8

1 of items between MET ED and GPU. To call those a Commercial  
 2 Review Board, I don't think that is perhaps the proper nomen-  
 3 clature we would have used here on the site. I did attend the  
 4 meetings in the fall of 1978, though.

5 MR. YUSPEH: Off the record.

6 (Off the record.)

7 MR. FRAMPTON: Back on the record.

8 BY MR. FRAMPTON:

9 Q Let me pursue this issue of commercial operations  
 10 review a little bit further. During the summer or fall of  
 11 1978, were you aware of any pressure from -- or desire on the  
 12 part of -- management to make sure that Unit 2 would go into  
 13 commercial operation before the end of calendar year 1978 as  
 14 opposed to say January or February of 1979?

15 A Desire, yes. I was scheduled towards trying to  
 16 take Unit 2 through its test program and become commercial in  
 17 calendar year 1978. They pointed that way from early on in  
 18 1978. Had we met some of our earlier schedules, we would have  
 19 been commercial relatively early in 1978.

20 In the spring of 1978, we encountered a significant problem.  
 21 The main steam relief valves on TMI-2. As a result of that  
 22 problem, we went through an extensive testing program and  
 23 determined that we could not obtain repeatability in the blow  
 24 down characteristics of the main steam relief valves and,  
 25 consequently, a decision was made by GPU management to take the

sls-9

1 time to replace the valves.

2 That particular evolution took the latter part of May,  
3 June, July and August of 1978.

4 The test program resumed about mid-September of 1978. That  
5 showed a very definite commitment to safety and a very definite  
6 commitment to make the unit right prior to forging ahead, and  
7 there were no skimping in the area where a nuclear safety was  
8 concerned.

9 Consequently, if nuclear safety was an issue, I felt no  
10 pressure whatsoever during the months of the fall of 1978 to  
11 stop and resolve any concern that involved nuclear safety.

12 Q At the time a decision was made to go down for this  
13 period of time to replace the main steam safety relief valves  
14 with new design valves, was there discussion or disagreement about  
15 whether that would have to be done? Was there specifically  
16 anyone who proposed or argued that further testing might make it  
17 possible to use the existing valves?

18 A We spent the month of May testing and hoping that we  
19 could make the valves work correctly because it would be a  
20 significant impact on the schedule should we have to change the  
21 design.

22 A great deal of time and money would be involved in procuring  
23 new valves, changing piping arrangements and making the  
24 installation. Once we determined that the repeatability was  
25 not there, the decision was made, and I know of no dissenting

sls-10

1 members thinking that we could forge ahead and operate with the  
2 existing valves. The valves' performance was such that  
3 eventual operation of the plant, from what we had seen to date,  
4 would not be possible.

5 Q Was there any discussion at that time of the  
6 question of whether replacing the valves would still permit the  
7 plant to come into commercial service well before the end of  
8 the calendar year? Do you recall any such discussion?

9 A I was involved in no such discussion.

10 Q I think you said -- correct me if I am wrong --  
11 that you were aware of a desire for the plant to go into  
12 commercial operation before the end of the calendar year. Did  
13 you ever know or hear what that desire was based on? Was it  
14 your understanding there were any financial advantages to the  
15 company of any kind in beating the end of the year deadline?

16 A I have heard there were financial advantages to  
17 take the unit commercial prior to the end of 1978. I did not  
18 know what those financial advantages were. I don't know where  
19 I heard that, whether I heard that through my management or  
20 GPU management or as a rumor that traveled through the rumor  
21 mill out here on site. The specific financial advantages, I  
22 did not know.

23 Q I understand that is not your area. What I am getting  
24 at is: To what extent it was communicated to you through your  
25 management or through people at GPU Service Corporation who

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would, in a sense, be upper level management of the system company, that this was something that you were all shooting for, that it was important to try to get commercial by the end of the year. What do you recall about the way that was communicated to you?

A I don't recall that ever being officially communicated to me through a management chain. I think it is important to realize that whenever one operates a nuclear plant in terms of a refueling outage, in terms of a start-up, in terms of any other evolution, he lays out a schedule for himself and works to that schedule. That's a milestone to gauge his progress against so he has some quantitative way to say he is either doing a job he thought he could do or he is not doing the job he thought he could do, and if he isn't doing the job he thought he could do, to try to sit back and say why? Do I need more manpower? Better material support? Where is this breaking down?

We operated the start-up with schedules.

End t-1

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BY LRW

1 We operate refueling outages on TMI-1 with schedules. We  
2 operate minor jobs with schedules. We try to meet those  
3 schedules because it is a realistic way to manage.

4 When a situation overtakes one where we can't meet the  
5 schedule, such as a situation with the safety valves, a  
6 significant deviation from the schedule is in order. I saw  
7 a commitment from the company to deviate significantly from  
8 the schedule to solve a problem. That showed me a  
9 commitment such that I was never in doubt that there was a  
10 commitment to nuclear safety from the management of the  
11 General Public Utilities Corporation and from the management  
12 of Met Ed.

13 Q I understand what you are saying about schedules.  
14 I understand the example you have used. I am certainly not  
15 implying that there should not be in the nature of any  
16 construction and preoperational testing the goals of a  
17 facility like this, to try to get it going as quickly as  
18 possible. In that sense, I understand there is also a rush  
19 to do the job as quickly as feasible, and safe.

20 But what I am really focusing on is the extent to which  
21 it was communicated to you that the end of the calendar year  
22 deadline was a significant deadline and that special efforts  
23 ought to be made if the commercial operational time period  
24 looked like it was going to fall in November or December or  
25 January, to make sure that it was in December because that

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LRW 1 would be in 1978 and not in the new calendar year of 1979.  
2 To what extent can you recall that thought or direction or  
3 desire being communicated to you, and by whom?

4 A That was not communicated to me directly. Through  
5 my management.

6 Q What do you recall about it being communicated to  
7 you indirectly in terms of what you heard or conversations  
8 with people?

9 A As I already stated, throughout the circuit of the  
10 rumor mill, there was a desire on the part of the company to  
11 have the unit commercial as soon as technically feasible.  
12 To have it commercial. Through some communications, and I  
13 can't say which because I don't remember, there were  
14 indications of a financial advantage for that to happen in  
15 December of 1978, by January of 1979.

16 In terms of schedules, I was not, in my position as  
17 technical support superintendent for Unit 2, responsible for  
18 the schedule of the startup period. That was administered  
19 through the GPU Service Corporation startup unit. As such,  
20 we did what we could to meet their schedule. I don't think  
21 I can give you any more insight to your question than that.

22 Q Did you ever hear any discussion that the  
23 schedules set during the 1978 preoperational testing phase  
24 were too tight to guarantee eventual safe commercial  
25 operation of the plant?



LRW 1 A No.

2 Q Did you ever see any other evidence that schedules  
3 were set tightly or that many things were attempted to be  
4 done in a short period of time in order to meet a year-end  
5 deadline in a way that you felt might jeopardize the safe  
6 operation of the plant?

7 A No.

8 BY MR. HAYNES:

9 Q Mr. Seelinger, during 1978, I believe most of the  
10 time you were chairman of the plant operations review  
11 committee for Unit 2.

12 A Yes.

13 Q And you were also acting unit superintendent for  
14 Three Mile Island 2 during part of that time.

15 A No.

16 Q Okay. Maybe I didn't phrase that correctly.

17 In the organization of the facility, there is a unit  
18 superintendent and then there is a station superintendent,  
19 is that correct?

20 A Yes.

21 Q Mr. Miller was station superintendent and also  
22 unit superintendent of Unit 2 during part of that year 1978,  
23 is that correct?

24 A That is correct.

25 Q Did you act for Mr. Miller as the Unit 2

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LRW 1 superintendent during part of that year 1978? Did you sign  
2 documents for him and so forth?

3 A I signed documents for him. However, I did not  
4 act as the unit superintendent. He was the unit  
5 superintendent. I functionally performed some of the duties  
6 that perhaps the unit superintendent would otherwise have  
7 performed because of Mr. Miller's responsibilities as  
8 station superintendent. However, I did those under my  
9 existing title as unit superintendent technical support, and  
10 was not -- nor did I try to become -- recognized as the unit  
11 superintendent.

12 Q As a part of the PORC function and so forth, did  
13 part of your considerations include the readiness of a plant  
14 for licensing? Loading fuel, completion of construction.

15 A The PORC has a charter that, if fulfilled in  
16 accordance with the technical specifications -- I don't  
17 remember those particular items as falling under that  
18 particular charter in the technical specifications. The  
19 test working group, which was what they called the TWG,  
20 through its signoff of certain tests, would have the plant  
21 at the point where it would be ready to load fuel.

22 Further, certain surveillances associated with the  
23 technical specifications needed to be done in order to  
24 satisfy the surveillance requirements, Mode 6 requirements,  
25 in order to load fuel.

LRW

1 PORC was involved as representative to the TWG in signing  
2 off the test documents. PORC would review, and a member of  
3 the PORC -- typically, myself or the vice chairman -- would  
4 sign off the TWG document saying certain tests and  
5 prerequisites had been completed.

6 Further, PORC was involved in approving the surveillance  
7 procedures that would have to be accomplished prior to the  
8 unit being ready to load fuel.

9 There was no meeting that I recall where PORC established  
10 a separate set of criteria other than those in the technical  
11 specifications, which said, once we meet these, we will then  
12 be ready to load fuel. We went with the criteria already  
13 established by the technical specifications at the test  
14 program, both of which we were involved in improving.

15 Q This TWG, who were members of the TWG group?

16 A The TWG members were a member from the operating  
17 company, Met Ed --

18 Q By name?

19 A By name, the three or four representatives,  
20 Mr. Haynes. Myself, Gary Miller, John Hilbish, perhaps one  
21 or two others that I don't recall.

22 Q You functioned as a part of the TWG.

23 A That's correct. The GPU startup group was  
24 represented. The member for the greatest share of the  
25 startup, who is a gentleman by the name of Max Nelson, of

LRW 1 Burns & Roe, the architect engineer, was represented on the  
2 test working group. A representative from Burns & Roe was  
3 typically Rich Brownwell, and Babcock & Wilcox was  
4 represented on the test working group. Their  
5 representatived some of the time was Lee Rogers, and other  
6 times various representatives of the B&W contingent were on  
7 site.

8 Q As a group, you reviewed the status of the test  
9 and completion of the test.

10 A That is correct.

11 Q The function of the PORC is advisory, is that  
12 correct, to the station superintendent?

13 A The function is rather clearly spelled out in the  
14 technical specifications. Without them in front of me, to  
15 read them, I don't know that I want to specifically want to  
16 comment on your question. However, the PORC typically  
17 recomends approval of the procedures and the unit  
18 superintendent typically approves the procedure.

19 Q In terms of procedures. There are other things --

20 A Yes, there are other things. Typically, the PORC  
21 recommends and the unit superintendent approves or  
22 disapproves.

23 Q The power test program was completed in different  
24 testing plateaus, was it not?

25 A That is correct.

LRW 1 Q Did PORC recommend to the unit superintendent or  
2 the station superintendent that a particular plateau has  
3 been successfully been completed now and we can go ahead and  
4 proceed to the next test plateau?

5 A That was again done through the test working group  
6 documentation. The PORC would review the requirements at a  
7 certain plateau. As I recall, it would go on from that  
8 plateau. As I remember, I think that's how the program  
9 worked at that time.

10 Q PORC found it to be acceptable and recommended it  
11 go on to the next plateau.

12 A That's correct, but that would be done through the  
13 next working group as opposed to through Met Ed's system.  
14 The PORC was not the body in itself that would make that  
15 recommendation. That was a combined group of various groups  
16 on site involved with the startup.

17 Q What if the PORC did not believe the plant had  
18 been successfully tested at a certain plateau?

19 A If the PORC disagreed with any of the test  
20 results that would have involved successful completion of a  
21 particular test, that would have, say, then become a  
22 prerequisite for going on, and that would have to be  
23 resolved because it couldn't foresee without TWG. In other  
24 words, the TWG required a unanimous approval by all members  
25 to approve test results. If the PORC disapproved the test

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LRW 1 result, its member would then dissent from the TWG's  
2 approval.

3 Q So, a member of PORC was always a member of the  
4 TWG.

5 A Yes, that is correct.

6 Q Okay, fine.

7 In the GORB meeting, general office review board, which  
8 is an off-site review committee for activities here at the  
9 site, in their meeting No. 29, of February 22, 1978, they  
10 have an item in there which talks about incomplete work  
11 items. Specifically, there were 1595 mechanical items and  
12 1295 electrical items evidently as of February 22, 1978,  
13 which were not complete.

14 MR. FRAMPTON: The record should reflect that that  
15 document has previously been identified as Exhibit 2.

16 THE WITNESS: Yes.

17 BY MR. HAYNES:

18 Q And in here it says that they should be completed  
19 prior to going to Mode 1. These items.

20 A Yes.

21 Q That's what it says.

22 Could you characterize what those 2800 types of items  
23 are, in general? Incomplete items. Would they be  
24 maintenance-type items, mostly?

25 A No, they would not be. For the most case, they



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OK LRW

1 were items that were on the QC punch list when part of the  
2 turnover of the system was accomplished and a greater share  
3 of the mechanical items were arc strikes left over from the  
4 welding.

5 Q One arc strike would represent one mechanical  
6 item?

7 A Yes.

8 Q I see.

9 A This gives you an idea why there was such a large  
10 number of these particular items.

11 Q How about the electrical?

12 A The electrical items, I don't know that I can  
13 categorize generically as well. There are people on site  
14 who were actively tracking these particular punch lists that  
15 could zero in on the winter '78 time frame and give you a  
16 much better answer to that particular question.

17 I was not actively involved in reviewing this particular  
18 punch list, so my answer would not perhaps represent a good  
19 generic answer to your question.

20 Q Do you know offhand when the plant was taken to  
21 Mode 1, plant operation?

22 A When?

23 Q Yes.

24 A It would have been in the fall of --

25 Q Mode 1 being power operation.

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LRW

1 A It would have been in the winter of 1978,  
2 approximately sometime in March. Late March of early April  
3 of 1978. So, perhaps that's early spring as opposed to late  
4 winter.

5 Q Do you know if these items were completed before  
6 the plant was taken to Mode 1?

7 A I do not know if they were completed. I suspect  
8 they were not all completed. The list was under constant  
9 review from our I&E inspectors of the NRC, and the list was  
10 administered by the GPU startup group.

11 On almost -- I will rephrase that -- on most visits of  
12 the NRC, inspectors during the startup, the punch list of  
13 open items was reviewed to review our progress on those  
14 particular items. However, I doubt that all punch list  
15 items were, in fact, completed prior to going into Mode 1.

16 Q In the system that was in existence at that time,  
17 how would such exceptions have been dispositioned?  
18 Something that's not complete, how would that be handled to  
19 make sure it is reviewed and is acceptable?

20 A The typical specifications require certain  
21 surveillance items to be completed for systems to be  
22 declared operable. A system, by nature, meeting those  
23 requirements, meets the operability criteria of the  
24 technical specifications.

25 If one meets that criteria for the various modes, for the

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LRW

1 technical specifications, he is allowed to advance into  
2 those modes. If one of these punch list items kept a  
3 particular system from meeting its surveillance  
4 requirements, it would have to be dispositioned in order to  
5 call that system operable.

6 Once we fell under the technical specifications in  
7 February of 1978, the operability criteria of the technical  
8 specifications were applied to the various systems prior to  
9 advancing the modes.

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BY LRW

1 Q What was your experience early into the test  
2 program after you had your license? Did you find the  
3 systems were operable, or did you find systems you thought  
4 were operable were not operable?

5 A I would say we found what we expected. The first  
6 time one tries to run a surveillance on a system, the  
7 surveillance doesn't pass for one reason or another and  
8 certain items need to go out and be corrected in order to  
9 get the surveillance to pass for the first time.

10 Once the surveillance passed the first time and the  
11 system is tuned, so to speak, to operate and meet the  
12 specific criteria of the technical specifications, I would  
13 not think that we had an abnormal amount of difficulty or  
14 unexpected amount of difficulty in passing subsequent  
15 surveillances.

16 Q In general, did you find the systems were operable  
17 and that the problems were more of a procedure test problem  
18 than a hardware problem?

19 A I would say there was an application of a mixture  
20 of both. When a complex system is built and then one goes  
21 out and tries to operate that complex system, that involves  
22 a great number of electrical connections and just any number  
23 of -- I don't think he would expect to turn the switch and  
24 necessarily have it operate perfectly the first time out. I  
25 would say that our experience was not unexpected in what we

6870 03 02

LRW 1 found.

2 Q You did do a series of tests, did you not, on  
3 these systems prior to receiving the license, prior to  
4 performance surveillance-type tests, is that correct?  
5 During the preoperational test program.

6 A There were functional tests done during the  
7 startup program that were well documented on various  
8 systems.

9 Q What time period is this?

10 A During the functional testing.

11 Q Prior to issuance of a license?

12 A Yes. Also, during that time there were attempts  
13 made to learn what surveillance was meaningful in order to  
14 get our procedures into a shape where they would work when  
15 we tried to run the surveillance. Certain items were not  
16 meaningful until later on, until the remainder of the system  
17 was, in fact, built.

18 One could have three-quarters of a system built and be  
19 missing a valve or a control device or a motor or something  
20 else, just because that was the particular state of  
21 construction, and the surveillance would not pass if that  
22 component was needed in order to make the surveillance  
23 pass. So, in some cases, early on testing of the system  
24 needed to wait for construction to finish building the  
25 system in order for the system to pass the surveillance.

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PW LRW

1 Now, prior to advancing in modes, when steel was loaded,  
2 surveillance had passed.

3 Q So the plant systems were operated and you knew  
4 they were operable prior to depending upon them for safety.

5 A Yes.

6 Q So really, what we are saying is the end of the  
7 construction and debugging-type process was where you went  
8 on into operation.

9 A That is correct.

10 Q So that when you were going into this debugging  
11 process, if items would show up to be a problem, they were  
12 reviewed and corrected, and before approval was granted to  
13 get the license and take the plant into operation, is that  
14 correct?

15 A Certainly before taking the plant into operation.  
16 Not all systems were needed in order to get a license. A  
17 certain series of tests had to be performed in order to be  
18 ready to have the license in a certain state of  
19 construction, had to be achieved prior to being able to get  
20 the license granted from the NRC. At the moment of license  
21 being granted, the plant was not ready to proceed into Mode  
22 1.

23 Q Was your license conditioned accordingly?

24 A Our license had various conditions in it that  
25 required completion of certain items prior to advancing into



6870 03 04

LRW 1 certain modes and prior to advancing past certain dates.

2 Q At the time you got the license to go into power  
3 operation -- I want to stick with power operation because it  
4 is after the critical test -- had you finished your  
5 debugging process with your systems and they were operable  
6 at that time?

7 A Prior to proceeding into any mode surveillance was  
8 always met for going into that mode. Prior to proceeding to  
9 any mode that was a license condition, the conditions of the  
10 license were always met. The answer to your question is  
11 "Yes."

12 Q That review was done by whom?

13 A That review was done by our procedures. Our  
14 procedures have in them a checklist that was called a  
15 "mode-to-mode checklist," and each mode required the  
16 satisfactory completion of certain surveillance procedures.

17 Surveillance procedures would be run against a particular  
18 system and the surveillance procedure had to pass in order  
19 to be successfully entered that that surveillance was  
20 acceptable in the mode-to-mode checklist.

21 The mode-to-mode checklist had to be completed in order  
22 to advance into the mode. If one reaches the whole point,  
23 he has to resolve that problem with the particular system in  
24 order to get it to successfully pass surveillance.

25 Q So, the problems have to be resolved before you

6870 03 05

BY LRW

1 continued on.

2 A That's correct.

3 Q Exceptions were not granted.

4 A That's correct, no exceptions. If exceptions were  
5 granted, they were granted through formal process with the  
6 NRC to a technical specification revision.

7 Q That would have been reviewed by the PORC?

8 A Yes.

9 Q Prior to ever being submitted to the NRC?

10 A Yes.

11 Q What is the function of the general review board?

12 A There is no requirement -- I will step back. The  
13 general office review board is not part of the technical  
14 specifications in TMI-2.

15 Q Go ahead, continue.

16 A The general office review board is not part of the  
17 technical specifications. We made great efforts in our  
18 dealings with the NRC to try to incorporate the general  
19 office review board in the technical specifications, and the  
20 NRC would not put the general office review board in the  
21 technical specifications.22 Those negotiations were conducted out of our home office  
23 in Reading. We consequently ended up with only the  
24 generation review committee, GRC-2, as it was known, in the  
25 technical specifications as an off-site review committee.

870 03 06

LRW

1 We, nonetheless, kept the board internally as a board  
2 that would review TMI-2 even though it was not part of the  
3 technical specifications. We felt that was a good mode of  
4 operations for TMI-1, and we felt that that off-site review  
5 by a senior group was in the best interests of our unit and  
6 in the best interests of nuclear safety.

7 Q The GORB does perform the review for Three Mile  
8 Island 1?

9 A The TMI-1 has two off-site committees.

10 Q TMI-1?

11 A TMI-1 has two off-site committees. One is a  
12 generation review committee. This is similar to TMI-2's  
13 generation review committee. The functions may be slightly  
14 different. I would have to look in the technical  
15 specifications to review the specific details.

16 The general office review board is also a part of TMI-1's  
17 technical specifications and is a senior off-site group that  
18 takes a broad-perspective look at operations and tries to  
19 assay those operations in a broad overview-type sense.

20 TMI-2 had no official commitment to have such a group  
21 because of the unwillingness of the NRC to incorporate that  
22 group.

23 Q Why were they unwilling?

24 A I don't know.

25 Q How has that impacted on your operation?

BY LRW

1 A It has not, because we kept the board.

2 Q Do you think it would have, had you not kept the  
3 board?

4 A I think that the functions of the general office  
5 review board are important. I think they are important  
6 because individuals from the industry with a good deal of  
7 seniority and experience come in and look over our shoulders  
8 and ask very good questions and give us a perspective and  
9 viewpoint that, being close to a situation and close to a  
10 problem, we do not have.

11 Whether or not eliminating them would make any difference  
12 in a specific instance would be strictly conjecture.

13 Q Does this general office review board also have a  
14 function at the Oyster Creek nuclear power plant?

15 A Yes.

16 Q Composed of the same members?

17 A I don't know. Some I know are the same.

18 BY MR. FRAMPTON:

19 Q How often does GORB meet?

20 A GORB is required by the Unit 1 technical  
21 specifications to meet once every six months. It typically  
22 meets about once every three months.

23 Q How about for Unit 2? About the same?

24 A In the past, prior to the -- I will start again.  
25 Prior to the accident, GORB's frequency for Unit 2 was

LRW 1 the same and the meetings were in conjunction with each  
2 other. In other words, half of the two-day session or  
3 day-and-a-half session would be usually spent on Unit 2 and  
4 the other half on Unit 1.

5 Q Did that group ask difficult questions of site  
6 management?

7 A Please phrase your question again.

8 Q Well, let me ask it this way: Did that group  
9 challenge site management to justify important  
10 safety-related decisions and to identify problems and issues  
11 it was having for review?

12 You said you thought that kind of review was useful and  
13 important. I am trying to get at what the board actually  
14 did that was useful and important.

15 A From time to time, the remarks and comments of the  
16 GORB were very challenging. The GORB seniority is such that  
17 with any general concept, a person with 20 to 30 years'  
18 experience in the nuclear industry can ask enough  
19 challenging questions that there aren't good answers for.

20 We felt that, one, it was good to get asked those  
21 questions and to try to respond to those questions to see  
22 how our organization and operation measured up to those  
23 questions and the answers to those questions.

24 Number two, we felt that the exposure of some of our more  
25 junior people to that senior-type group was a very good

5870 03 09

LRW

1 experience because the accountability that it offererd our  
2 people -- an example would be that a young engineer might go  
3 and present a particular problem to the GORB.

4 An example would be the atypical weld wire material that  
5 was used in certain reactor vessels and the effect of that  
6 material on the continued operational curves of the reactor  
7 vessel. The GORB member, with his seniority and experience,  
8 could ask very penetrating questions and unless that  
9 engineer of maybe five to 10 years of experience did his  
10 homework, he wouldn't have the answers.

11 It is good to put our young engineer in the kind of  
12 situation that forces him to do his homework to stand up  
13 against that particular type of critique and line of  
14 questioning. We found that experience from the GORB to be a  
15 valuable experience in terms of exposure for our people in  
16 addition to the overall nuclear safety concerns and  
17 perspective that the GORB presented to us.

18 Q How did issues or questions get to GORB in time  
19 for them to make a review or decision or recommendation that  
20 is effective for operations purposes?

21 A GORB was an after-the-fact review group. GORB was  
22 what I will call more philosophical as a review group in  
23 that it is the third review group in a line of review  
24 groups. PORC is the first line of defense. The generation  
25 review committee is the second line of defense, reviewing

870 03 10

LRW

1 and looking over PORC's shoulder. The GORB looks over the  
2 shoulders of both to make sure that not necessarily that an  
3 issue is handled in a given way, but rather that the  
4 philosophy of operation and maintenance and general conduct  
5 is proper.

6 So, the GORB would look at issues that typically would  
7 arise from such things as NRC inspection reports, event  
8 reports, other issues that come into the focus in the  
9 industry through, say, NRC letters or bulletins or circulars  
10 or incidents that would happen at a particular power plant  
11 that may or may not necessarily be a reportable kind of  
12 incident but perhaps is a significant type of incident that  
13 merits the review of a senior group.

14 Then the GORB would try to put that in the perspective  
15 of: You have had this one incident here, TMI, and you have  
16 done X to correct it. How about related incidents? X, Y,  
17 Z, A, B, and C? Are they, in fact, related, and have you  
18 covered a broad enough spectrum in your approach to this  
19 particular problem to avoid recurrence in other closely  
20 related areas?

21 Q How about the GRC? How does that fit into this  
22 hierarchy? Is the GRC also in large part an after-the-fact  
23 review?

24

25



870.04.1

1           A           The GRC is typically an after-the-fact review, though  
2 on certain items such as modifications made to safety-related  
3 systems, there is a review made by members of the GRC, not  
4 necessarily by a committee, but by the off-site corporate  
5 technical support staff, and that is prior to making the  
6 modification kind of review.

7                       It is an off-site engineering review, if you will.

8                       Typically, other items reviewed by the GRC are  
9 after-the-fact reviews, but they are detailed reviews as  
10 opposed to a more general and philosophical type review that  
11 the GORV might take.

12           Q           Do the tech specs require prior GRC review of,  
13 for example, changes in design and safety systems, or changes  
14 in technical specifications?

15           A           I would have to look to see the specific  
16 requirements. There are one or two items in which proposed  
17 changes to either procedures or system design are required  
18 prior to implementation.

19                       In most cases, it is not.

20                       Now we must recognize in that I see that you have  
21 broken out the Unit 2 technical specifications, that I have  
22 been addressing the generation review committee of TMI 1.  
23 However, you will find that the generation review committee  
24 for unit 2 in the technical specifications is such that there  
25 are one or two items they must review prior to this

870.04.2

1 implementation period.

2 I believe that you will find that changes which  
3 involve a significant environmental impact, changes to  
4 procedures that involve significant environmental impact of  
5 the work proposed, those changes are in the technical  
6 specifications.

7 BY MR. HAYNES:

8 Q When it says "proposed," that means that it is  
9 before the fact.

10 A That's correct. However, we do take an example  
11 here that says proposed changes to procedures, equipment, or  
12 systems which involved an unreviewed safety question, as  
13 defined in Section 50.59.

14 That doesn't mean that all proposed procedure  
15 changes would, therefore, get reviewed by GRC, but only those  
16 that involve an unrelated safety question would have to be  
17 reviewed prior to the fact.

18 In most situations here, there is a qualifier that  
19 means that these things do not get reviewed or need to be  
20 reviewed prior to their initial implementation.

21 Q Unless they constitute a safety question or change  
22 in the technical specification, or change in the license.

23 A That's correct.

24 Q The less important things do not need prior  
25 approval, but the more important things require it.

870.04.3

1 A That is correct.

2 BY MR. FRAMPTON:

3 Q Going back to where we started here to our  
4 discussion of the nuclear plant management review, is that  
5 a useful enterprise, in your view?

6 A Yes, it was useful.

7 Q Do any of the other groups or committees that we  
8 have been discussing -- PORC, GRC, or GORV -- fulfill that  
9 kind of function of assessing the operating experience in  
10 the plant, the problems, the issues, and sharing that  
11 information with upper management and engineering people and  
12 getting feedback on it?

13 A My answer will be a little subjective, but I  
14 hope that it will put the question in perspective. There are  
15 many committees investigating TMI 2, all of which cover some  
16 of the same territory and some independent territory.

17 An example would be this deposition. The same  
18 was true with the nuclear plant management review.

19 One of the items that it offered that some of the  
20 other committees did not would be a change for plant people  
21 to interface with the highest levels of management within  
22 the company.

23 The exposure of the technical support superintendent  
24 the PORC chairman, the lead engineer in a particular  
25 discipline, or the mechanical maintenance or electrical

870.04.4

1 maintenance supervisor, with the president of the company  
2 to explain that he had a problem in maintaining certain  
3 motors because of an error that was made in purchasing, say,  
4 eight years ago -- my example is strictly hypothetical --  
5 or a complaint or the ability to share with the company  
6 president his frustration with, say, the union contract or  
7 his frustration with, say, the numbers of people that he  
8 has or that he doesn't have, shift maintenance or for the  
9 engineer to share his problems with the company president  
10 where he spends an excessive amount of time on the plant  
11 operations and review committee, or that numerous other  
12 facets of his particular job are not necessarily totally  
13 appealing to him.

14           Something that the other committee doesn't offer  
15 is offered here. It offers a management look at some of the  
16 details that the plant people deal with on a day-to-day kind  
17 of basis and offers to the plant people the involvement of  
18 management in those details, and consequently opens a line  
19 of communication, be it only for one day.

20           When, on other days, it has to revert to a more  
21 lengthy chain of command to get the same person --

22           Q       What's what I was getting to.

23           A       It still shows that concern first-hand to the  
24 person in the field. That's a very important thing in the  
25 management concept.

870.04.5

1 Q Do you think that this kind of thing could be  
2 usefully employed more than once a year in a plant in this  
3 size? Would the usefulness be reduced quite a bit if you  
4 did it every three months, for example?

5 A I think three months would perhaps have been too  
6 frequent just because of the amount of time it took us to  
7 prepare for such a thing.

8 When one prepares to present something to his  
9 company president or to a corporate president, or vice  
10 president, he does his homework and has all the facts he wants  
11 to have together to present.

12 Putting that in the proper format and perspective  
13 gives it the necessary on-site review so things that don't  
14 come out that are total surprises to the staff.

15 The site management requires too much time for a  
16 three-month frequency. I do have a feeling that TMI 2,  
17 had it stayed in an operational status, that we probably would  
18 have ended up with two of these on-site per year at different  
19 times.

20 I don't know that for a fact, but I feel we would  
21 have had one for each year and one for Unit 2 each year.  
22 It would have been in a different time period. Some of the  
23 same faces would have been involved because of the  
24 responsibilities associated with both units.

25 I think it would have been not too much exposure.

870.04.6

1 Any more frequent than six months would have been too  
2 frequent.

3 Q Let me ask you the same type of question about  
4 what groups or structures exist to assess operating experience  
5 in other plants, particularly other plants of the same  
6 design that may be relevant to the operation of TMI 1?

7 Prior to the accident, how did you, as the unit  
8 superintendent of Unit 1, get, in some useful fashion, if you  
9 did, and communicate to your immediate supervisor immediately  
10 working for you information about things that had happened  
11 or were happening at other B&W plants that might be  
12 relevant to safety or operations at TMI 1?

13 A I'm sure you have seen, through reading other  
14 depositions, the existence of the B&W users group. That  
15 group met, I believe, twice a year and we typically sent one  
16 to two representatives to those meetings to attend or bring  
17 back useful information and discuss problems that we had  
18 had with the other superintendents at the other B&W units.

19 I attended one such meeting in October of 1978 in  
20 New Orleans. I attended one other meeting in early March of  
21 1978 called AB&W Operating Plant 7R. It was held in Orlando,  
22 Florida, in which not only B&W utilities attended, but there  
23 were representatives there from utilities which did not  
24 have B&W plants, either operating or under construction, or  
25 necessarily even planned for construction.

870.04.7

1                    Various topics were discussed: engineering topics,  
2 innovations B&W came up with; performance of B&W equipment;  
3 performance of the various utilities on refueling outtages,  
4 with B&W equipment and B&W reactors.

5            Q            Let me stop you for a minute. My impression of the  
6 material from those operating experience seminars is that  
7 concrete safety and operating problems were addressed only  
8 in the broadest ways and then, for the most part, only those  
9 problems that relate to down time.

10                    Is that a fair assessment of those meetings?

11            A            I would say not. I would say that on any specific,  
12 you might be able to make that statement, depending upon the  
13 emphasis lending to the specific, by the particular individual  
14 presenting the specific. But, however, if the particular  
15 utility regarded the problem as a significant problem, it  
16 would have been presented in that light.

17                    In October of 1978, in New Orleans, I presented the  
18 problem that TMI 2 had with its main steam safety valves.  
19 In my presentation of our operating experience during the  
20 start-up over the past 6 months, I tried to hit on any other  
21 key problems we have had.

22                    One other B&W utility had the safety valves and  
23 not only did I mention that, but I talked to representatives  
24 from that utility afterwards, discussing the problems we  
25 had and the fact that we had to replace those valves.



870.04.8

1                   That utility, I might add, ended up sequently  
2 replacing their valves, as well.

3           Q       Who was that?

4           A       Arkansas Power and Light.

5           Q       Were you aware at any time before the March 28,  
6 1979 accident of the transient at Davis-Besse in September  
7 of 1977?

8           A       I was not.

9           Q       Is the information about that transient the kind  
10 of information that you think ought to be made available to  
11 people who have responsibility for operating similar plants  
12 in a good system of distribution of such information?

13          A       In retrospect, certainly. However, one can flood  
14 circuits with so much information that the circuit is no  
15 longer useful. One could take all he experiences of various  
16 plants and that is even, in fact, done by certain groups,  
17 and make documents so big that it is no longer useful because  
18 no things are extracted.

19                   In this case, it would have been an obvious boon  
20 to have been familiar in detail with the Davis-Besse  
21 transient. We were not. It would have been an obvious boon  
22 for us to have seen some of the NRC correspondence I have  
23 subsequently been made aware of after the accident that  
24 existed and would have helped, would have been a very great  
25 help to have seen some of the B&W internal correspondence,

1 but we didn't see that, either.

2 If we had seen all the correspondence, it might not  
3 have been as much help because we, again, may have missed  
4 the significance of what we had seen because of it being  
5 diluted.

6 So what we see has to be very carefully filtered  
7 through a somewhat sophisticated system so that the right  
8 pieces of information get to the people that need them.

9 Q How would you do that?

10 A We are currently setting up a system to do that. I  
11 am not involved with setting up that system. I don't want  
12 to answer that question off the top of my head because it  
13 requires more thought than I have time to give it now.

14 Q Who is involved in setting that up?

15 A I think our licensing group is right now.

16 Q Who would be working on that, say, in the next  
17 month?

18 A It would be under Jack Thorpe's guidance, I believe.  
19 How far along it is I don't know at this time.

20 Q I don't want to press you for an opinion if you  
21 don't want to volunteer one -- I think that's quite fair --  
22 but, as a unit superintendent, can you offer any thoughts  
23 about what is the best way in which you could receive this  
24 kind of information, whether it is from your own management  
25 or from the NRC or from some industry group that would make it

870.04.10

1 possible for you and your senior staff people to review some  
2 of it or have it brought to your attention by other people in  
3 a timely fashion?

4 A My answer to this will sound a little bit like the  
5 last answer. That is, the terrific deluge of paper that we  
6 faced dilutes each individual piece. Word-of-mouth  
7 communication is sometimes the most effective to key a person  
8 into a particular problem.

9 An example would be if I received a call from  
10 another superintendent saying we had a significant problem  
11 with our particular piece of equipment and we want to make  
12 you aware of this so that you don't have the problem, or  
13 can investigate it to make sure that you don't have the  
14 problem.

15 That, in itself, might be the most effective way to  
16 get the ball going with follow up kinds of correspondence.

17 Another way to do this would be, I think, what we  
18 are trying to do, and that is setting up a committee or team  
19 of people that reviews this kind of thing in an ongoing  
20 fashion as almost a principal kind of function.

21 Q An operating experience committee, in effect?

22 A That's right. But because of the sheer volume,  
23 it doesn't do too much else other than review this because  
24 there is so much that to do too much else is very difficult.

25 Consequently, it is a significant problem that we

870.04.11

gsh

1 are trying to come to grips with to determine how, in fact,  
2 to best handle the problem.

3 Q To your understanding, were any persons charged with  
4 the principal responsibility for doing that prior to the  
5 accident?

6 Was there one place in Met Ed or GPU Service  
7 Corporation where there was some responsibility for looking at  
8 operating experience elsewhere and trying to pick out the  
9 things that were important to you and getting them to you?

10 A We did that in various ways and with various  
11 people. I think everyone felt a responsibility to do that.  
12 I think we are ingrained in operating on pieces of paper such  
13 that if anything is written down, we tend to take action on  
14 it.

15 If you sent me a piece of paper to say I was all  
16 fouled up or should look at X, Y, and Z, I would end up looking  
17 at X, Y, and Z if you were the janitor or if you were the  
18 president.

19 It would just tend to function in that sort of  
20 fashion.

21 Q Let me interrupt you a minute. Is functioning in  
22 that fashion largely a result of the NRC requirements? Is  
23 that a function of government regulation? Or is it a function  
24 of the industry as much as anything else?

25

c4

LAW

1           A           I think it is a function of the responsibility of  
2 the people in the industry and their past training. They  
3 are, in general, though this is a subjective comment,  
4 responsible people and at fairly senior levels have been  
5 taught that they must respond to everything, and  
6 consequently do and don't leave any stones unturned if the  
7 stone is sitting there waiting to be turned over.

8           Let me stop off the record a second.

9           (Discussion off the record.)

10           THE WITNESS: To continue, other ways in which we  
11 tried to get that information out is notes and minutes that  
12 were taken at meetings such as the B&W users group, which  
13 were distributed to the people that needed to see those  
14 particular minutes. Action that looked to be necessary was  
15 typically assigned. Atomic Energy clearinghouse documents  
16 were typically assigned to particular people to read  
17 portions of. Other documents received the same sort of  
18 treatment and assignment. Things that came in typically got  
19 looked at for applicability to us and generic type  
20 problems.

21           BY MR. FRAMPTON:

22           Q           So, your answer would be that it was important on  
23 an individual basis rather than an institution  
24 administratively assigning a responsibility to one person or  
25 group to do that.

5870 05 02

LRW

1           A           That's correct. There were certain people within  
2 the organization that, on typical documents, reviewed those  
3 documents and made assignments for further review, for other  
4 documents such as B&W user group minutes, B&W operating  
5 seminar minutes, informal minutes in other meetings would be  
6 distributed by the person who went to the meeting, the  
7 people who should see the particular minutes.

8           Q           Do you know whether at any B&W users or owners  
9 meetings anyone from Toledo Edison made a presentation on  
10 the Davis-Besse September 17, 1977 transient?

11          A           I know from our notes relative to one of the user  
12 meetings there is a one-line statement made that Davis-Besse  
13 had a problem with the electromatic relief valve.

14          Q           Those are Gary Miller's?

15          A           No.

16          Q           Did you attend that meeting?

17          A           No.

18          Q           Do you know whether anyone else attended that  
19 meeting?

20          A           Those notes were Gary Miller's, but I believe that  
21 particular section of the note was taken by Jim O'Hanlon, my  
22 predecessor, in the unit 1 superintendent's job.

23           Your last question, again, please?

24          Q           I think you answered it. I think you said in some  
25 prior testimony that you occasionally received and reviewed

6870 05 03

LRW 1 or occasionally looked at the NRC newsletter called "Current  
2 Events Power Reactors."

3 A That is correct.

4 Q And I take it you don't recall seeing the one for  
5 September and October of 1977 that described the Davis-Besse  
6 incident that we were talking of.

7 A That is correct. We have, subsequent to the  
8 accident, determined that the power reactors events -- and  
9 there is one other similar type complication to come out of  
10 the NRC -- were received by the Unit 1 superintendent on  
11 site, and, to the best of our knowledge, that was the only  
12 place on site at which they were received.

13 Q That is Mr. O'Hanlon?

14 A That is correct.

15 Almost all the other correspondence received on site was  
16 received by both unit superintendents. The power reactors  
17 and similar type publications were through Mr. O'Hanlon's  
18 assistants signed out to various people for particular  
19 sections to read, review, determine applicability, and so  
20 forth.

21 The unit 2 personnel, from our determinations, were not  
22 included in that distribution because it was assumed that  
23 Unit 2 received publication, as they did in many other  
24 publications. Publications is the wrong word. As they did  
25 other NRC correspondence.



LRW 1 An example would be an NRC bulletin circular or notice.  
2 Those particular pieces of correspondence are sent to both  
3 superintendents. We did not realize that our not seeing  
4 those particular publications in Unit 2 was due to the fact  
5 that we didn't receive them and that Unit 1, not realizing  
6 Unit 2 didn't receive them, only distributed them within  
7 Unit 1.

8 Q You said you had made a determination of this  
9 recently. Who looked into this? Do you know?

10 A I did.

11 Q You did.

12 A And my assistant did.

13 Q Who?

14 A Rod Harbin.

15 Q Did you find this particular newsletter did come  
16 to Unit 1?

17 A We did not find, to the best of our knowledge,  
18 that particular newsletter, so I cannot answer whether it  
19 came to Unit 1 or not. We found several others and they  
20 were distributed only to Unit 1.

21 The Unit 2 people that would have been on the  
22 distribution of similar publications, including myself when  
23 I was in Unit 2, never saw these particular types of  
24 publications in a generic sense.

25 MR. YUSPEH: Off the record.

6870 05 05

LRW

1 (Discussion off the record.)

2 MR. FRAMPTON: On the record.

3 BY MR. FRAMPTON:

4 Q Have you had a chance to read the account of the  
5 Davis-Besse transient in this NRC publication in the last  
6 couple of months?

7 A I have not.

8 Q When we take a break in a few minutes, I would  
9 like to ask you to look at this description, which is about  
10 a page and a half to two pages, and I would ask you a  
11 question or two about it afterwards, after you have a chance  
12 to look at it.

13 Let me change subjects for a moment. Unit 2 had a  
14 transient on March 29, 1978, which involved the PORV failing  
15 open or staying open through power failure, and I believe  
16 that you have testified previously that you personally had  
17 no role in response to that in terms of any changes that  
18 needed to be made, but that you were a member of PORC and  
19 PORC reviewed the changes that were proposed for that. Is  
20 that a fair summary?

21 A That, I would say, is a fair summary.

22 Q Do you know who did make the decision to change  
23 the operation of the valve so it would fail shut instead of  
24 fail open?

25 A I don't know who made the decision. I was

BY LRW

1 involved in the suggestion of the decision and involved in  
2 some of the discussions involving the desirability of the  
3 valve to fail shut as opposed to fail open.

4 Q What do you recall about the substance of those  
5 discussions?

6 A One thing that I recall is that I wanted to make  
7 sure that when the change was made, the valve would fail  
8 shut only when it was operating at its high set point.

9 The valve has two set points. One set point is a high  
10 set point, nominally 2255 pounds. It opens and closes at  
11 2205 pounds. The low set point is nominally about 500  
12 pounds, and the low set point is affected by the temperature  
13 in the reactor coolant system.

14 The purpose of the low set point is to provide startup  
15 over pressure protection when the plant is at a low  
16 temperature and one has to be concerned about brittle  
17 fracture problems with the reactor vessel.

18 Q Is the set point automatically changed again  
19 depending on temperature readout?

20 A Yes, it does.

21 Q It is hot-wired?

22 A That is correct. There is a logic circuit that  
23 makes the change, and there are switches that can vary the  
24 set point, as well.

25 I was involved in the design change in terms of stressing

6870 05 07

LRW

1 the desirability of having the valve fail shut at its high  
2 set point but trying to emphasize I didn't think it was  
3 desirable to fail shut at the low set point.

4 Q Was your suggestion adopted?

5 A I was told it was adopted in the design of the  
6 change. I don't know that I specifically reviewed the  
7 prints in detail to determine that personally.

8 Q Do you recall why the decision was made to have an  
9 indication on the control room on a controller panel as to  
10 the position of the valve or supposed position of the valve?  
11 Was that made as a result of the March 29 transient or the  
12 April 23 transient?

13 A I believe it was made as a result of the March 29  
14 transient, and it was made because, when the  
15 depressurization occurred on March 29, we really didn't know  
16 why it occurred. In losing a vital bus, which was what we  
17 lost on the 29th, we lost a good share of the  
18 instrumentation in the control room so the shift supervisor  
19 who was dealing with that particular problem had nominally  
20 half his instrumentation that he couldn't believe because it  
21 lost power, and the other half of his instrumentation  
22 looking considerably different than the half that lost  
23 power and, at the same time, was losing pressure in a rather  
24 dramatic fashion and rapidly, without any real indication of  
25 why he was losing pressure.

870 05 08

PW LRW

1           The transient ended when we regained power, but had we  
2 not regained power, I'm not sure it would have ended as  
3 quickly and abruptly. It may have taken a considerably  
4 longer period of time for us to figure out what the cause of  
5 the problem was.

6           Q           Do you know whether the NRC or any NRC personnel  
7 played any role in the decisionmaking relating to those  
8 changes, those two changes, the position indication light  
9 and the failing closed instead of failing open?

10          A           I do not know if they played any part in the  
11 changes we made or not.

12          Q           Did you participate in or discuss the change that  
13 involved putting the position indication -- putting an  
14 indicator light or indication in the control room?

15          A           I am almost certain that we reviewed that  
16 particular change in the PORC. As such, if I had been in  
17 the PORC at that point in time, I would have played a role  
18 in that particular review.

19          Q           Do you recall any discussion about whether the  
20 indicator light should indicate the state of the circuitry?  
21 That is, the energization solenoids -- or whether by  
22 contrast it should give an affirmative position indication  
23 either on the pilot or on the main valve stem?

24          A           No, but I will add a subjective parenthetical  
25 comment: On March 29, 1978, we had no indication to us at

870 05 09

LRW 1 that time that any indication was a step in the right  
2 direction, so we were very happy to get something as opposed  
3 to having nothing.

4 Q Do you recall any discussion or consideration of  
5 what the something that you were going to get was going to  
6 be, one type of indication as opposed to the other?

7 A I don't recall any indication relative to the fact  
8 that it was going to be demand as opposed to actual valve  
9 position.

10 Q One more subject before we take a break. I think  
11 you said before --

12 A Let me back up.

13 Q Excuse me. I didn't want to interrupt.

14 A I stated I don't recall any discussion. I think  
15 that I could state that when we put the particular change in  
16 to give us an indication of the demand to the valve, we  
17 realized at the time that what we were putting in was the  
18 demand signal and was not a limit switch that was coming off  
19 the valve. It wasn't as if the change was put in with us  
20 thinking that that was actual valve position.

21 I don't mean to try to dilute the thing by thinking, yes,  
22 we have an indication of a valve. We have indications of  
23 the signal being sent to the valve.

24 Q It appears that that change was made during the  
25 time that the plant was down on account of the steam relief

LRW 1 valves.

2 A I believe that is correct.

3 Q Would making the indication on the PORV being an  
4 indication of the actual position of that valve have been  
5 more complicated or more expensive to do than just putting  
6 an indication on the selenoid?

7 A No question about the fact it is more complicated,  
8 and I suspect it is also more expensive.

9 I might also add we are currently making a change in Unit  
10 1 to add actual position indication because Unit 1's  
11 position indication for the PORV is not actual position  
12 indication, and it is receiving considerable engineering  
13 attention, and it is not necessarily a straightforward kind  
14 of indication.

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870.06.1

1 Q It may be difficult to do, in other words.

2 A That is correct.

3 Q I think you said that you obtained a senior reactor  
4 operator's license for Unit 1 in early 1977. January or  
5 February, was it?

6 A I received the license in January of 1977.

7 Q And was that after tests given by the company,  
8 by Met Ed? Did you take any tests administered by NRC?

9 A Yes.

10 Q Did you take company tests first and then  
11 NRC-administered tests?

12 A Yes.

13 Q And there were several phases to those tests,  
14 several types of tests that you had to pass to get that  
15 license.

16 A Yes.

17 Q Can you say just very briefly what they were?

18 A At various stages in the training program, there  
19 were written and oral examinations. There was a final  
20 written examination administered by the company. I believe  
21 there was a final written or oral examination given by the  
22 company. I don't remember the specific time, but I'm quite  
23 certain that there was.

24 There were two written full-day examinations given  
25 by NRC and one half-day oral examination given by NRC.

870.06.2

1 Q Subsequently, you obtained a license for TMI 2.  
2 Is that right?

3 A That is correct.

4 Q A cross license.

5 A That is correct.

6 Q Having obtained the license for TMI Unit 1, what  
7 additional tests did you have to take to get the cross-license  
8 on Unit 2?

9 A In the Unit 2 training program, I remember taking  
10 some tests as part of the training program, and I took a  
11 final written examination administered by the company, as  
12 opposed to the NRC, that was the same scope as an NRC-type  
13 examination.

14 That was written to stress the differences between  
15 the two units.

16 Upon subsequently passing that examination, I  
17 received an amended license from the NRC to operate as a senior  
18 reactor operator at both TMI Units 1 and 2.

19 Q Would you say that the test which you received to  
20 get your Unit 2 license or your course license was as  
21 intensive on the particulars of Unit 2 as the sum total of  
22 your tests on Unit 1 had been with respect to the particulars  
23 of Unit 1?

24 A Yes.

25 Q After the process of getting your cross-license, your

870.06.3

1 second license, would you say that you were just as familiar  
2 with the plant functions, tracing the equipment and so on on  
3 Unit 2 as you were on Unit 1?

4 A I would say that in certain areas, I was more  
5 familiar.

6 Q With Unit 2?

7 A With Unit 2 more than I was Unit 1.

8 Q Why was that?

9 A Because in certain areas I was able to get better  
10 access on Unit 2 in my training than I was on Unit 1. In  
11 other words, in accomplishing the training on Unit 2, we did  
12 not yet have radioactive fluid in some of the systems in  
13 Unit 2.

14 Many of the areas that are currently contaminated  
15 areas in Unit 1 that would require special radiation work  
16 permits to enter and a great deal of difficulty to enter, they  
17 were able to be freely entered on Unit 2 during the  
18 period of time I trained on Unit 2.

19 So with respect to some of the areas in the plant,  
20 I would say I was more familiar with Unit 2 than I was with  
21 Unit 1.

22 Q Setting aside whatever particular experience you  
23 may have had with these two units as a result of working more  
24 on one than the other, or wherever your jobs were in 1975,  
25 '76, and '77, do you think that the cross-licensing

870.06.4

1 requirements set up by the NRC are adequate to insure that  
2 an operator who is licensed in the first unit becomes  
3 thoroughly familiar with the second unit before he actually  
4 gets his license for that second unit?

5 A I will answer the question by saying that I don't  
6 think the NRC could have given me any more difficult test  
7 than the company gave me, and I think I would have passed  
8 an NRC examination in the same fashion that I passed the  
9 company examination.

10 Had the NRC been giving the examination, I wouldn't  
11 have studied any harder than I did for the company  
12 examination. I physically couldn't have studied any harder  
13 than I studied.

14 I removed myself from my normal job and went into  
15 a full-time study program and studied as if the examination  
16 were going to be administered exactly as it had been  
17 administered for my first license examination.

18 Q Well, I am merely assuming that the company  
19 examination is, to some extent, reflective of what the NRC  
20 requirements are.

21 And what I am asking is whether the test, whether  
22 administered by the NRC or the company, do you think that the  
23 requirements for such testing are adequate to insure that  
24 the operator in a cross-licensing situation really does  
25 become familiar with the second plant, or whether it is

870.06.5

1 borrowing a lot of his expertise from the first plant?

2 A Monday morning quarterbacking, I think that there  
3 is a certain amount of merit in an oral examination on the  
4 second unit as opposed to only a written examination on the  
5 second unit.

6 I think that the NRC's method of licensing  
7 operators right now is so much up in the air and has such  
8 a high degree of question that my answer would be a very  
9 personal kind of answer and would be supposition on my part.

10 Q What do you mean by the NRC's method of licensing  
11 being up in the air?

12 You mean as a result of this accident, determining  
13 whether there will be substantial changes made or not?

14 A That is correct.

15 Q Well, as a plant unit superintendent, do you think  
16 that there ought to be very substantial changes made for  
17 operator license requirements?

18 A Yes.

19 Q In what areas?

20 A I think that the Navy hit on one key area in its  
21 final oral examination in the Navy training program, and that  
22 was that it gave its operators an oral board as opposed to  
23 an oral examination for -- at least nominally four people  
24 sat on one side of the table and the trainees who were the  
25 prospective licensees sat on the other side of the table,

870.06.6

h 1 and he faced questions from four people instead of one person.

2 He was under a great deal more pressure because of  
3 the inquisition coming from different people, all with a  
4 slightly different background of expertise. And consequently,  
5 the situation simulated perhaps more of a high pressure  
6 environment that he might subsequently face under stress  
7 conditions.

8 I think that the current licensing practices of the  
9 NRC do not reflect that same stress condition and I feel very  
10 strongly it should be reflected because the subsequent  
11 situation a person might find himself in in the control room  
12 might involve a great deal of stress.

13 Whether that stress is co-relatable and whether  
14 my analogy between the two situations would be valid before  
15 a psychologist is highly questionable.

16 Nonetheless, I feel personally, when I went through  
17 the Navy board, that I felt a great deal of stress and that  
18 it helped me to cope with stress situations having that  
19 in my background, knowing I went through something in which  
20 I felt stress and made it through that.

21 Q You took an oral examination NRC administered, an  
22 oral examination for your SRO license for Unit 1.

23 A That is correct.

24 Q How long did that last?

25 A It lasted about three to four hours.

870.06.7

1 Q Was that with one person?

2 A One examiner.

3 Q Was that oral portion of the whole examination a  
4 significant test, a material factor in your studying and  
5 so forth over and above all the written portions?

6 A In my studying, yes. I prepared well for the  
7 oral examination.

8 Q Did you have to do a lot of things for the oral  
9 examination in the way of preparation you might not have had  
10 to have done if that examination had not been given, if it  
11 had just been the written portion?

12 A I felt I had to feel comfortable in taking the  
13 oral examination. I felt that I had to absolutely be totally  
14 comfortable with the control room.

15 By that, I mean that, although I was an off-shift  
16 person and probably would not ever be the person to go up  
17 and turn or manipulate a particular control, because of the  
18 requirements of the license and because of taking the  
19 examination in the control room, that I had ought to make  
20 sure that absolutely know every single location of every  
21 single control in the control room, and that every control  
22 the examiner would want to point to, he could say, what is  
23 this, and I could explain what it was and what it did and  
24 what effect it had on other systems.

25 I felt, unless I knew that, I wouldn't be

870.06.8

1 comfortable in taking the examination.

2 So I subsequently went and learned that and that  
3 took a great deal of time to learn. And it took a great deal  
4 of time to map that in my mind so that I could walk through  
5 it.

6 It wasn't something that I dealt with in an  
7 everyday situation. It was memorization exercises for a  
8 person who didn't operate those particular controls every day.

9 Q Did the oral examination actually test that?

10 A A portion of it was called upon in the oral  
11 examination, and I felt very much more comfortable taking  
12 the oral examination because of it.

13 I consequently feel more comfortable in the control  
14 room as a result of it.

15 Q Are there other areas where you think NRC operator  
16 licensing ought to be substantially changes or upgraded?

17 A Yes. The use of the simulator is the closest that  
18 the utility industry comes to actually experiencing a  
19 casualty on the plant in a training scenario.

20 The NRC does not use any simulator facilities in  
21 its testing and I feel that this particular area could be  
22 developed and used.

23 Q You have testified previously in a deposition about  
24 a number of aspects of simulator training work that you  
25 participated in implementing before some recent training in



870.06.9

h 1 July. It was the double fault kind of thing, taking an  
2 accident through to the end, training a shift together and  
3 facing them with those kinds of problems and a couple of  
4 other things that you talked about.

5 Do you think the NRC could usefully require that  
6 type of simulator training as a condition to giving an RO  
7 license, could require an individual go through that kind of  
8 simulator test?

9 A No, I don't think it could. I don't think that the  
10 NRC could because what we did on the simulator in July of  
11 1979 was team train and team performance as opposed to  
12 individual training and individual performance.

13 Q People were scored, however.

14 A Teams were scored. Individuals were not scored.  
15 It is the team that will save the plant; not necessarily  
16 the individual that will save the plant.

17 The Navy, in its training program and in its  
18 continued examination program, would examine crews aboard  
19 submarines in a crew concept type of fashion in addition to  
20 oral and individual written examinations.

21 That was a portion of the crew's continued ability  
22 to operate the reactor plant. I think that a similar type  
23 of examination could be given by the NRC under a somewhat  
24 controlled set of conditions for operating shifts of nuclear  
25 power plants.

870.06.10

1 Q At least for requalification.

2 A In a requalification type fashion. But the training  
3 would have to be rated, I feel, on a shift concept as opposed  
4 to an individual concept. Just as it was during the Navy.

5 One could characterize, judge, quantify the  
6 leadership capabilities of the shift supervisor, the technical  
7 knowledge capability of the control room operator. But it  
8 is the shift that either saves or loses the plant.

9 The shift team works in such a fashion as opposed to  
10 an individual ability.

11 Q Do you have a system here of changing people  
12 between and among shifts?

13 A On occasion, that happens, yes.

14 Q And you do rotate shifts so that one group of  
15 individuals doesn't always have a night shift, a back shift,  
16 or whatever.

17 A That is correct.

18 Q But less often, is it that you change the make-up  
19 of shifts? Is there some intent to try to keep an individual  
20 shift together if it is working well together?

21 A Yes, there is an intent to try to do that. The  
22 personalities on the shift are hopefully blended together in  
23 the best possible fashion.

24 The leadership capabilities and technical  
25 capabilities of respected individuals on the shifts are matched

870.06.11

1 insofar as our ability to judge those.

2 The shifts are typically changed through promotion,  
3 through resignation, through sickness, those types of factors  
4 which tend to get people off their shift and onto another  
5 shift, or bounce the leadership of the various shifts around.

6 Other situations that could change that would be a  
7 situation where the shifts would rotate on a 5-section basis  
8 and the shift supervisors or foremen might rotate on a  
9 6-shift basis, or vice versa.

10 That type of situation could also vary the shift.

11 BY MR. HAYNES:

12 Q Mr. Seelinger, with respect to this naval board for  
13 the oral examination of operators, why do you think that would  
14 be a better indication of a person's ability to operate the  
15 plant?

16 Is that because a fellow has to have a higher  
17 level of knowledge to pass that board? Or why?

18 A I would say that when one is subjected to the talents  
19 and questions of four individuals, as opposed to the talents  
20 and questions of one individual, he has to perform to a  
21 higher level to look as good in front of all four.

22 Further, I think that the range and breadth of the  
23 questions that he would get from four individuals would be  
24 different than what he would get from one individual.

25 Further, while one individual questioner is asking

870.06.12

1 questions, three other questioners can be thinking of questions  
2 they want to ask, or thinking of lines of questioning they  
3 want to pursue.

4 I consequently feel that the examination would be  
5 a further in-depth examination in that it would definitely  
6 put more pressure on the licensee or prospective licensee  
7 facing that type of situation.

8 Q As I understand it, then, the fellow who  
9 successfully passes the four-member board examination would  
10 have to have a higher level of knowledge to successfully  
11 pass that board than he would an NRC oral examination.

12 A He potentially would have to have a higher level of  
13 knowledge. I think that the board would test his composure  
14 perhaps more than one examiner would test his composure.

15 I think, again, to go back to the fact that a  
16 psychologist may tell me I'm all wet, I don't really -- let  
17 me rephrase that.

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LRW

1 I think an individual's composure under a stress-type  
2 situation is important. I think we showed that during the  
3 TMI-2 accident.

4 Q All of these fellows had successfully passed a  
5 naval board examination, had they not?

6 A All our operators were not navy operators here at  
7 TMI.

8 Q The ones that were involved in the accident that  
9 night.

10 A I don't know. I don't know if all the people that  
11 were involved that particular night were navy operators.

12 Q Navy-trained operators.

13 A Perhaps the control room operators and shift  
14 supervisor and foreman were navy-trained. There were  
15 certainly individuals involved at various stages of the  
16 accident that were not all navy-trained or had not all been  
17 through an oral board-type situation in the navy at various  
18 phases in the accident.

19 Not that that is any key whatsoever, but to set the  
20 record straight, I am looking very seriously at implementing  
21 oral board-type criteria within our own in-house training  
22 program here at TMI.

23 MR. FRAMPTON: Let's take about a 10-minute  
24 break.

25 (Brief recess.)

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LRW

1 MR. FRAMPTON: Back on the record.

2 BY MR. FRAMPTON:

3 Q I asked you to read a portion of what I will have  
4 marked as Exhibit 5.

5 (Seelinger-5 identified.)

6 BY MR. FRAMPTON:

7 Q This is an NRC memorandum relating to the  
8 distribution of operating experience documents to Met Ed.  
9 The portion that I asked you to read was a description of  
10 the Davis-Besse transient that occurred in September 1977,  
11 contained in an NRC newsletter called "Current Events Power  
12 Reactors," that was published in December of 1977. The  
13 description is under a category called "valve malfunctions"  
14 on pages 2, 3, and 4 of that newsletter.

15 My question is: If you had received that and reviewed it  
16 before the accident here and had it pointed out to you that  
17 this was of some interest, is it possible for you to go back  
18 and put yourself in that time frame at this moment and give  
19 us some indication of whether you think that would have been  
20 adequate to alert you to any changes or notifications that  
21 might have been appropriate in TMI-1 and -2?

22 A Well, it is very difficult to take yourself  
23 backwards in time and put yourself in the framework in your  
24 mind in the pre-accident framework and then talk objectively  
25 about what you now see.

870 07 03

LRW

1 Q I understand that. I am certainly not asking you  
2 this question to pin you down. I am really asking the  
3 question to try to get some sense of whether you think that  
4 this sort of description is useful information to someone.

5 A The description is useful, but it is not  
6 sufficient in itself to understand exactly what happened.

7 In getting this, I think one of the things we would have  
8 done would have been to insure that our documentation of  
9 checks that had been performed on the electromatic relief  
10 would have been sufficient to show it opened and reset  
11 properly and at the proper set points. That's a fairly  
12 obvious kind of thing. It doesn't get into the downstream  
13 events that happened at Davis-Besse.

14 There are a couple of interesting statements in it  
15 relative to the downstream events that showed pressurizer  
16 level increasing while pressure was dropping. Certainly, in  
17 the post-TMI-2 scenario, that is somewhat enlightening. I  
18 tend to like to believe that they also would have been  
19 enlightening enough prior to that time to have us probe  
20 further. Without a strip chart or without more of an  
21 analysis of the transient, it would have been difficult to  
22 have this writeup and presented to operators in a training  
23 scenario and said watch out for this kind of thing because  
24 it could happen at TMI-2 or TMI-1. There just isn't quite  
25 enough there.

5870 07 04

LRW

1           There is an interesting statement about the pressurizer  
2 level starting to increase after saturation conditions are  
3 reached because of the steam in-surge. Excuse me, the  
4 formation of steam in the RCS caused an in-surge of water  
5 into the pressurizer. That perhaps is a concept we have  
6 never talked to pre-TMI-2 to our operators about. We might  
7 have been able to get enough from this to ask enough  
8 questions to teach that concept properly.

9           This, in itself, I don't think would have been  
10 sufficient, but it could well have been sufficient for us to  
11 have asked enough questions that we could have been smarter  
12 prior to TMI-2.

13           Q           For example, asking for the LER, itself, or other  
14 documentation?

15           A           Yes, or going back to B&W or Davis-Besse and  
16 seeing if they had anything relative to the transient that  
17 could have further explained it. With today's line of  
18 thinking, I am sure we would do that. I am inclined to  
19 think that we probably would have done it beforehand, but I  
20 can't say that with a hundred-percent certainty.

21           Q           Now I would like to turn to March 28, 1979. I  
22 believe you testified before in some detail about the events  
23 of that day, your participation. I don't want to go over  
24 all of the details there. I believe that you arrived in the  
25 Unit 1 control room a little bit before 7:00 o'clock in the



LRW 1 morning, is that right?

2 A That's correct.

3 Q You went there because you knew that there was a  
4 site emergency and because your emergency station as the  
5 alternate superintendent was to go to your unit and make  
6 sure it was doing what was necessary to support the unit  
7 having problems.

8 A That's correct.

9 Q Did you know, when you arrived in the Unit 1  
10 control room or shortly thereafter, that an emergency  
11 control station had been set up or was about to be set up?  
12 What did you know about the location of the ECCS at that  
13 time?

14 A Frankly, I don't remember. I don't remember if,  
15 at that time, the ECCS had shifted to the Unit 1 control  
16 room or if the ECCS was still at the health physics control  
17 point in Unit 1, where the normal emergency control station  
18 is for both units.

19 Q It would appear that the ECCS was about to be set  
20 up at the health physics access control.

21 A From the announcement on the page, my assumption  
22 was at the time that that's where the ECCS would be set up.

23 Q Did you know, as a result of drills, that that's  
24 where it ordinarily would be set up?

25 A That's ordinarily where it is, yes.

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1 Q Did you have any contact with the ECCS when you  
2 went over to the Unit 2 control room about 8:00 in the  
3 morning?

4 A I don't remember.

5 Q I think you said when you went over to the Unit 2  
6 control room, you found some 20 to 30 people in the control  
7 room. Is that a fair statement?

8 A That's a fair statement. It was probably more  
9 like 20 than 30.

10 Q Did you have some conversation there with  
11 Mr. Miller concerning the status of the plant?

12 A Yes.

13 Q How about Mr. Ross? Did he participate in that  
14 conversation?

15 A Yes. We had several conversations regarding plant  
16 status.

17 Q What do you recall learning about the plant status  
18 in the eight to nine a.m. time frame?

19 A Well, at that time we knew that we had a full  
20 pressurizer. Situations changed during the day, so I could  
21 have my times screwed up. I think pressure was still  
22 reasonably low at that point in time, although it cycled  
23 between low and quite high during the period of time I was  
24 in the Unit 2 control room. It seems to me it was shortly  
25 after 8:00 o'clock in the morning -- no, forget that. I

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1 don't think we had any of the reactor coolant pumps  
2 operating at that time.

3 The hot leg temperature was off-scale high. Cold leg  
4 temperature, I don't remember the values of it, but I'm sure  
5 they are well documented.

6 One of the early conversations was, in realizing that  
7 what flow we had through the core, it was extremely  
8 limited. The sensors that we had in terms of hot and cold  
9 leg temperature were not necessarily representative of the  
10 conditions we had. One of the early conversations was to  
11 try to get a readout from the in-core thermocouples to  
12 determine the temperature conditions inside the core.

13 Another thing early on that one of those conversations  
14 discussed was high-pressure injection and what we should do  
15 about it or whether we should leave it on or throttle it or  
16 exactly how we should handle that situation.

17 Offhand, those are the only two specific conversations  
18 that I remember regarding the plant, although I am sure I  
19 was probably involved in two or three more discussions that  
20 morning.

21 Q With respect to throttling the high-pressure  
22 injection, a decision was made -- I think you have testified  
23 to that -- and rather quickly changed.

24 A That is correct. We realized, to add a note of  
25 explanation, shortly after our decision, within a minute or

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1 two minutes, that we didn't understand our situation at the  
2 time, didn't know what conditions we had, and that the  
3 high-pressure injection system was designed for an accident  
4 scenario, and although the pressurizer was full, until we  
5 better understood our situation, we reversed our decision  
6 and decided to leave high-pressure injection on.  
7 High-pressure injection, as a result of that decision, was  
8 not taken off.

9 Q Was there any discussion at that time about  
10 whether the core was really covered, or was there any  
11 concern about that?

12 A I just don't remember.

13 Q But you were aware there was some significant  
14 problem about reduced flow through the core, or thought  
15 there might be.

16 A Well, we didn't have any flow with the reactor  
17 coolant pumps. Natural circulation, because of the hot leg  
18 temperature being off-scale, was highly questionable. It  
19 was pretty obvious we didn't have any flow to speak of.

20 In terms of coverage of the core, we obviously had some  
21 very significant radiation problems. Those radiation  
22 problems come from something like uncovering of the core, so  
23 whether it was still uncovered or whether it had ever become  
24 partially uncovered, I think it was probably in our minds  
25 that at one time it at least suffered some amount of

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1 uncover. The exact status of it at that time we were  
2 fighting to determine.

3 Q Do you recall knowing at that point that the PORV  
4 had been open or probably open for over two hours?

5 A I don't recall at that time.

6 Q Do you have any recollection or do you know  
7 whether that information was later communicated to  
8 Mr. Miller?

9 A I don't know.

10 Q Do you remember when you first learned that the  
11 PORV had probably been opened for almost 2-1/2 hours?

12 A I don't recall when I first learned that. I first  
13 got a pretty fair inkling of what had led up to the events  
14 that led to our situation, at about 9:00 o'clock in the  
15 morning the following morning, from one of the people in the  
16 Service Corporation in GPU.

17 Prior to that time, during the day, what had happened  
18 during the hours between 4:00 in the morning and 9:00 in the  
19 morning in terms of putting an entire picture together, I  
20 wasn't privileged to sit down and talk about that because we  
21 didn't have time to talk about that with the situation at  
22 hand.

23 Q I understand that I may be asking the wrong  
24 question to you in terms of what your responsibilities were  
25 there that morning, but what I am getting at is the question

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LRW 1 of whether, if that kind of information had been known, was  
2 indeed known to people who didn't know it, whether they  
3 might have had a better appreciation of what the plant  
4 status was.

5 In other words, do you know when Mr. Miller, for example,  
6 learned that the PORV had been opened for nearly 2-1/2  
7 hours? Did he learn that immediately upon coming on site?

8 A I don't know. I think you are asking the question  
9 of the wrong person.

10 Q Did it come as a surprise to you, or did it change  
11 your assessment of the situation when you learned that valve  
12 had been open for a long time?

13 A I don't think it drastically changed my assessment  
14 of the situation or came as a total shock. Obviously,  
15 something had happened that had gotten us into where we  
16 were, and I well could have learned about it that day.

17 My answer, talking about the next day, was one that put  
18 at least a very preliminary sequence of events together that  
19 showed the first two or three hours in relation to each  
20 other with respect to all the parameters and some of the key  
21 things that had happened to cause us to be where we were.

22 Q When you came in about 8:00 o'clock, were you  
23 aware that the high-pressure injection had been throttled  
24 substantially or turned off during some large portion of the  
25 preceding four hours? Is that something that was discussed

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1 or that you became aware of?

2 A I was not aware of it, no.

3 Q Do you know whether others were aware of it as  
4 part of discussing what the proper strategy was now?

5 A I don't know if others were aware of that or not.

6 Q You mentioned trying to find out information from  
7 the core thermocouples. I think you have testified before  
8 that the printout had question marks for a lot of the core  
9 thermocouples.

10 A That's correct, in-core thermocouples.

11 Q Not the ex-core.

12 A There are no -- in-core thermocouples is what we  
13 are talking about. Yes, that's what I testified before.

14 Q Did you know what that meant?

15 A No.

16 Q Is the computer system at TMI-1 not of a similar  
17 type printout?

18 A It has a similar type printout.

19 Q Did you later learn that that meant either that  
20 the readings were off-scale for the computer or they were  
21 malfunctioning?

22 A No.

23 Q What did you later learn?

24 A Nothing concerning that.

25 Q You don't know to this day what happened?

LRW 1 A I don't know what the question marks meant sitting  
2 here right now. I could make a supposition as to what they  
3 mean, but I don't know.

4 Q I think you mentioned that in some prior testimony  
5 you and Mr. Dubiel made a conscious decision during that  
6 8:00 to 10:00 a.m. time period not to evacuate the site.

7 A That is correct.

8 Q What was that based on?

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1           A.           That was based on the readings that we were seeing  
2 from our on-site monitoring team and in the areas where our  
3 people were mustered on site.

4           Readings were low from the on-site monitoring team, and  
5 at that point we had not reached any of the criteria -- I will  
6 retract that -- I don't remember whether we had reached any  
7 of the criteria in the emergency plan for site evacuation.  
8 However, it was our judgment that with the low readings that  
9 we had on site, there was no need for the site evacuation at  
10 that point in time and the people might be available, still  
11 being on site, to help us with whatever we needed them for on  
12 site as we were able to get better control of what we had.

13           Further, I think we felt a hazard in a sending of them  
14 off site, and it could possibly lend to confusion in terms of  
15 traffic, in terms of people going to the observation center  
16 with respect to the amount of people that were already at the  
17 observation center, and our initial feeling was that there  
18 was no technical requirement at that point in time to evacuate  
19 the on-site people.

20           Q.           Let me go back to the thermocouple readings. The  
21 n-core thermocouples. Do you recall any discussion by other  
22 people about what these question marks meant or what signi-  
23 ficance it had that you were not able to get good readings  
24 out of this?

25           A.           I think we asked one of our instrument control

1 engineers what the question marks meant, and he didn't know  
2 what they meant at that particular time.

3 Q Was that Mr. Porter?

4 A Yes.

5 Q Do you recall during this time period also being  
6 requested to try to get readings with a millivolt meter or  
7 some other instrument?

8 A Yes, I recall him being asked to get readings.

9 Q Do you recall being there when he or anyone else  
10 came back with any readings?

11 A I don't remember if I was there when he obtained  
12 readings, nor do I remember in what time frame readings were  
13 obtained.

14 I do remember that later on, late in the first day or the  
15 second day -- I am inclined to think it was the second day --  
16 we had some readings that were higher than other readings,  
17 and at that time there was a perception on the part of B&W  
18 that those readings were not good readings. In other words,  
19 the numbers that we were seeing -- I don't remember their  
20 relative magnitude -- were misleading. I don't remember the  
21 technical reason for that.

22 I think, subsequent to that time, we decided that perhaps  
23 geometry changes or, for other reasons, those readings might  
24 be reliable after all.

25 Q When you say "B&W," do you mean Lee Rogers?

1 A No, I don't. I mean conversations with Lynchburg,  
2 yes.

3 Q That would have been after the telephone line was  
4 established between --

5 A I don't know the time frame.

6 Q Do you recall whether at any time before these  
7 conversations with B&W, that readings were obtained as a  
8 result of Mr. Porter's effort that were not given credence  
9 by Met Ed people in the control room?

10 A I don't know.

11 Q Do you recall when the first time was that you heard  
12 he had come back with some very high readings from some of  
13 the thermocouples?

14 A I don't recall the timing, no.

15 Q Do you recall whether, during this 8:00 a.m. to  
16 10:00 a.m. time period, the people who had been manning the  
17 ECS turned up in the Unit 2 control room?

18 A Yes. The people who had been manning the ECS did  
19 turn up in the Unit 2 control room, or at least portions turned  
20 up in the Unit 2 control room. The emergency repair party  
21 did turn up in the Unit 2 control room. Nominally, that  
22 was somewhere between 9:00 and 9:30 in the morning. They  
23 turned up in the Unit 2 control room because of the radiation  
24 levels at the health physics control point in Unit 1. I  
25 don't remember the sequence, but eventually the ECS function

1 got transferred to the Unit 1 control room and I thought that  
2 that was somewhere between about 8:00 and 9:00 in the morning.  
3 I could be mistaken. It could have been later than that in  
4 the morning.

5 Q During the period of time in the morning when you  
6 were in the Unit 2 control room, you have said in prior testi-  
7 mony that you were spending some of the time, in effect,  
8 reviewing the procedures, checking to see whether various  
9 procedures were being followed and notifications being made;  
10 is that correct?

11 A That is correct.

12 Q What other tasks besides reviewing procedures on the  
13 one hand and occasionally caucusing with Mr. Miller and others  
14 were you involved in during this time period?

15 A I was involved to a certain extent in the accounta-  
16 bility of people on site.

17 Q Collecting dosimeters?

18 A Well, I wasn't personally doing that, but I was  
19 ensuring that the badges such as this had been collected, so  
20 that our security people could determine who was on site and  
21 who was not on site.

22 One of my other functions in the emergency preparedness  
23 and planning had been to kind of be a backup for Gary Miller,  
24 to just ensure that various things were running as we had  
25 practiced them. I guess you could say I was a fill-in. I

1 filled in wherever there was a weakness at that particular  
2 type of area.

3 I tried to get the status boards going. I was involved to  
4 a certain extent with the communications to try to make sure  
5 that in-house our communications were proper. I tried to  
6 set up to assure that our practice lines of communications,  
7 such that Miller only would talk to only certain people and  
8 certain people would talk to him, that they remained in  
9 effect.

10 I worked with Dick Dubiel in terms of the radiation plume  
11 and whether or not we would evacuate the people on site.  
12 Those were the areas I was chiefly involved with.

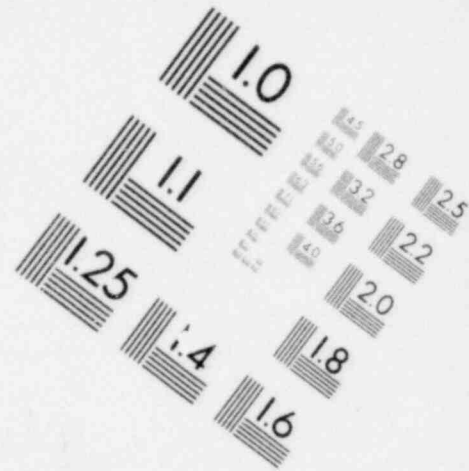
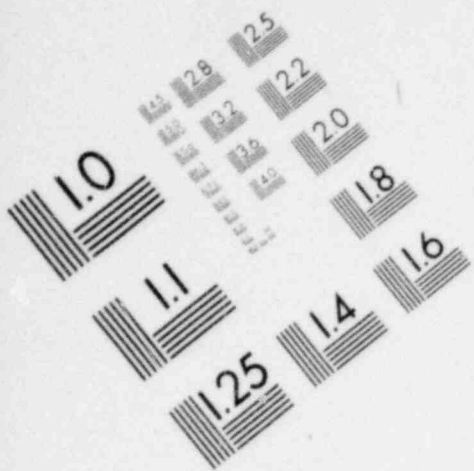
13 Q What was Mr. Logan doing during this time, if you  
14 recall?

15 A He was involved more with the control of the plant,  
16 itself. He was more involved in the plant status than any  
17 other function during that period of time.

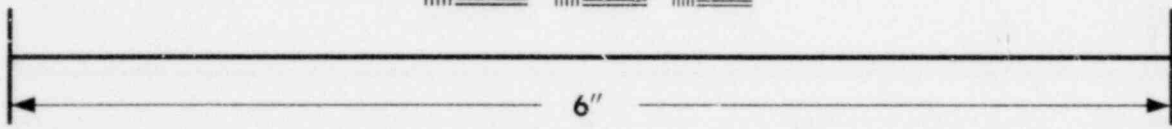
18 There was a period of time also where he was involved, I  
19 think, with reviewing the procedures to ensure we were follow-  
20 ing the emergency plan procedures.

21 Q What was the strategy that was being acted upon  
22 during this time period to try to cool down the plant? Or  
23 did it change?

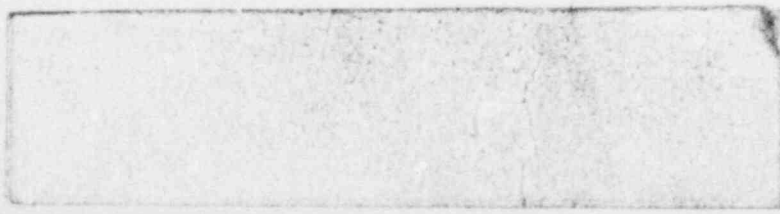
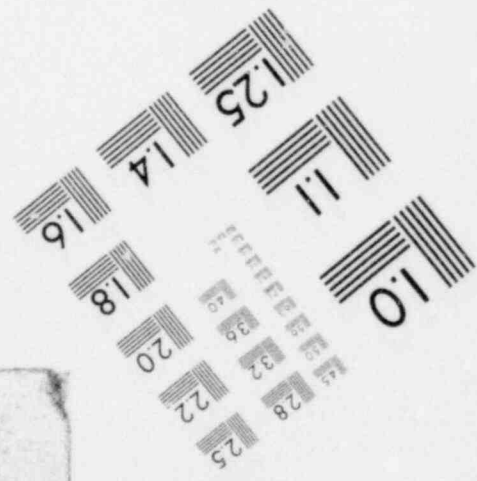
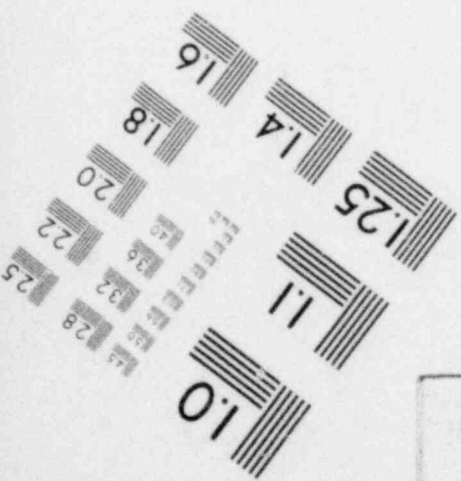
24 A Well, it changed, but I don't remember if it was  
25 when I was there.



**IMAGE EVALUATION  
TEST TARGET (MT-3)**



**MICROCOPY RESOLUTION TEST CHART**



1 We obviously wanted to try to get some flow and some  
2 cooling into the core, because we just didn't know how much  
3 we had and our hot leg temperatures were off scale. Somewhere  
4 along the line, there was a decision made -- and I don't know  
5 that I was still in the Unit 2 control room at that time --  
6 to depressurize, to try to get the core flood tanks to actually  
7 go in over the core. That was done.

8 Q But that may have been initiated after you left?

9 A Yes. I don't remember the timing on that. I would  
10 say that happened somewhere between 10:00 in the morning and  
11 2:00 in the afternoon. Coincident with and following the  
12 core flood tank situation, if I remember correctly, we got  
13 the A hot leg to read back on scale. The B leg remained off  
14 scale.

15 Our next tack, really, for pretty much the remainder of the  
16 day centered around trying to get a reactor coolant pump  
17 running and operating. Once we managed to get the reactor  
18 coolant pump running and operating, which was in the evening --  
19 7:30-8:00 o'clock at night -- we were able to get the other  
20 hot leg back on scale.

21 Our initial thinking was to depressurize, to go on decay  
22 heat -- the decay heat removal system. That turned out not  
23 to be the tack we followed and represented some of the change  
24 in strategy we had throughout the day.

25 Q Let me go back to the 8:00 to 10:00 time period.



1 You said at some time after that there was a decision made to  
2 try to blow all the way down to go on decay heat removal, but  
3 at the time when you were in the Unit 2 control room -- 8:00  
4 to 9:00 o'clock in the morning -- what was the strategy, if  
5 any, that was being followed then? You said you huddled  
6 together with Miller and the other people and were talking  
7 on a couple of occasions to say: All right, where are we?  
8 What do we do?

9 Was there a strategy developed during that time? Here is  
10 what we will do, we will try to do that, or this.

11 A. The strategy -- I just don't remember at this point--  
12 it was so long ago, the strategy was to try to pick out the  
13 individual strategies at various sessions. I frankly don't  
14 remember. I think between about 8:00 and 9:00 in the morning,  
15 after one of our early caucuses, we realized we were going  
16 to have to keep our high-pressure injection on, and we dis-  
17 cussed that here earlier in this deposition. That was one of  
18 our early strategies, to keep high-pressure injection on and  
19 figure what we had and try to figure a way out of what we  
20 had.

21 One of the follow-on strategies -- there may have been  
22 some in between that I don't remember -- was not to go on  
23 decay heat, as you mentioned in this particular question, but  
24 rather to depressurize to the point of having the core flood  
25 tank go in over the core, and that was subsequently done.



1 Again, I don't remember the time frame, but it is well  
2 documented in other testimony and well documented in records  
3 of the plant in terms of the time that actually happened.

4 Later in the day, the strategy became to try to get one  
5 of the reactor coolant pumps on line and to try to get rid  
6 of the bubble in the respective loops.

7 One of the ideas was to get flow through the core and to  
8 get the loops back full again with fluid as opposed to having  
9 a steam bubble in the respective loops.

10 Q. Did the strategy to repressurize and try to get a  
11 reactor coolant pump going become the strategy in the afternoon  
12 prior to the time Mr. Miller came back from the Lieutenant  
13 Governor's office?

14 A. I don't remember.

15 Q. The purpose of depressurizing enough to get the  
16 core flood tanks to get some water into the core, was that  
17 a different distinct goal from the goal of trying to get the  
18 pressure down low enough to get residual heat removal system  
19 in operation? What was the purpose of trying to get the core  
20 flood tanks to go --

21 A. We didn't know if the core was covered, or at least  
22 felt that by putting the core flood tanks in we could assure  
23 we were putting water in to cover the core if the core were  
24 not covered.

25 The core flood tanks also go in prior to getting the

1 pressure down to a point where the decay heat removal system  
2 will take again. The core flood tanks go in at 600 pounds.  
3 You have to go down to approximately 200 pounds to have the  
4 low-pressure injection system working or the neighborhood  
5 of 350 pounds or so to be on the decay heat removal system.

6 Q. If the purpose of going down low enough to get  
7 the core flood tanks to put some more water in the core was  
8 simply to get that additional inventory, why wouldn't precisely  
9 the same goal have been accomplished by increasing high-  
10 pressure injection flow? Or was that already at maximum?

11 A. I just don't remember. I don't know that I was  
12 involved in the discussions at the point when we put the core  
13 flood tank in and I don't know whether it was discussed at  
14 that point.

15 Q. Do you recall whether there was any concern that  
16 these two methods would not produce the same result because,  
17 for some reason, high-pressure injection flow might not get  
18 into the core and cause any kind of flow there, whereas at  
19 least if the core flood tanks opened up, you would be lumping  
20 cold water right into the core?

21 A. I don't know if I was involved in discussions where  
22 that was discussed or not. I think it is very important to  
23 know that the situation at that particular point in time,  
24 while calm because we were in pretty good shape in the area  
25 of handling the emergency off-site and had completed all the

1 actions of our plan, but had not yet had to contend with the  
2 press and other outside agencies such as the political arms  
3 of the state and agencies such as that, with that in hand,  
4 we were still operating under an extreme amount of duress.

5 Things were not sitting in the boardroom and being discussed  
6 as to how we will proceed. Things were tight. We kept some  
7 basic objectives in front of us. Cooling the core, minimizing  
8 release to the public. We tried to continue to uphold  
9 throughout the day. The situation wasn't easy and straight-  
10 forward. We were dealing in a realm where we had never dealt  
11 in before, nor had we ever practiced this in the plant, nor  
12 had this been analyzed before. It was a different type  
13 situation for us.

14 Q I think you had mentioned in some prior testimony  
15 that Mr. Miller had the forethought to get a state police  
16 helicopter to go across the river and do monitoring.

17 A That's correct.

18 Q I believe that helicopter did, in fact, arrive very  
19 quickly and was out there in Goldsboro shortly after 8:00 a.m.;  
20 is that correct?

21 A I don't know the timing, but it was early on after  
22 the request.

23 Q Do you recall when they were calling in on the  
24 radio directly to the control room?

25 A I don't know how they got back to us. I remember

1 hearing a reading back from the helicopter while I was still  
2 in the Unit 1 control room. It was a next to nothing kind  
3 of reading in Goldsboro. This is that the helicopter had  
4 beat the plume to Goldsboro.

5 Q. Do you know whether the helicopter picked up some-  
6 body from the Island to actually perform the monitoring?

7 A. I think that was accomplished, but I don't know.

8 Q. Now when you returned to the Unit 1 control room  
9 around 10:00 o'clock in the morning on the 28th, I take it  
10 that, in effect, the ECS was established or was going to be  
11 established in the Unit 1 control room at that point, is that  
12 correct?

13 A. That's correct.

14 Q. And prior to that, when you first came on the site,  
15 you took some actions which you thought to be necessary to  
16 get things organized that are really ECS functions, such as  
17 getting the gates closed and getting somebody to set up to  
18 answer telephones and so on. Is that a fair characterization  
19 of some of the actions that you took?

20 A. That's a characterization of some of the actions I  
21 took. Whether it is a fair characterization or whether or  
22 not they are ECS functions, I don't know. I recognized the  
23 need to man the switchboard and to immediately close the  
24 gate, and took steps to do both.

25 Q. After you returned to the Unit 1 control room, I

1 think that you have testified in the past that you regarded  
2 yourself as being de facto at least in charge of the ECS  
3 functions, is that correct?

4 A. That's correct.

5 Q. Was that because you were the senior management  
6 person there at the ECS of the people who were doing those  
7 kind of jobs that were there, too?

8 A. That's correct.

9 Q. You weren't necessarily designated by the emergency  
10 plan as the person to coordinate all those activities.

11 A. The formal station for the ECS is not in the Unit 1  
12 control room. I was the senior man where the ECS ended up.  
13 I therefore put myself in charge of the ECS.

14 Q. Were you or people under you, then, primarily in  
15 charge of doing monitoring of off-site releases?

16 A. That is correct.

17 Q. Who was actually running that, coordinating that  
18 at Met Ed?

19 A. Tom Mulleavy did most of that coordination for me.

20 Q. He was receiving the information, or people working  
21 for him were receiving the information back from Met Ed teams?

22 A. That is correct.

23 Q. I think it was about this time that the first team  
24 of NRC people from Region I turned up at the site, is that  
25 right? 10:00 or 10:30 in the morning?



1 A. That is correct.

2 Q. Did you take charge of instructing where those  
3 people should go or could go?

4 A. Yes.

5 Q. And I think that you testified that you permitted  
6 two of them to go over to the Unit 2 control room.

7 A. That is correct.

8 Q. The others who were going to stay there could stay  
9 in Unit 1.

10 A. That is correct.

11 Q. Did they have teams monitoring or a team out monitor-  
12 ing, too?

13 A. Not at that time.

14 Q. They did not.

15 Do you remember when the first NRC monitoring started?

16 As best you can recall. I am talking about off-site releases  
17 now.

18 A. Some time during the afternoon or -- early or late  
19 afternoon, I believe there was a flight by the ERDA plane  
20 that had monitoring capability, which, as far as I know, was  
21 the first governmental type monitoring from a federal agency.

22 As far as the NRC setting up any off-site teams or bringing  
23 us any off-site readings, that could have happened in the  
24 afternoon. I don't know that it did. I do know that I got  
25 readings from an NRC inspector who came into the Unit 1 control

1 room approximately 8:00 in the evening, Carl Plumlee, who  
2 had been on Pennsylvania 230 in the area of the Harrisburg  
3 International Airport and had readings from his own personal  
4 monitoring equipment.

5 Q Were you keeping on top of more or less what the  
6 results were from the off-site monitoring teams during the  
7 day?

8 A Yes.

9 Q So you were relying principally on your own teams  
10 and on the ERDA/DOE airplane -- helicopter?

11 A Yes.

12 Q You had an open line to the Bureau of Radiological  
13 Health in Harrisburg.

14 A That is correct, yes.

15 Q From the Unit 1 control room.

16 A That is correct.

17 Q You were passing information on off-site readings  
18 to them.

19 A Yes. We passed some information on off-site readings  
20 and some information in terms of plant conditions from Unit 2  
21 that we received from the Unit 2 control room.

22 Q At least on the first day, as far as you are  
23 concerned, there was no input from NRC monitoring teams in  
24 cars or vans or whatever.

25 A I don't remember any coming into our communications

1 network. There well could have been, but I don't know of any.

2 Q How did you perceive the role of the NRC people  
3 who were there at the Unit 1 and Unit 2 control rooms? What  
4 did you think their function was?

5 A I hoped that they had been there to help, because  
6 we needed at that time all the help we could get. I made it  
7 quite clear to the NRC people in the Unit 1 control room --  
8 one of them was Dr. Gallina, that had been an inspector of  
9 ours on emergency planning inspections -- if he saw anything  
10 at all he thought we could do differently, to please come  
11 forward and tell us, because we needed anything we could get  
12 in terms of assistance or help; not to be bashful.

13 I don't remember anything that he came and specifically  
14 pointed out to us. He well may have done so, either to me  
15 or other people that particular day, but there certainly  
16 wasn't very much of that that went on. Most of the role was  
17 that of an observer.

18 Q Is that a passive role, would you say?

19 A Most of the role was passive, almost entirely  
20 passive.

21 Q Did you understand he was there to report informa-  
22 tion of some kind back to someone else, back to NRC?

23 A I think there was an effort made to do that on  
24 the part of the NRC. I don't know how significant that  
25 effort was. I felt that with the NRC being on site, that



1 my obligation in terms of keeping the NRC informed was to  
2 keep the man next to me on site from the NRC informed insofar  
3 as I could.

4 In terms of having to make any subsequent reports to the  
5 King of Prussia office that one would normally make if he  
6 had, say, an abnormal -- I should say a licensee event report  
7 kind of thing -- and I felt like I would be telling the man  
8 right next to me, and from there on that was his bag. I had  
9 told the NRC once I had done that. That's the role our  
10 inspectors typically take. I am obligated to tell an NRC  
11 inspector if I have a licensee event report. Usually I tell  
12 the principal inspector. If I can't get him, I would tell  
13 another inspector. That would be such.

14 Q Who was the principal inspector?

15 A Don Haverkamp.

16 Q Did you talk to him at all on the phone during the  
17 day?

18 A I don't remember if I talked to him that day or not.  
19 I don't remember if he was on site that day or not.

Q He wasn't on site that day. Really, what I am  
getting at is: Were you surprised he wasn't? Did that  
register with you at all?

A Not directly. One inspector I was surprised not  
to see on site was Dale Donaldson, who had been our recent

1 inspector in the emergency planning area. I felt like he  
2 had usually had a number of comments for us in this particular  
3 area and that we had taken pains to make sure we had satis-  
4 fied his critiques of our situation. I felt kind of  
5 surprised not to see him.

6 Q. Did any of the NRC inspectors from Region I who  
7 were in either control room during Wednesday or Thursday  
8 make any suggestions or strong comments contrary to what you  
9 were doing at the time?

10 A. Strong comments, I remember none. Their role was  
11 definitely a passive role.

12 Q. Any comments or suggestions in the --

13 A. There may have been some low key suggestions,  
14 because we certainly welcomed them to make such comments and  
15 suggestions. We certainly included them in any discussions  
16 we had. I would say that the relationship was entirely open  
17 100 percent in terms of the flow of communications. There  
18 may have been occasions when we knew of something that was  
19 going on that was not specifically pointed out to the NRC  
20 inspector, but that would have been, in my judgment, his  
21 fault rather than my fault -- I'm using "my" collectively --  
22 the fault of the person in charge at the particular time,  
23 because it was openly going on in his presence. If he didn't  
24 understand it, he could have asked questions about it.

25 Q. Do you think the people who were there from the

1 NRC in the plant on Wednesday and Thursday knew enough about  
2 the plant to be able to observe or report effectively on what  
3 was going on to their own superiors?

4 A. I don't feel the reporting that was done, in  
5 retrospect, was adequate.

6 Q. To NRC?

7 A. To NRC. Not from Met Ed to NRC. I feel that was  
8 adequate. In terms of NRC to NRC, I don't feel that was  
9 adequate. But it was a situation that had not been conceived  
10 before in terms of what type of telephone lines were manned  
11 in the early hours. I don't think NRC was equipped nor had  
12 their chain of command ready and able to cope with the situa-  
13 tion from an information flow standpoint.

14 I think that also was one of the hardest things we faced  
15 during the accident. Our emergency plan, I think we did almost  
16 everything just about right. Our problem was that our emer-  
17 gency plan stopped when it came to the communications. That's  
18 something where our plan would be handled by the Met Ed  
19 communications department. It, by no means, was able to handle  
20 or cope with the technicalities of the situation and the  
21 dynamics of the situation, nor the social implications of the  
22 situation at hand.

23 I don't feel the NRC was able to cope with it in-house.

24 Q. Wasn't there an open telephone line rather early  
25 on from the Unit 1 control room to King of Prussia's NRC

1 control room?

2 A I don't remember. I know I had one with the  
3 Bureau of Rad Health from the shift supervisor's office.  
4 Whether or not I had one -- I think that the inspectors that  
5 came in from King of Prussia established that line in the  
6 shift supervisor's office in Unit 1. I don't know that for  
7 a fact.

8 Q Do you recall receiving a lot of questions, either  
9 from the NRC inspectors there on Wednesday or relayed from  
10 others in NRC through them, about plant status, off-site  
11 readings, or other matters?

12 A I recall very few questions being directed to me,  
13 very few. That could have been because of the dynamics of  
14 the situation, because I was pretty busy in terms of directing  
15 what was going on. But it also could have been that it was  
16 fairly obvious to the NRC, and they were able to get the  
17 information without asking.

18 Q In the early afternoon of Wednesday, the 28th,  
19 Mr. Miller and Mr. Kunder, I believe, were instructed to go  
20 brief the Lieutenant Governor, is that correct, according to  
21 your recollection?

22 A They did go brief the Lieutenant Governor, that is  
23 correct. What instructions they received, I don't know.

24 Q Shortly thereafter, you were asked to come over to  
25 the Unit 2 control room.

1 A. That is correct.

2 Q. By Mr. Ross.

3 A. That's correct.

4 Q. Do you think that he wanted some technical expertise  
5 from you or psychological support or what was his purpose in  
6 asking you to come over there?

7 A. I felt like he wanted organizational expertise.  
8 At least that was the role I tried to follow when I got there.  
9 I had practiced the emergency drills that we had here at the  
10 plant since 1974 and had been instrumental in organizing some  
11 of our approaches to the particular emergency drills, and  
12 instrumental in some of the internal communications that were  
13 set up.

14 Consequently, when I arrived at the Unit 2 control room  
15 for the second time, I tried to make sure those lines of  
16 communication were established and moving, and tried to make  
17 sure we were showing progress along those lines and that we  
18 were actively forward as we had been doing before that day.

19 Q. Do you recall what the plant situation was when you  
20 went back to Unit 2 around 2:00 or 2:30 in the afternoon?

21 A. I don't know that I recall it from being briefed on  
22 it again when I came into the control room or recall it from  
23 reading through the sequence of events to know what it was  
24 at that point in time. At this point, I know that at that  
25 time we had a hot leg temperature indication on scale in the



1 A loop and it was still off scale in the B loop. Pressure  
2 I don't remember.

3 Q Was the strategy at that time still to depressurize  
4 it?

5 A I don't believe it was.

6 Q What do you recall about what the strategy was at  
7 that time?

8 A At that time, I think we were still shooting for  
9 reactor coolant pump, trying to make preparations to get one  
10 on line.

11 Q Do you know where that strategy came from, if  
12 anywhere? Where it originated?

13 A I don't know where it originated. We didn't have  
14 flow in the B loop, or at least, if we had flow, it wasn't  
15 doing too much with the hot leg temperature indication in  
16 terms of bringing it down. Consequently, we felt if we could  
17 get flow in the B loop and get rid of the bubble, the bubble  
18 we felt was in the B loop, that could get us a little way  
19 towards reestablishing flow conditions in the core and solving  
20 some of our immediate problems.

21 Q Was there any discussion while you were there about  
22 a pressure spike in the containment?

23 A I don't remember.

24 Q You couldn't rule that out, though? You couldn't  
25 rule that out? You don't recall one way or another? You

1 think you probably didn't hear anything about it?

2 A I think I heard about it on subsequent dates, as  
3 opposed to that day. Knowing from the sequence of events  
4 what time it happened, I was not in the control room when it  
5 happened, in the Unit 2 control room.

6 Q When you were over there, were the NRC inspectors  
7 who were in the control room in evidence at all? Were you  
8 aware that they were there?

9 A I was aware they were there.

10 Q Were they making any contribution to plant strategy  
11 or simply observing?

12 A Their role was a passive role at that time.

13 Q Was that Mr. Higgins?

14 A I remember him.

15 Q And Mr. Baunack?

16 A I don't know if Mr. Baunack was there at that time  
17 or not. There were two people there.

18 Q Higgins was one, for sure?

19 A Higgins was one.

20 Q Do you recall them taking any position on any  
21 particular strategy?

22 A No.

23 Q Do you recall about the time you came back to the  
24 Unit 2 control room, or shortly before that, there was a  
25 decision made to stop steaming through the steam relief

1 valves?

2 A State that question again, please.

3 Q Do you recall that a decision was made while you  
4 were in the Unit 2 control room, or had been made shortly  
5 before that, to stop steaming through the steam relief valves?  
6 Perhaps I am using the wrong name.

7 A You're close enough. I do remember that we had  
8 decided to stop steaming through the atmospheric relief  
9 valves. I don't remember the timing, what time of the day  
10 that happened.

11 Q What do you recall learning at the time about who  
12 made that decision and the reasons for it?

13 A Well, I remember that the public was being very  
14 concerned about radiation coming from Three Mile Island and  
15 steam coming from Three Mile Island. One can kind of look at  
16 something being emitted and draw the correlation that that  
17 was perhaps a radioactive cloud of steam from the discharge  
18 of the atmospheric relief valves.

19 There was a certain amount of political pressure to stop  
20 steaming from the atmospheric relief valves. From whence  
21 the actual decision came, I think it came from off site and  
22 was, I think, transmitted to Gary Miller. But I don't know  
23 either of those things to be fact. That is supposition on  
24 my part.

25 I also know that coincident with our stopping steaming,



1 we regained vacuum and were able to steam to our condenser,  
2 so, consequently, we didn't lose the capability to steam.

3 Q How do you know that?

4 A I remember it happening.

5 Q When you say you didn't lose your capability to  
6 steam, was getting the condensers and the use of the steam  
7 generator back, in effect, did that give you an effective heat  
8 sink or not?

9 A We never lost the steam generator. The atmospheric  
10 relief valve comes off the steam generator just as the  
11 turbine bypass valves came off the steam generator. In terms  
12 of an effective heat sink, it was doubtful whether it was an  
13 effective heat sink either way, because of the flow situation.

14 BY MR. HAYNES:

15 Q What was forming the steam in the steam generator?

16 A What was forming the steam in the steam generator?

17 Q Was there a heat transfer taking place or was that  
18 just the heated water that had been staying in the steam  
19 generator? I mean, if there is no circulation through the  
20 loop.

21 A Well, I don't remember the sequence relative to  
22 getting the A loop back on scale. In terms of the hot leg  
23 temperature -- where that was relative to our steaming from  
24 the atmospheric relief valve -- if the A loop was on scale,  
25 that says that I did have some natural circulation through

1 the A loop. Consequently, I did have some heat sink through  
2 those two and I just don't know the sequence without looking  
3 at it here in front of me. So I can't directly answer the  
4 question.

5 Q Then the steam generator, there was a body of water  
6 there that was hot?

7 A That's a true statement. It depended on the  
8 pressure. One could definitely form steam.

9 Q And blow that down for a while?

10 A That's right.

11 Q Even though you don't have any circulation in the  
12 loop?

13 A That's right, plus the metal is going to retain  
14 heat for a good long period of time, and also heat up some  
15 of the water that one would put in.

16 MR. FRAMPTON: Let's stop and go off the record.

17 (Discussion off the record.)

18 MR. FRAMPTON: On the record.

19 BY MR. HAYNES:

20 Q Back for a minute, Mr. Seelinger, you said that when  
21 the atmospheric relief valves were closed, that the inner  
22 vacuum was reestablished and the steam flow was reestablished  
23 going to the condenser. How did you confirm that steam was  
24 in fact being discharged down the steam pipes into the  
25 condenser?

1           A.       I don't know if it was confirmed. I wasn't  
2 involved in that confirmation. I think it is a natural  
3 assumption that steam is going out the atmospheric reliefs,  
4 and one gets his vacuum back and the steam is going to be  
5 somewhere, and that will be to the condenser. There are  
6 ways that it could be confirmed, involving listening to flow  
7 in the line, seeing what the temperature of the pipes are  
8 that would be containing the steam, looking at the level  
9 changes in terms of the feed flow into the steam generator,  
10 and seeing what the level change is as a result of that feed  
11 flow, which implies the steam would be going someplace.  
12 Those things would collectively confirm that they did in  
13 fact have steam going in the condenser.

14           Q.       At that time you did not do that type of confirming?

15           A.       I don't know if it was done.

16           Q.       You did not?

17           A.       I personally did not.

18           Q.       Thank you.

19           BY MR. FRAMPTON:

20           Q.       Did you remain in the Unit 2 control room on  
21 Wednesday until Mr. Miller came back?

22           A.       Yes.

23           Q.       Then you went back to Unit 1?

24           A.       Yes.

25           Q.       Did you remain there the rest of the evening?

1 A. No.

2 Q. What did you do during that evening?

3 A. Somewhere around 9:00 or 10:00 o'clock, I came back  
4 to the Unit 2 control room. I remained in the Unit 2 control  
5 room until about 3:00 in the morning the following morning.

6 Q. Who left at about 3:00 a.m. when you left?

7 A. Gary Miller left. I left. I think Lee Rogers  
8 left at the same time we left. I don't remember who else  
9 left.

10 Q. At that time, who was left in charge?

11 A. Joe Logan was in charge in the Unit 2 control room  
12 when I left.

13 Q. Would you say that he was the top person in charge  
14 of the plant or would it have been somebody from Mr. Herbein's  
15 group at the observation center?

16 A. Joe Logan was the person in charge on site of the  
17 plant. That doesn't say that he didn't have close liaison  
18 with the observation center. We had established that early  
19 on in the day in terms of a person being in charge on site.  
20 He was the person.

21 Q. Was there some shift system then set up for  
22 operating the plant?

23 A. Yes.

24 Q. Was that before you left on that night?

25 A. No. That was on the following day, after we came

1 back in.

2 Q Okay. That system was what? Why don't you describe  
3 it for us?

4 A That system varied a little bit during the first  
5 two to three days as it was getting started, but it basically  
6 was two shifts of people such that the shifts stood 12 hours  
7 on and 12 hours off, and the entire shifts were in the early  
8 days of the accident organized in that fashion.

9 Q Well, you and Mr. Miller traded off shifts?

10 A That is correct.

11 Q 12 hours on and 12 hours off.

12 A That is correct.

13 Q Was that a capacity of emergency director or, in  
14 effect, a station superintendent, back and front shifts?

15 A Effectively, the name is somewhat immaterial, but  
16 the function you have described is correct. It was somewhere  
17 between shift emergency director and station superintendent  
18 on the two respective shifts. We started those shifts the  
19 day following the accident and our shifts eventually relieved  
20 6 hours off the other shifts such that we relieved at by, I  
21 think, the Friday following the accident or the Saturday  
22 following the accident, we were in a position where we  
23 relieved at 6:00 in the morning and 1800 at night. The other  
24 shifts relieved at 12:00 noon and 12:00 midnight.

25 Q You were on from 6:00 p.m. to 6:00 a.m.?



1 A Yes.

2 Q Under you and Mr. Miller, the shifts for running  
3 Unit 2, who were the two people who were in effect the shift  
4 supervisors there? Is that Mr. Ross and Mr. Floyd?

5 A Mr. Ross and Mr. Floyd were on opposite shifts.  
6 Mr. Toole and Mr. Logan, I think, were on opposite shifts.  
7 And Mr. Tsaggaris and Mr. Potts were on opposite shifts in  
8 the emergency control station.

9 Q Which was still at that time in the Unit 1 control  
10 room.

11 A Yes.

12 Q When did you return to the site on Thursday, the 29th?

13 A Approximately 9:00 a.m.

14 Q Were you there all day on Thursday?

15 A Until about 2:00 a.m. the following day.

16 Q Where were you and what were you doing, as best  
17 you can recall, on Thursday?

18 A I spent a good share of the morning from about  
19 10:30 or 11:00 until 1:00 or 2:00 o'clock in the afternoon  
20 in the Unit 1 control room, trying to ascertain the status of  
21 the ECS and ensure the ECS was operating properly. Then I  
22 went to the Unit 2 control room and spent the remainder of the  
23 day in the Unit 2 control room.

24 In terms of physically what I was doing, I don't remember  
25 the specifics. I was directing the activities of the shift,

1 trying to accomplish certain evolutions consistent with the  
2 goals that we had established for ourselves in terms of  
3 containing the radioactive fluid and gas that had been  
4 generated, and in terms of keeping the core and the reactor  
5 coolant system in a stable condition.

6 Q During the period of time that you were in the  
7 Unit 1 control room the first half of Thursday, were you  
8 coordinating off-site monitoring at all during that time, or  
9 was someone doing that for you?

10 A I don't remember doing too much coordinating of  
11 off-site monitoring. I do remember being involved trying to  
12 figure out and ascertain the status of what had happened  
13 during my absence when I had been sleeping and getting an  
14 adequate status. I became involved in certain evolutions  
15 going on in the control room prior to going to the Unit 2  
16 control room.

17 Q Did Met Ed still have monitoring teams out on  
18 Thursday reporting in?

19 A Yes.

20 Q Do you recall whether there were more -- did Met Ed  
21 have helicopters that had been leased, one or more that were  
22 doing monitoring?

23 A We had helicopters. How they were obtained, I don't  
24 know.

25 Q Do you recall whether there was any DOE monitoring,

1 people who were reporting into the control room, the ECS?

2 A. I don't recall.

3 Q. What about NRC monitoring? Do you recall any of  
4 that?

5 A. I don't recall.

6 Q. Were you aware that a team from NRR in Washington  
7 arrived on Thursday at the site, led by Mr. Vollmer?

8 A. I don't know if I was aware of that or not.

9 Q. From your point of view, was there any perceptible  
10 change in the NRC presence or role on Thursday from what it  
11 had been on Wednesday?

12 A. No.

13 Q. There were still inspectors in the control rooms  
14 observing and reporting back?

15 A. Yes.

16 Q. Was there any increase in the extent to which you  
17 were getting questions from them or from NRC people in  
18 Washington about the status of the plant and so forth on  
19 Thursday?

20 A. I don't remember any marked difference.

21 Q. What were your functions when you moved over to the  
22 Unit 2 control room in the afternoon and evening of Thursday?  
23 What were you doing over there?

24 A. Again, my functions were to direct the progress of  
25 the shift and the status of the plant, to try to keep core



1 cooling and to try and minimize and contain any radioactive  
2 releases to the environment.

3 Q Was Mr. Miller there on Thursday in the Unit 2  
4 control room during the afternoon and evening of Thursday?

5 A I don't remember the time frame that he was on site  
6 on Thursday. I believe he was on site approximately the same  
7 time I was on site on Thursday. In terms of getting ourselves  
8 into a two-section watch rotation, that happened either late  
9 Thursday or Friday.

10 Q Would you say that things were relatively calmer  
11 on Thursday than they had been on Wednesday?

12 A They were not calm. We had better control of the  
13 plant on Thursday than we did on Wednesday.

14 Q There was a feeling that the plant was more stable?

15 A The plant was more stable, without question. The  
16 release situation was still not well in hand.

17 Q Were you aware during Thursday afternoon or evening  
18 or late at night before you left that releases were occurring  
19 as a result of the transfer of liquids or gases in the  
20 auxiliary and fuel-handling buildings?

21 A Releases were in progress, just from looking at the  
22 radiation monitor equipment, most of which was off scale or a  
23 good share of which was off scale. In terms of, at that point,  
24 being able to correlate releases to specific evolutions being  
25 performed with water and/or gas transfer within the auxiliary

1 building or fuel-handling building, I don't think that on  
2 Thursday we had yet been able to perform that correlation.

3 Q So you don't think as of Thursday night you were  
4 aware that a specific action such as intentional venting of  
5 the makeup tank was correlated with releases up the stack that  
6 could be observed by helicopter or some other way?

7 A It was certainly not correlated to the point it was  
8 correlated on subsequent days. There were undoubtedly initial  
9 indications that subsequent data proved that the correlation  
10 existed that would have occurred on Thursday. Whether or not  
11 we were fully aware of the implications of a higher pressure  
12 in the makeup tank, causing more of a release, I don't know.

13 Q Was there concern on Thursday about gas or pressure  
14 building up in the makeup-letdown system?

15 A Well, there was definitely concern. As pressure  
16 builds up in that system, it tends to impede the letdown flow  
17 within the reactor coolant system. The letdown flow eventually  
18 ends up in the tank in which that pressure buildup was occur-  
19 ring. So there was a definite concern and the need was  
20 recognized to vent that tank to the vent header, subsequently  
21 into the waste gas system. Eventually, the concern, which is  
22 well documented, became known that there was a large amount  
23 of gas.

24 Depressurization caused the gas to come out of solution and  
25 a resting place for that gas had to be found. That resting

1 place eventually ended up being the containment building after  
2 piping was installed to port the gas to the containment  
3 building.

4 Q Specifically, were you aware on Thursday night or  
5 early Friday morning, before you left, that the operators  
6 were periodically venting the makeup tank in order to keep  
7 the pressure down so as not to degrade the letdown flow?

8 A I was probably aware of that. I don't remember  
9 sitting here.

10 Q Do you recall your making any connection or anyone  
11 else making any connection between that periodic venting and  
12 periodic puffs, releases into the atmosphere?

13 A I don't remember relative to Thursday.

14 Q You remember that clearly being a concern on  
15 Friday?

16 A I remember that clearly being a concern on subsequent  
17 days, but which days, I don't know.

18 Q And you recall leaving at 2:00 o'clock in the morning  
19 or something like that on Friday morning.

20 A Yes.

21 Q When did you return to the plant?

22 A About 10:30 on Friday morning.

23 Q And then you shortly thereafter left.

24 A I think I left about 4:00 or 5:00 in the afternoon.

25 Yes, I think I left about 4:00 or 5:00 in the afternoon.

1 Q Had you come in in anticipation of taking a shift  
2 beginning noon on Friday?

3 A Yes, and somehow we swung on two shifts. I have not  
4 been able to reconstruct that in my mind, how we did that.  
5 I tried to do that and I don't remember how we did that.  
6 Eventually, I ended up on the 6:00 o'clock at night until  
7 6:00 in the morning shift, through a period of a couple of  
8 days of swinging on shifts.

9 Q Did you become aware of an increased NRC presence  
10 on the site on Friday when Harold Denton and a large number  
11 of other people from White House communications arrived? Did  
12 that make any impact on the plant operations or the operation  
13 of the ECS?

14 A Not to my knowledge.

15 Q In some previous testimony, you made a remark about  
16 it being obvious that within the NRC, I&E, and NRR, they often  
17 didn't talk to each other. Was that a general comment based  
18 on experience with the NRC or does that arise out of the  
19 experience in NRC's response to this accident?

20 A The initial people we had on site, I was familiar  
21 with dealing with the NRC, with the I&E people. I have had  
22 very little dealings prior to the TMI-2 accident with anyone  
23 from the NRR. The people who arrived on site Wednesday were  
24 I&E people. I don't recall any NRR people on site on Thursday,  
25 though they well may have been.

1       Our chief communications, I think, were with the I&E people  
2 on Thursday. It had been our experience in communicating  
3 with one NRC individual in a non-crisis situation that that  
4 was sufficient communication to get the word in to the NRC  
5 hierarchy as far as it had to go in a non-crisis atmosphere.  
6 That, apparently, from news accounts, though I don't know  
7 whether that could be believed, was not totally sufficient in  
8 this case.

9       The I&E people on site were certainly privy to the  
10 information we had available. They were talked to and observed  
11 what we did, what we saw. News accounts from NRR existed in  
12 somewhat of a void of information. That information was  
13 available to NRC people.

14       Q       Did there come a time during the period of Friday,  
15 Saturday and Sunday when there was an increased presence or  
16 control by NRC that you were aware of? A situation had come  
17 about where there was more likelihood of checking with NRC  
18 people in the control room or observation center before any  
19 major actions were taken in the plant?

20       A       By Saturday or Sunday, we had a procedure scheme  
21 set up such that virtually nothing was done without a newly  
22 created procedure and NRC was one of the bodies that reviewed  
23 that procedure. Consequently, from that standpoint, a good  
24 deal of control was exercised over what actions we elected  
25 to take.

1 In terms of who ran the show and in terms of who called  
2 the shots and in terms of what action would be taken, that  
3 was always ours. We never saw NRC take control over that  
4 throughout the entirety of the accident. In the few dealings  
5 with NRR on site, I saw strong suggestions, but never saw  
6 the NRC take control and take command responsibility for  
7 accomplishing items.

8 Q Did the NRC at any point seek to do that?

9 A I don't know.

10 Q From your observation, did NRC people try to keep  
11 hands off and make it appear that they were simply in an  
12 advice-giving or consultative mode?

13 A Their role became more active, as I stated, with  
14 the procedure review.

15 Q How did the procedure review get set up and what  
16 was it?

17 A A group somewhere appeared on site. I'm not really  
18 sure how. NRC reviewed our procedures. The exact mechanism  
19 that was dictated that NRC would review our procedures, I  
20 don't remember, but all of a sudden NRC was there and NRC  
21 was reviewing procedures. There was a shift of NRR people  
22 there that reviewed procedures.

23 Q When you say "there," where were they physically  
24 located?

25 A Initially, in the control room. Eventually, on the



1 turbine floor.

2 Q Do you remember when they appeared in the control  
3 room and undertook this?

4 A I do not, but I would guess that it was in the  
5 Saturday-Sunday time frame.

6 Q And you don't know what arrangements were made to  
7 have that happen?

8 A No.

9 Q Do you know who was in on that or who instructed  
10 you that these people would be in the control room and were  
11 going to be reviewing major things that you did?

12 A I am sure I probably got the word through my  
13 management that that's the way it was. That's the way it  
14 happened.

15 Q Who was the lead person, if you recall, Saturday  
16 or Sunday, when you were there, from NRR in the control room?

17 A One of the shifts I dealt with, NRC was on shifts  
18 as well, and one of the chaps was Tom Novak. I don't remember  
19 the other shifts.

20 Q Were the people from the NRC who were fulfilling  
21 this function sufficiently knowledgeable about the plant and  
22 did they have sufficient expertise to give constructive advice  
23 and review?

24 A I don't know.

25 Q Did you interact with them very much?

1           A.       Some. Not directly a great deal. On occasion, I  
2 interfaced with them to expedite their review of a particular  
3 procedure or something of that nature, but I think the review  
4 was mostly through the people that were writing the procedures,  
5 interfacing with the people reviewing the procedures.

6           Q.       As far as you could tell, were they a hindrance or  
7 did they make very little impact one way or the other?

8           A.       In terms of help or hindrance, I think the system,  
9 once relatively stable, needed as many functional checks and  
10 balances as would be appropriate, and they certainly served  
11 that purpose relative to what we were doing.

12           A very large number of procedures got created in a rela-  
13 tively rapid fashion with quickly changing guidance. In  
14 terms of individual qualifications of the respective people,  
15 I just can't speak to that. I am sure they don't know the  
16 specifics of Three Mile Island Unit 2, but I'm not sure they  
17 needed to.

18           MR. YUSPEH: What did you mean when you say they  
19 were a check and balance, or one of several checks and  
20 balances?

21           THE WITNESS: Any procedure that is written undergoes  
22 a review process such that if the writer is writing something  
23 that is not technically sound or administratively correct,  
24 hopefully the reviewer would pick that up. They served that  
25 type of function.



1 In addition, they had access to experts in various fields  
2 that could provide some technical expertise in such areas as  
3 hydrogen control, hydrogen diffusion, hydrogen explosive  
4 limits, things of that particular nature.

5 BY MR. FRAMPTON:

6 Q I think that you testified before on one occasion  
7 that, prior to the accident, you had participated at various  
8 times in entrance and exit interviews with NRC inspectors who  
9 came on site during construction and start-up of TMI-2, is  
10 that right?

11 A That is correct.

12 Q Do you think the I&E inspections that you had some  
13 knowledge about during that time period were effective in  
14 catching things that your organization did not or would not  
15 have caught?

16 A I think that the I&E inspections provide a purpose  
17 that is a sound purpose, that is an independent review from  
18 a regulatory body. I think we were responsive to those  
19 inspections. I think that, prior to the accident, we had an  
20 adequate working relationship with the NRC, such that we  
21 provided them the attention they needed while on site to  
22 complete their inspections and tried to be responsive to what  
23 they found.

24 A nuclear plant is a big place. There are reams of paper  
25 and reams of documentation that govern the activities of a

1 nuclear plant. That much administrative control will lend  
2 itself to a certain amount of error. The object is to minimize  
3 that error and make that error acceptable.

4 For the NRC or ourselves to go look for that error in  
5 auditing and inspecting, you can always find some error. I  
6 think the size and sheer magnitude of what we are dealing  
7 with, because of that size and magnitude, the inspections serve  
8 a useful purpose.

9 Hopefully, with our own inspections and QC inspections, we  
10 find some of the same things and take the same type of correc-  
11 tive action, and I think we in general tried to respond in  
12 the same like fashion, but I think additional inspection in  
13 those areas is welcome.

14 Q Do you think the organization relies on the NRC in  
15 any part to pick up things that aren't being done by the book?

16 A No, I don't.

17 Q When NRC inspectors come here -- and I am talking  
18 about the individual inspections; not special teams or audits --  
19 what were they customarily, or what would he or she customarily  
20 inspect? Would the inspector go and look at the control room  
21 and go in the building and look at an individual valve or  
22 talk to people, or would the inspector ordinarily examine  
23 logs and other paperwork that had been done?

24 A Well, it would depend upon the purpose of the  
25 inspection. The NRC has a series of inspection modules that

1 it carries out. Depending on the particular module, it  
2 depends upon the inspection. A typical module would be a  
3 quarterly operations inspection that would review operations  
4 logs and records, tagging documentation, surveillance proce-  
5 dures, compliance with those procedures, surveillance results,  
6 general area inspections for proper cleanliness and proper  
7 maintenance of equipment, fire hazards, status of fire  
8 extinguishers. Those are the kinds of things that might be  
9 inspected in a typical operations inspection.

10 Some of the other modules, there might be a module on leak  
11 rate testing in which all the documentation for valve testing  
12 and containment integrity testing is reviewed to ensure that  
13 we have complied with the regulations and requirements and  
14 the technical specifications involving those particular items.

15 In the health physics area, the same kind of things: Have  
16 we complied with all the requirements of 10 CFR 20? Do our  
17 procedures comply with the requirements of the law? Do we  
18 in fact, through documentation, show we complied with our  
19 procedures? Are our practices being followed from actual  
20 observations?

21 Q How does the NRC inspector determine whether you are  
22 complying with your procedures, other than determining whether  
23 surveillance checklist is there in the book or something like  
24 that?

25 A Much of it is done through paper review. Some of

1 it is done through actual observation. I would say that  
2 those two items are the biggest way that the NRC used to do it.  
3 I would say that probably greater than half -- maybe three-  
4 quarters is by documentation review, and that one-quarter or  
5 so is actual observation.

6 Q In the area in which you were working for a good  
7 deal of time, training, what kinds of inspection does the  
8 NRC do in that area?

9 A There is a training module that comes out about  
10 once a year or so. The NRC comes down and inspects you as  
11 to requirements of the reg guides and the requirements of your  
12 specific commitments from the training area to ensure your  
13 programs and documentation have met the requirements that you  
14 have laid down to say you will meet.

15 For example, you may look at the operator requalification  
16 program and ensure the licensed operators have in fact  
17 completed their 60 hours a year, that they have taken and  
18 passed their tests, that they have participated in the control  
19 room for the required number of hours and received the variety  
20 of experience they are committed to receive.

21 Q That's by checking the logs and books and course  
22 results and so forth?

23 A Correct.

24 Q Do NRC inspectors interview individuals to determine  
25 whether they really went through the training course and got

1 the experience in the control room?

2 A. Occasionally.

3 Q. But not often?

4 A. Typically, if it is done, it is done on the training  
5 inspection. It would be done probably no more frequently than  
6 once a year, but might be done at any time. I know of it  
7 being done on at least a couple of different occasions.

8 Q. Who undertook the burden of training of the control  
9 room operators and auxiliary operators for TMI-2 during 1976,  
10 1977, and 1978?

11 A. Whose job was it to train those people?

12 Q. Yes. Was that done entirely by Met Ed? What was  
13 being done as input into tha..?

14 A. Our training department administered the program  
15 for the most part and taught a good deal of it. We sent our  
16 control room operators on Unit 2 to an eight-week simulator  
17 course at B&W in order that they might be eligible to receive  
18 what is called the cold NRC license. That's a license that  
19 is obtained prior to fuel load, an operator's license that  
20 is obtained prior to fuel load.

21 Q. Did B&W provide course materials and teachers?

22 A. Yes. That was all done in Lynchburg.

23 Q. I am not talking about just the simulator portion,  
24 but for other portions of the training.

25 A. I don't remember. It was not the majority of the



1 course, by any means, if in fact that was done.

2 Q The majority of the course would have been run by  
3 Met Ed?

4 A It was an in-house training program, that's correct.

5 MR. YUSPEH: Have you sent people occasionally to  
6 commercially-sponsored training programs such as those offered  
7 by NUS?

8 THE WITNESS: For specified items, yes, but not  
9 typically in the area of operator training.

10 BY MR. FRAMPTON:

11 Q I believe in some prior testimony you talked briefly  
12 about the control room design and the lac of prioritization  
13 of controls and instruments. Do you think that the prolifera-  
14 tion and/or lack of prioritization of instruments and controls  
15 in the control room played a significant role in making it  
16 more difficult during the first day or few days of the  
17 accident for the operators to focus on the most important  
18 variables?

19 A Yes.

20 Q Can you give any more specific examples or description  
21 of that?

22 A The area of the reactor coolant drain tank indica-  
23 tions was not readily accessible to the operator from his  
24 normal duty station.

25 Q Those are on the back panel facing the other

1 direction from the front of the console?

2 A. That is correct.

3 The sheer magnitude and size of the control room, with  
4 the great number of alarms present in the control room, make  
5 it very difficult to focus on any given alarm. I would say  
6 that those two areas are the most significant relative to  
7 the control room as opposed to other comments.

8 Q. How would you contrast the Unit 1 control room with  
9 the Unit 2 control room with respect to its workability?

10 A. The Unit 1 control room is a little better in terms  
11 of size than the Unit 2 control room.

12 Further, there are virtually no controls in the Unit 1  
13 control room that the operator loses sight of the console and  
14 panel while he is operating. There are some that he marginally  
15 loses sight of, but never is as remote as he is from the  
16 console and panel in the Unit 2 control room because of  
17 configuration.

18 The Unit 1 control room is probably no bigger than about  
19 two-thirds the size of the Unit 2 control room, and its  
20 relative compactness adds to its controllability.

21 There are features in the Unit 2 control room which I  
22 prefer over the Unit 1 control room in terms of organization  
23 of controls by systems.

24 Q. That's in Unit 2?

25 A. Unit 2 versus Unit 1. However, the alarm



1 acknowledgment capability in Unit 1 is far superior to that  
2 in Unit 2.

3 Q Why is that? Because it is central?

4 A That's because there are several places from which  
5 one can acknowledge an alarm in Unit 1 and very few in  
6 Unit 2. That's about it in terms of differences.

7 MR. FRAMPTON: Off the record.

8 (Discussion off the record.)

9 MR. FRAMPTON: Back on the record.

10 BY MR. HAYNES:

11 Q If we may continue, I have a couple of questions  
12 about the control room differences between Units 1 and 2.  
13 You said the size of the Unit 1 control room is about  
14 two-thirds that of the size of the Unit 2 control room. Why  
15 the difference in size? Is there less equipment, miniaturiza-  
16 tion? What?

17 A I don't really know. There are more alarms in the  
18 Unit 2 control room, by a considerable number. There is  
19 less indication, I would say, in general in the Unit 1 control  
20 room as opposed to the Unit 2 control room. The electrical  
21 panels are arranged much more compactly in the Unit 1 control  
22 room than Unit 2.

23 Q The electrical panels meaning the battery controls  
24 and the 4160/480 controls?

25 A Right. Those would be the chief reasons.

1 Q With respect to location of controls, I believe you  
2 mentioned that in the Unit 1 control room the operator could  
3 perform manipulations without getting out of view entirely of  
4 his main console, whereas that is not the case in Unit 2.  
5 Specifically, the panel 8-A, which is the leak panel, is a  
6 back panel. I noticed also that the ventilation panels were  
7 in back.

8 Is there a similar situation to that in Unit 1?

9 A There are panels in Unit 1 that are in the approxi-  
10 mate location of the shift supervisor's office at Unit 2.  
11 There are two such panels. One is slightly out of view of  
12 part of the console. However, it is no more than one step  
13 from being in view of the entirety of the console. All others  
14 that require any manipulation or from which any manipulation  
15 is done are in site of the console.

16 Q A while ago we talked about cross-licensing of  
17 operators. Were any reactor operators cross-licensed between  
18 Units 1 and 2?

19 A I assume by that you mean --

20 Q Control room operators.

21 A By classification.

22 Q That's correct.

23 A The answer is no.

24 Q Cross-licensing took place at the supervision level?

25 A That is correct, and for the most part at the

1 supervision level, that was shift supervisor in level. There  
2 were one or two foremen that were cross-licensed, but mostly  
3 just the shift supervisors and supervision above shift  
4 supervisors.

5 Q Do you recall the number of cross-licenses? Would  
6 ten strike a bell with you?

7 A I would say 11.

8 Q Fine. If I could, I would like to go back to how  
9 the management of the plant was organized on 3/28, 3/29,  
10 through 4/2, if I may.

11 A Let's go back for a second. I think that number  
12 should be 12 cross-licenses.

13 Q Okay. I just wanted some idea of numbers. 10 or 12  
14 versus 20 or so. But it is in the range of 12?

15 A Yes.

16 I just thought of another. 13.

17 Q Fine, okay.

18 With respect to the organization of the plant management  
19 late on Wednesday, the 28th, through the following Monday, I  
20 have been trying to make up a little chart here and, as I  
21 understand, on the 28th essentially you were at the site  
22 between 0645 in the morning until 0300 Thursday morning.

23 A Yes.

24 Q Then you left and came in around 0900 Thursday  
25 morning and stayed until 0200 Friday morning.

1 A That's correct.

2 Q You left and then came back around 10:30 in the  
3 morning and stayed until 4:00 or 5:00 in the afternoon.

4 A I think that is correct in terms of the time I left.

5 Q I understood from your prior depositions, one of  
6 them, that you came back in on Saturday on the midnight to  
7 8:00 shift.

8 A I think that's correct.

9 Q Which would swing you over into the 1800 to 6:00 a.m.  
10 time shift.

11 A That's how that happened.

12 Q So on Sunday, you would be working -- well,  
13 Saturday night, from 6:00 in the evening to 0600 in the  
14 morning Sunday, and then continue from there.

15 A That is correct.

16 Q Alternating with you on that was Mr. Miller.

17 A That's correct.

18 Q I will establish his schedule with him later on.

19 I understood Mr. Ross and Mr. Floyd were there from noon  
20 to midnight. When you were on duty to 0200 on Friday morning,  
21 do you recollect if Mr. Floyd was the one that came in on  
22 duty at midnight?

23 A I don't remember.

24 Q You were functioning somewhere between the emergency  
25 director and the unit superintendent. What was the

1 functioning of Mr. Ross and Mr. Floyd? Did they report to  
2 you when you were there?

3 A Yes. I made up titles for everybody so that we  
4 could call ourselves something, and I think that we called  
5 Gary Miller and myself site supervisors. We called Mr. Logan  
6 and Mr. Toole shift superintendents. We called Mr. Ross and  
7 Mr. Floyd either shift operations supervisors or senior  
8 shift supervisors. I think it was shift operations  
9 supervisors. And Mr. Tsaggaris and Mr. Potts, ECS coordinators.

10 Q Is this documented somewhere?

11 A I have it written down on a piece of paper I found  
12 the other day when someone asked me the question.

13 Q Could I have a copy of it?

14 MR. YUSPEH: Sure.

15 BY MR. HAYNES:

16 Q When you were on duty as the site supervisor, where  
17 did you generally stay?

18 A In general, I was in the Unit 2 control room.

19 Q Mr. Ross and Mr. Floyd, when they pulled the shift  
20 operations supervisor function --

21 A Also usually in the Unit 2 control room.

22 Q ECS coordinators?

23 A Unit 1 control room.

24 Q Shift superintendents?

25 A Unit 2. The Unit 2 control room.

1 Q They were in the Unit 2 control room. Did I  
2 understand you to say you were in Unit 2 or 1?

3 A Unit 2.

4 Q So there was really --

5 A Three senior people per shift in the Unit 2 control  
6 room. That's the way that worked out.

7 Q Was it clear to everyone, to your knowledge, that  
8 they knew who was in charge?

9 A Yes.

10 Q What flexibility did the shift operations supervisors  
11 have with respect to operation of the facility with respect  
12 to venting of the makeup tank? By "venting," I mean going  
13 up into -- not truly venting. It is discharging it up into  
14 the waste decay gas header.

15 A I don't remember exactly. Early on in the accident,  
16 before we correlated the venting of the makeup tank or  
17 buildup of pressure in the makeup tank to increased release  
18 rates off-site, I don't remember exercising as much control  
19 over that evolution as we did later in the first 10 to 14  
20 days of the accident, such that I don't know if I would have  
21 been specifically notified if the makeup tank was to be vented  
22 or not.

23 Q So these controls were exercised -- this would be  
24 Saturday or later?

25 A Later on, there was relatively more control over



1 evolutions such as that, once those evolutions were completely  
2 correlated to off-site releases.

3 As I mentioned earlier in the deposition, I don't know  
4 that on Thursday and Friday we had totally correlated venting  
5 of the makeup tank to specific off-site releases. We may have.  
6 But I can't say that for a fact. Consequently, the venting  
7 of such tank did not necessarily require the same degree of  
8 notification of off-site personnel at the observation center  
9 and so forth that were going to perform this evolution standby,  
10 countdown, that kind of scenario that we would exercise later  
11 on in the accident.

12 In terms of saying the specific day that degree of control  
13 started, I don't know. I would have to say it evolved and  
14 got a little stronger with each day, as our knowledge  
15 increased.

16 Q. On Friday, the 30th, there was a makeup vent valve  
17 opened at 0710 in the morning, according to records. As I  
18 understand from your work schedule, you were not here on the  
19 site at that time.

20 A. That's right.

21 Q. Do you recall a Mr. Berry being on shift during this  
22 period?

23 A. How do you spell that?

24 Q. B-e-r-r-y.

25 A. I don't recall.



1 Q Do you know Mr. Berry?

2 A Yes.

3 The reason I asked you how you spell it is that we also  
4 have a Mr. Barry and a Mr. Berry.

5 Q This is B-e-r-r-y.

6 I have what appears to be --

7 MR. FRAMPTON: Could we have marked as Exhibit 6 a  
8 TMI document No. TM-0357, which appears to be pages of hand-  
9 written notes made by Mr. Berry and by Mr. Marshall during the  
10 period of March 29 to 31, 1979.

11 (Exhibit No. 6 identified.)

12 BY MR. HAYNES:

13 Q Do you recognize this at all?

14 A No.

15 Q During this period, did you have one assigned making  
16 data in the control room to keep track of the equipment opera-  
17 tions being performed in the control room?

18 A I don't remember.

19 Q Do you want to look at this a minute and see what  
20 you might characterize that as? You have not seen this?

21 A No.

22 Q In these notes, it appears on the evening of the 29th,  
23 up until midnight of the 29th, venting of the makeup tank was  
24 being accomplished by cycling the makeup valve 13 for periods  
25 of two to five seconds, to burp gas out quickly. Is that --

1 as you recall, how was that handled at that time?

2 A. I don't remember.

3 Q. Later on, on the 30th, between the hours of midnight  
4 and 6:00 a.m., a slightly different process appears to have  
5 been used where the venting was taking place for longer periods  
6 of time, 20 to 25 minutes, on two different occasions. You  
7 don't recollect that?

8 A. I don't remember.

9 Q. Okay, fine.

10 When you were functioning as the site supervisor, to whom  
11 were you reporting?

12 A. To Jack Herbein.

13 Q. Was Mr. Herbein there continuously or, in his  
14 absence, did he have an alternate?

15 A. Bob Arnold was his alternate.

16 Q. So they were working 12 on and off.

17 A. Basically.

18 Q. Where were they located?

19 A. At the observation center.

20 Q. What period of time were they in place there?

21 Do you know?

22 A. From somewhere either late in the morning or early  
23 in the afternoon on the 28th, Herbein established himself at  
24 the observatory center for about a month.

25 Q. I believe Mr. Arnold came over later on a Friday, as

1 as I recollect, on the 30th.

2 A I don't know what day he started.

3 Q You don't know who was Mr. Herbein's alternate on  
4 the 29th?

5 A No.

6 Q All right.

7 BY MR. FRAMPTON:

8 Q Have you had a chance to read some portions of the  
9 I&E report of the accident? The report of the I&E investiga-  
10 tion.

11 A I read small portions of the report.

12 Q Do you have any comments on the report with respect  
13 to either its accuracy or its usefulness or any of the  
14 conclusions that you read in the report?

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1           A           I felt the report was very objective in a very  
2 subjective situation and that the report attempted to analyze  
3 and report performance in a nuclear accident under rules that  
4 were designed for an everyday atmosphere. Consequently, I feel  
5 that the conclusions -- or I should say proposed citations  
6 portion of the report -- made no allowances for the uniqueness  
7 of the emergency situation in which the plant staff, the NRC  
8 and all others concerned were trying to function.

9           As a result of that, somewhat subjectively, I feel the  
10 report is very condemnatory and as part of the public record I  
11 think leaves a great deal to be desired in that it makes no  
12 consideration for the uniqueness of the situation.

13           An example would be one of the proposed citations was the  
14 fact that the health-physics control point was left unattended  
15 and consequently all personnel could have gone past that point  
16 and become inadvertently exposed. Under the set of circumstances,  
17 pretty tight control over personnel was being exercised.  
18 Continuous announcements or frequent announcements were made  
19 on the page system to keep people informed of what conditions  
20 were. Access to various points throughout the plant were  
21 being controlled from the control room. Security posts that  
22 were normally manned were not manned to avoid radiation  
23 exposure. Perhaps an undue amount of exposure could have  
24 occurred by leaving a person stationed at the control point  
25 to avoid other people being exposed.

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sls-2

1 I think that this particular type of proposed citation  
2 makes the situation look like one of noncompliance when, in  
3 fact, compliance wasn't the issue. Control in responding  
4 under the circumstances in the best technical manner possible  
5 was the issue at the time and I feel that that was at least what  
6 we tried to do. Whether or not the end result will show that  
7 we accomplished that will be the subject of many reports and a  
8 great deal of analysis by various groups.

9 Q One of the things or conclusions of the I & E report,  
10 I think it's fair to say, is that the operators and their  
11 supervisors facing a situation that was completely unexpected  
12 and unanticipated had received training and conditioning and  
13 procedures which encouraged them to take one approach to coping  
14 with the accident when, in hindsight, a different approach might  
15 have been more productive in ameliorating the accident. I think  
16 you, yourself, told us before or described a situation of a  
17 bunch of people facing something that nobody ever faced before.  
18 A situation that was not well understood as to what you were  
19 facing.

20 My question to you is whether you have any comments on how  
21 this could have happened. How is it that an accident or a  
22 sequence of events which nobody anticipated could occur? Or,  
23 if some people anticipated it, or a portion of it, those people  
24 never communicated that information to the people whom it would  
25 have done some good to have had the information. Do you have any



sls-3  
1 observations on what it is about the way the system works or  
2 what it is about the way NRC regulates that can permit this  
3 kind of thing to happen?

4 A My comment there would be that we are dealing with  
5 human beings. Human beings have failings. They are not  
6 perfect. They don't remember everything. They don't necessarily  
7 always respond 100 percent perfectly.

8 We try to design equipment around some of those constraints.  
9 We try to cope with those things as best we can.

10 I think the accident happened because we are human, because  
11 we probably can't analyze for every single eventuality and  
12 every combination of eventualities.

13 We can, though, improve our training and our response to  
14 eventualities to the point that our ability to cope with an  
15 accident such as this, or another accident of a different scope,  
16 can be much improved. I think that the answer is in the  
17 training and in the approach to the particular problem, and in  
18 trying to bound the problem with a philosophy as opposed to  
19 specific kinds of actions.

20 We have, since the accident, added to our emergency  
21 procedures discreet steps that are objectives. Nowhere in  
22 the Regulatory Guide is there a requirement or suggestion.  
23 However, we've decided that should the cookbook fashion  
24 guidance that we give the operator in our procedures break down,  
25 then he should have three or four or perhaps five things in

sls-4  
1 trying to cope with the accident such that he is using his  
2 mind and what he knows about his equipment to satisfy four or  
3 five specific objectives.

4 Q Give him some first principles to go back to?

5 A That's the basic idea. We have inserted these  
6 objectives at the beginning of the follow-up action portion of  
7 the procedures such that that is the first time, really,  
8 the procedures are read, because the immediate actions are  
9 differently memorized actions that operators are supposed to  
10 respond to and supposed to be responsible for performing by  
11 memory. That point of the procedure is then broken out and  
12 he immediately reads what he is trying to accomplish.

13 Should he not be able to perform the cookbook fashion  
14 steps below, he can still come back to those and say if I  
15 can't accomplish what these say using the formula below, how  
16 can I accomplish these objectives? I think that is a signifi-  
17 cant step in the right direction, such that future occurrences  
18 of another type can definitely be avoided or minimized.

19 If you go also in the training, by teaching a methodology  
20 of handling a certain type of casualty such that people go  
21 into specific roles that are prepracticed roles, the chances  
22 of performing properly are very much enhanced. We had three  
23 practice roles in our handling of the emergency plan and I  
24 think our handling of that plan definitely was far improved from  
25 what it would have been had we not had those prepractice roles.



sls-5  
1 People knew where to go, what to say, what to do and how to  
2 function. That practice paid off.

3 In terms of control room performance, I think the same  
4 person has to break out the procedure each time. It can't be  
5 relying on one slot. That is, a person filling that slot to do  
6 it one time and a different person to do it the next time. He  
7 has to go to that role and perform it. He has to understand  
8 and have practiced the command relationship between himself and  
9 the rest of the people on the shift. He has to know whether  
10 he is the ball carrier and the blocker, if you want to put it  
11 in terms of an analogy with a football game.

12 We have practiced that recently in the simulator and found  
13 that there is a great deal to be learned and practiced in that  
14 particular area, and I feel we made a significant step forward  
15 in terms of realizing what is available in terms of using the  
16 similarity versus what we have ever done before.

17 Those two areas, I think, are the most significant in  
18 terms of how to avoid this particular kind of thing. The  
19 equipment will break. People will fail. That's part of the  
20 world we live in.

21 But I think that we can survive this kind of thing as we  
22 survived TMI-2 and do so well, again implementing these kinds  
23 of principles. I think that TMI-2 taught us a great deal in  
24 retrospect relatively cheaply, and that's a somewhat subjective  
25 remark.

sls-6  
1 Q Thank you. Let me ask you one final question: You  
2 have been interviewed by I & E and you have given two  
3 depositions, I believe, to the President's Commission that  
4 have been transcribed, is that right?

5 A Yes.

6 Q Have you been interviewed or deposed on other  
7 occasions besides those for other investigatory bodies or  
8 groups?

9 A Not by any other investigatory bodies outside of  
10 MET ED Company.

11 Q In addition to the areas in which questions were  
12 asked in those other interviews and the areas that we have  
13 covered with you today, are there other areas or subject  
14 matters that you think are of material importance to the  
15 cause of the accident or the utility's response to it, that you  
16 have never been asked about that you think are significant?

17 A One. I think the role of the press in an accident  
18 or a happening is a very significant item. I think it is the  
19 subject of an ongoing investigation that is happening right here  
20 and now in another part of the country. I feel a little bit  
21 frightened by the power of the press versus the responsibility  
22 of the press.

23 I guess the accident here at Three Mile Island helped to  
24 form that attitude. As a licensee of the Nuclear Regulatory  
25 Commission, or as a person who is responsible for running a

sls-7  
1 nuclear reactor plant, I have certain obligations to fulfill.  
2 One, I have a license that I must discharge, a set of rules  
3 I have to live by. I am responsible to that myself, technically,  
4 responsible morally to myself. I am responsible technically and  
5 morally to the NRC, Pennsylvania DER, BOO of Radiological  
6 Protection, to OSHA, and to numerous outside agencies.

7 Without a doubt, this is one of the most regulated  
8 industries in the United States. The NRC is a regulated group  
9 responsible to Commerce, feeling the burden of that responsi-  
10 bility close to TMI-2 as their investigation and others have  
11 pointed out. I wonder in my mind to whom the press is  
12 responsible, and I wonder what checks and balances the press  
13 has. I feel a little frightened that although I believe in the  
14 freedom of speech, the freedom of the press, the power of the  
15 press is awesome.

16 Perhaps some of the confusion, perhaps some of the propor-  
17 tions of which the Three Mile Island accident was placed was  
18 caused by the press. It may have been amplified by MET ED or  
19 the NRC response to the press. Certainly there is much room  
20 for improvement in both of those areas.

21 Nonetheless, that's an area that, as an American citizen,  
22 I am a little bit concerned about.

23 Q Well, I believe you have testified before the  
24 President's Commission, but perhaps I was looking at some  
25 recommendations that I believe were yours internal to the

1 organization, being the need for a single communicator, not  
2 only within the state, but among all of the agencies that are  
3 responding to an accident like this one so that the media and  
4 the public as well as emergency response agencies are hearing  
5 the same information at the same time from the same voice. I  
6 think that's a useful suggestion.

7 Thank you very much for your time and your cooperation.  
8 I appreciate it very much.

9 (Whereupon, the proceedings were concluded at  
10 6:25 p.m.)

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CERTIFICATE OF NOTARY PUBLIC

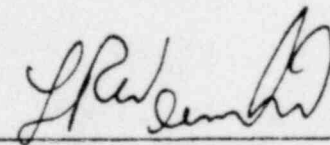
I, \_\_\_\_\_, a notary public,  
do hereby certify that the witness whose testimony appears herein  
appeared before me and was duly sworn by me.

\_\_\_\_\_  
Notary Public in and for the

My commission expires

+++++  
CERTIFICATE OF COURT REPORTER

I, Lewis R. Weinschel, Court Reporter, do  
hereby certify that the testimony contained herein is a true  
record of the testimony given by said witness, and I further  
certify that I am neither attorney nor counsel for, related to  
or employed by any of the parties to the action in which this  
statement is taken; and, further, that I am not a relative or  
an employee of any attorney or counsel employed by the parties  
hereto, or financially interested in the action.

  
\_\_\_\_\_

Court Reporter