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ON

IN THE MATTER OF:

THREE MILE ISLAND SPECIAL  
INQUIRY DEPOSITION

POOR ORIGINAL

DEPOSITION OF:

THOMAS L. MULLEAVY

Place - Middletown, Pennsylvania

Date - Thursday, September 20, 1979

Pages 1 - 247

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

-----X  
: In the Matter of: :  
: :  
THREE MILE ISLAND :  
SPECIAL INTERVIEWS :  
: :  
-----X

DEPOSITION OF THOMAS L. MULLEAVY

TMI Site #138  
Middletown, Pennsylvania

Thursday, September 20, 1979  
8:45 a.m.

BEFORE:

For the Nuclear Regulatory Commission:

JOHN DIENELT, ESQ.  
OLLIVER D. T. LYNCH, JR.  
HARRY NORTH  
FRANK J. MIRAGLIA  
SHLOMOS YANIR

For Metropolitan Edison and Deponent:

MS. DELISSA A. RIDGEWAY, ESQ.  
Shaw, Pittman, Potts & Trowbridge  
1800 M Street, N.W.  
Washington, D. C. 20036

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C O N T E N T S

<u>WITNESS:</u>	<u>DIRECT</u>
Thomas L. Mulleavy	3

E X H I B I T S

<u>EXHIBIT NUMBER:</u>	<u>IDENTIFIED</u>
3033	4
3034	4
3035	4
3037	120
3018	126
3038	243

gsh 1 Whereupon,

2 THOMAS L. MULLEAVY,  
3 was called for examination and, having been first duly  
4 sworn, was examined and testified as follows:

5 DIRECT EXAMINATION

6 BY MR. DIENELT: ^^

7 Q Would you state your name and business address?

8 A Thomas L. Mulleavy, and I work for Metropolitan  
9 Edison here at Three Mile Island.

10 Do you want to know the address?

11 Q That's fine.

12 I'm going to show you a document which is a copy of  
13 Exhibit 3021, which has previously been introduced. Have you  
14 had an opportunity to review that letter?

15 A Yes, I have.

16 Q Do you understand its contents?

17 A Yes, I do.

18 Q Your testimony today has the same force and effect  
19 as if you were testifying in a court. You will have an  
20 opportunity to leave the transcript of your testimony and  
21 make any changes in it which you deem appropriate.

22 If any of the changes are of a substantial, significant  
23 nature, the fact that you make the changes after your testimony  
24 could be viewed as affecting your credibility.

25 So it's important for you to give full and complete answers

CAR gsh

1 to the questions. And for that reason, it's important for  
2 you to understand the questions.

3 So if you don't understand the questions, please let us  
4 know and we will attempt to rephrase them or clarify them so  
5 that you can give full, complete answers.

6 Also, I would like to ask you to allow us to finish asking  
7 the question before you give an answer, even though you know  
8 what the question is and are prepared to answer it.

9 That will help the Court Reporter in getting down a clear  
10 chain of questions and answers.

11 You have previously given interviews to the I&E branch of  
12 the NRC?

13 A That's correct.

14 MR. DIENELT: Would you mark these as Exhibit 3033  
15 and 3034 and 3035?

16 (Exhibit No. 3033 identified.

17 Exhibit No. 3034 identified.

18 Exhibit No. 3035 identified.)

19 BY MR. DIENELT:

20 Q I'm showing you three exhibits marked 3033, 3034,  
21 and 3035, which purport to be transcripts of the interviews  
22 which you gave to I&E on April 24th, May 21st, and June  
23 4th, respectively.

24 Have you received either a tape or a draft or final  
25 transcript of your interviews?

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1 A I have received tapes. I do not have the  
2 transcript itself.

3 Q Have you prior to today listened to the tapes?

4 A Not in their entirety, no.

5 Q Do you recall being interviewed on the three  
6 occasions which are indicated on the front covers of the  
7 exhibits?

8 A Yes, I do.

9 Q Do you recall any statements that you gave during  
10 any of those interviews which you now believe were incomplete  
11 or inaccurate and need to be corrected or clarified?

12 A No, I don't believe so.

13 Q Is it fair to say that in those three interviews,  
14 you gave answers which were as full and complete and accurate  
15 as you could?

16 A Yes, to the best of my knowledge, they are  
17 complete.

18 Q Do you recall being interviewed by I&E on any other  
19 occasions when the interview was taped or transcribed?

20 A No.

21 Q Have you been deposed or interviewed by the staff  
22 of the President's Commission which is investigating Three  
23 Mile Island?

24 A Yes.

25 Q Was it an interview or a deposition?

DAR gsh

1 A It was an interview.

2 Q Do you know whether it was transcribed?

3 A I do not know. I haven't seen any transcript.

4 Q Have you had any other occasion to testify or give  
5 a deposition under oath in connection with the Three Mile  
6 Island incident?

7 A No.

8 Q Have you had any occasion to be interviewed in  
9 circumstances in which the interview, to your knowledge, was  
10 taped or transcribed?

11 A No.

12 Q What is your current position?

13 A Radiation protection supervisor.

14 Q Is that the same position you held on March 28th,  
15 1979?

16 A Yes.

17 Q Can you tell me what the duties of your position  
18 are?

19 A I work in the health physics department under a  
20 department head, who is Dick Dubiel, and as of March 28th,  
21 that was correct, and thereafter, it was correct until I  
22 was placed into Unit 2 after the accident.

23 The duties are to take care of the formen, direct them,  
24 who in turn direct the Met Ed technicians in all forms of  
25 health physics. That is survey work and decontamination

AR gsh

1 studies and monitoring. And we function here in the plant  
2 site for both units.

3 Since the accident, the duties are the same, but I am in  
4 a different chain right now at the moment and that is part of  
5 the recovery team for Unit 2.

6 The duties are the same.

7 Q Prior to the accident, did you report to Mr. Dubiel  
8 as your immediate supervisor?

9 A Yes.

10 Q Since you have been placed in Unit 2, who do you  
11 report to?

12 A Dave Limroth.

13 Q What is his title?

14 A I'm sorry. I don't know exactly what that title is.  
15 He is an administrator.

16 Q Is he the head of the recovery team?

17 A No, he is not.

18 Q Who is the head of the recovery team?

19 A Right now it's John Barton, who is the head of our  
20 particular section.

21 Q That is the health physics section?

22 A Yes. Well, we fall into a group called Waste  
23 Management.

24 Q How long have you been assigned to Unit 2 for  
25 purposes of recovery?



DAR gsh

1 A Approximately two months.

2 Q So you would have started in the middle of July?

3 A Well, let me correct that. It probably was in

4 June, so that is a little longer.

5 Q How long have you been radiation protection  
6 supervisor?

7 A For five years. I had my first anniversary here  
8 at the beginning of September

9 Q How long have you worked at Three Mile Island?

10 A Five years.

11 Q How long have you worked for Met Ed?

12 A Five years.

13 Q So your first position with Met Ed was as radiation  
14 protection supervisor?

15 A Again, I will have to correct that. Excuse me.

16 No, I came here as a radiation protection foreman and I have  
17 been radiation protection supervisor for -- time flies --  
18 three years.

19 Q What is your post-high school educational training?

20 A A community college, but I did not complete it.

21 Q From the time you left college to the time you began  
22 work at TMI, could you summarize your employment experience?

23 A I began right after I left school as a histologist  
24 in a laboratory, medical laboratory. From there I went to  
25 New York shipbuilding and joined under Ernie Resner involving

AR gsh 1 an HP department that was being established for work on the  
2 NSS Savannah.

3 From the NSS Savannah, when that was completed, I went into  
4 the naval nuclear program as a civil employee in the health  
5 physics department.

6 I left there after 8 years -- being health physicist  
7 there -- came here as a radiation protection forman and  
8 ultimately, the HP supervisor.

9 Q Prior to joining Connecticut Yankee, what was the  
10 total period of time that you were involved in health  
11 physics?

12 A Prior to?

13 Q Yes, sir.

14 A Six years.

15 Q So your combined years at New York Shipbuilding in  
16 the naval nuclear program was 6 years?

17 A Yes.

18 Q What did you do in the job that you had in connection  
19 with the NSS Savannah?

20 A I was a member of the health physics department.  
21 We did survey work, air sampling, the whole gamut.

22 Q And what did you do in the job that you had with  
23 New York Shipbuilding? Were you actually doing the surveying  
24 work and air sampling work, or were you supervising?

25 A No. I started off as a technician.

AR gsh 1 Q Now when you were in the naval nuclear program --

2 A Let me correct that. I was not specifically, myself,  
3 in the naval nuclear program. That is navy people. We had  
4 a civilian program connected with building of submarines.

5 Q Tell me what you did in the health physics department  
6 there?

7 A I was a health physics technician and we did air  
8 sampling, radiation work, survey work for contamination and  
9 radiation areas.

10 We collected samples, we did water analysis, and we ran  
11 the training for the people at New York Shipbuilding.

12 We ran the monitoring program for personnel radiation  
13 update.

14 Q Prior to joining Connecticut Yankee, had you had  
15 any supervisory role as opposed to working as technician or  
16 as a monitor?

17 A I left New York Shipbuilding as a lead technician,  
18 which we had a shift under me.

19 Q And did you have a supervisory role in the civilian  
20 part of the naval nuclear program in which you engaged?

21 A As a lead technician, yes.

22 Q In other words, the New York Shipbuilding job was  
23 then the naval nuclear --

24 A Yes.

25 Q -- program?

WAR gsh 1 A Yes.

2 Q What yard was it that you were at at New York  
3 Shipbuilding?

4 A That is the yard. It is called New York Shipbuilding  
5 It was in Camden, New Jersey.

6 Q Did you have any formal training at the college  
7 level in health physics?

8 A We attended public school or public health schools  
9 in Rockville, Maryland.

10 Q This was in connection with which job?

11 A Radiation protection. That was in connection with  
12 the health physics field. At that time, they were giving  
13 the basic HP course. They were giving management of nuclear  
14 accident courses and I took those courses.

15 Q That was when you were at New York Shipbuilding?

16 A New York Shipbuilding, yes.

17 Q Did you have a role as a lead technician or a  
18 supervisor at Connecticut Yankee?

19 A Yes.

20 Q What position did you start with there?

21 A I started out as a technician. Then I took over  
22 a position called the plant health physicist, which is the  
23 same position that I have here which equates to the radiation  
24 protection supervisor job here.

25 Q In connection with your job at Connecticut Yankee,

AR gsh 1 did you have any classroom or formal HP training?

2 A No.

3 Q In connection with your job at Three Mile Island,  
4 before you began working as a technician, did you have any  
5 classroom or formal training?

6 A No.

7 Q Have you had any classroom or formal education in  
8 connection with your job at TMI?

9 A Here at the island, no.

10 Q Elsewhere?

11 A Yes.

12 Q Where has that been?

13 A I took a couple of courses. One was in respiratory  
14 protection down in Florida. That was last year.

15 Let's see, where else? I have been to seminars since  
16 joining here, but that's about all.

17 Q Are the courses that you just described ones which  
18 you took at your own initiative?

19 A I applied to go to them.

20 Q You applied to Met Ed?

21 A Yes.

22 Q Who gave the respiratory protection course in  
23 Florida?

24 A Los Alamos Scientific Labs.

25 Q How long a course was it?

PAR gsh 1 A Three days.

2 Q And when did you take it?

3 A It was in January of last year.

4 Q Can you approximate the number of seminars that

5 you have attended?

6 A Probably about three.

7 Q Have you attended any within the last two years

8 from the beginning of 1977?

9 A Yes. There was one which was an HP seminar.

10 That's all.

11 Q Where was that?

12 A It was in South Carolina.

13 Q Did you also apply to Met Ed to go there?

14 A Yes.

15 Q How long did that course last?

16 A It was a three-day session.

17 Q Was it general health physics?

18 A Yes.

19 Q Who sponsored that seminar?

20 A The HP Society, I believe it was.

21 Q Is that the full name of it, HP Society?

22 A Health Physics Society, yes, sir.

23 MR. DIENELT: Off the record.

24 (Discussion off the record.)

25

DAR gsh 1

BY MR. DIENELT:

2 Q Are you a member of the Health Physics Society?

3 A I am not.

4 Q During the period beginning on March 28th, did you  
5 maintain a log or diary or any notes of your activities?

6 A Not formally, no.

7 Q Did you maintain some kind of informal records of  
8 what you did?9 A Other than pieces of paper and general jotting down  
10 of different duties and so forth, as meetings took place. But  
11 as I say again, nothing formal and nothing that I believe that  
12 I could retrieve in any formal manner.13 Q In other words, you don't have those notes or you  
14 don't know where they are?

15 A No, I really don't know.

16 Q After March 28th, did you prepare any written  
17 documents summarizing the activities which you had engaged  
18 in?

19 A No, sir.

20 Q When did you first become aware of the transient  
21 that began on March 28?22 A I was called at home on the morning of March 28,  
23 approximately 7:00 in the morning.

24 Q Excuse me. Go ahead.

25 A And I was asked to come in, that we had a problem

DAR gsh 1 here and could I please report to work.

2 Q Who called you?

3 A Mike Kuhn, who was a technician.

4 Q Do you want to spell Kuhn?

5 A K-u-h-n.

6 Q Did he tell you what the reason for his asking you

7 to come in was?

8 A No, he didn't. He just said that he had been asked

9 by Dick Dubiel to give me a call and he was doing so.

10 Q When did you arrive at TMI?

11 A About 7:30.

12 Q What did you do?

13 A Went directly to the ECS because I was told by the

14 gate that we had a problem and they waived me through and

15 I went directly to -- well, I went directly to my office and

16 there was no one there, so I went back to the HP lab in

17 Unit 1 and there, of course, is our ECS, and I reported there.

18 Q ECS stands for --

19 A Emergency Control Station.

20 Q Who was at ECS when you reported?

21 A A foreman -- there were many people there because

22 they had already established that as part of an emergency

23 plan, and this is -- at that time I found out what was going

24 on.

25 Q Who was the person in charge of the ECS when you



DAR gsh 1 arrived?

2 A I believe Joe DeMann, who was an HP foreman.

3 Q Did you then relieve him?

4 A Yes.

5 Q What were you informed was the situation when you  
6 arrived?

7 A The situation -- Unit 2 was having a problem. That  
8 is about all I knew at that particular point, and that we were  
9 to set up our emergency control station, get the teams ready  
10 and so forth.

11 And I tried to call over to Unit 2 to find out from Dick  
12 Dubiel what was going on, but I couldn't call him right at  
13 the moment. And then we got involved in evacuation of ECS  
14 because the radiation level increased.

15 Q Would it be fair to say that before you had to  
16 evacuate the ECS, you really had not been able to do anything?

17 A Totally evaluate it on what the situation was.

18 Q How soon after you arrived did you evaluate the  
19 ECS?

20 A I don't really know. I can't tell you that. And I  
21 hesitate to put a time value because everything ran together.

22 Q After you left the ECS, where did you go?

23 A We went to the Unit 2's control room, which was  
24 our alternate ECS.

25 Q The procedures that you have just described are set

DAR gsh 1       forth, are they in the emergency plan?

2       A       Emergency plan, yes, sir.

3       Q       And you followed them according to the emergency  
4       plan?

5       A       Yes, we did.

6       Q       I want to show you a chart which appears in a  
7       lengthy document which I will not introduce into the record.  
8       The title of the document is "NUREG-0600, An Investigation  
9       Into the March 28, 1979 Three Mile Island Accident by the  
10      Office of Inspection and Enforcement of the U.S. Nuclear  
11      Regulatory Commission."

12      And I want to ask you to look at Figure 2 -- that's  
13      II-22, which appears on II-2-9.

14      Can you tell me what that chart represents?

15      A       It looks very much like a flow chart for an  
16      emergency plan.

17      Q       Would it be fair to characterize that as an  
18      emergency chart?

19      A       Yes.

20      Q       Is it accurate as a reflection of what the  
21      emergency organization chart under the emergency plan is  
22      supposed to be?

23      A       Yes. That is a fair assumption. This is our  
24      emergency plan and how it actually flowed, yes.

25      Q       Where on the organization chart do you fit?

DAR gsh 1 A Right in here -- let's see, here we are. Okay.

2 Q You're pointing to the box, ECS director?

3 A Yes.

4 Q And am I correct that during an emergency, according

5 to the plan, you have a fairly large number of boxes under

6 you, including emergency repair teams?

7 A Yes.

8 Q Emergency chemistry and a variety of monitoring

9 activities?

10 A Yes. And that is because all of this group forms

11 in what we term the ECS.

12 Q Pursuant to the prescribed emergency organization,

13 am I correct that you, as an ECS director, report directly

14 to the emergency director?

15 A That is correct.

16 Q Who is the person who under the plan is supposed to

17 be the emergency director?

18 A Gary Miller, our station superintendent.

19 Q Or station manager?

20 A Station manager.

21 Q Now where on the chart is, if anywhere, is Mr.

22 Dubiel?

23 A In the radiological assessment.

24 Q Which is a box at -- if I'm correctly describing

25 it -- at the same level as you?

DAR gsh 1 A Yes.

2 Q And under the emergency organization as prescribed

3 in the plan, Mr. Dubiel reports directly to Mr. Miller?

4 A That is correct, yes.

5 Q Under normal times, you report to Mr. Dubiel?

6 A Yes.

7 Q But the emergency organization plan makes you and

8 Mr. Dubiel both reporting to Mr. Miller?

9 A Yes.

10 Q Is that the way it worked?

11 A Well, to answer your question, no, it didn't.

12 Q Did it ever work that way during the emergency?

13 A No.

14 Q Now I want to direct your attention to another

15 chart which is Figure II-2-3 on page II-2-12.

16 Off the record.

17 (Discussion off the record.)

18 BY MR. DIENELT:

19 Q Of the same publication, NUREG-600, will you look

20 at that chart and tell me what, in your view, it represents?

21 A This looks -- well, this changes because it puts

22 the ECS director underneath and in the proper place under

23 the radiologic assessment individual, who is Mr. Richard

24 Dubiel.

25 Q Is this chart an accurate reflection, as you

DAR gsh 1 understand it, of the emergency organization which was in  
2 effect at some point in time during the incident which began  
3 on March 28th?

4 A I can only comment on my relationship with this  
5 chart in that it properly shows how we reacted to the  
6 situation.

7 Q And who is "we"?

8 A Myself and Dick Dubiel in communication one with  
9 the other.

10 Q Now at the top of the chart, there is an indication  
11 of time, 0730 to 0900.

12 Is it your understanding that your part of this organization  
13 is accurately reflected for that period of time, 7:30 in the  
14 morning to 9:00?

15 A As I understood it, yes.

16 Q Did this organization apply at any time after 9:00  
17 in the morning, to your knowledge?

18 A That applied for the day. I was still in  
19 communication with Dick Dubiel, so as, again, I relate that  
20 my portion of this particular emergency organization as  
21 shown did apply.

22 Q For a period after 9:00?

23 A Yes.

24 Q Now and for the whole day of the 28th?

25 A Yes.

DAR gsh 1 Q Did it change on the 29th?

2 A I moved from the Unit 2 control room to the Unit 1  
3 control room.

4 Q On the 29th?

5 A On the 29th.

6 Q Where on this chart are you?

7 A Here.

8 Q You are pointing to a box that says, "ECS Director"?

9 A Yes.

10 Q And where on the chart is Mr. Dubiel?

11 A Right above the box entitled -- right above the  
12 box entitled, "ECS Director," is the radiological assessment.

13 Q During the period of time when this organization  
14 was in effect for you and Mr. Dubiel, am I correct that you  
15 reported to Mr. Dubiel

16 A Yes, sir.

17 Q Mr. Dubiel, in turn, reported to Mr. Miller?

18 A Yes, indeed, he did.

19 Q Did you report to anyone other than Mr. Dubiel?

20 A No, sir.

21 Q Now you testified a moment ago that this chart  
22 reflected the proper place of you?

23 A Yes.

24 Q Are you saying it reflected the proper place in  
25 terms of the fact that you did report to Mr. Dubiel, or are

AR gsh 1 you saying that it referred to the proper place in the sense  
2 that under the emergency plan, it was the correct thing for  
3 you to be reporting to Mr. Dubiel?

4 A Under the emergency plan, as we had always practiced  
5 it, that flow of information was from myself to Dick Dubiel.

6 Q Now what you are saying is that the emergency plan,  
7 as written, was not accurate as a reflection of the emergency  
8 plan the way that you and Mr. Dubiel contemplated it would  
9 operate in fact?

10 A No, that isn't what I was saying.

11 Q I'm sorry, I misunderstood you. The emergency  
12 plan had you reporting directly to Mr. Miller?

13 A I'm not so sure it did. This drawing shows it,  
14 which I'm not sure how we can relate to this here.

15 Q I want to show you a document which -- off the  
16 record.

17 (Discussion off the record.)

18 BY MR. DIENELT:

19 Q I show you a document that we will later mark as  
20 Exhibit 3036, which I understand comes from the emergency  
21 plan?

22 A Yes.

23 Q Have you seen this document before?

24 A Yes.

25 Q Do you agree that that is a chart reflecting the

DAR gsh 1 organization which is supposed to apply during an emergency?

2 A Yes, if this is the latest reg, that is the one  
3 that we were to follow.

4 Q And is it your recollection and under the written  
5 plan you were to report to Mr. Dubiel?

6 A Yes.

7 Q Do you agree with me that this document shows you  
8 reporting to the station superintendent, Mr. Miller?

9 A Yes.

10 Q Nevertheless, your understanding is, your  
11 understanding of the emergency plan was that the proper chain  
12 of command in the sense of the prescribed chain was that you  
13 should report to Mr. Dubiel?

14 A Yes.

15 Q Where was Mr. Dubiel at the time you went from the  
16 emergency control station to the Unit 2 control room?

17 A Mr. Dubiel was in the Unit 2 control room.

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DAR gsh

1 Q And did you remain in the Unit 2 control room for  
2 the duration of the 28th?

3 A The afternoon of the 28th and again, I don't recall  
4 the exact time. I left Unit 2 control room and reported to  
5 Unit 1 control room.

6 Q Why did you do that?

7 A At the request of Mr. Dubiel to do so.

8 Q What was to be your function in Unit 1 control room?

9 A To be the HP monitoring person there at that  
10 control room.

11 Q On the emergency organization chart that appears  
12 at Figure II-2-3? It appears to me that your responsibilities  
13 include monitoring supervision of emergency repair teams and  
14 emergency chemistry?

15 A Yes.

16 Q Is that correct?

17 A That's correct.

18 Q Did you in fact supervise emergency repair teams and  
19 emergency chemistry at some point during the 28th?

20 A No. Emergency chemistry, no. Emergency repair  
21 party, yes.

22 Q As I understood it, who supervised emergency  
23 chemistry on the 28th?

24 A As I later found out, I did not know at the time  
25 that it was Dick Dubiel.

UAR gsh 1 Q Did you understand on the 28th that your  
2 responsibilities in an emergency included supervision of  
3 emergency chemistry?

4 A Yes.

5 Q Did you make any efforts to supervise emergency  
6 chemistry during that day?

7 A No.

8 Q Why not?

9 A Because that had already been taken care of.

10 Q By whom?

11 A Richard Dubiel.

12 Q And when did you learn that?

13 A When I got to the control room.

14 Q So it was early in the morning, 9:00, 7:30, somewhere  
15 in that range that you learned that Mr. Dubiel was taking  
16 the emergency chemistry function?

17 A That he had already taken that function.

18 Q For what period of time on the 28th did you  
19 supervise the emergency repair party leader?

20 A When we went to the control room and, again, I  
21 don't know the exact time, but that's where we got together  
22 up there.

23 Q Who was the emergency repair party leader?

24 A I believe it was Dan Shovlin. I think I have  
25 testified before. I'm not sure.

DAR gsh

1 MR. DIENELT: Off the record.

2 (Discussion off the record.)

3 MR. DIENELT: All right. Let's go back on the  
4 record.

5 BY MR. DIENELT:

6 Q Prior to coming to the Unit 2 control room, do you  
7 know who, if anyone, had exercised any supervision over the  
8 emergency repair party leader on the -- or the teams?

9 A The plan states that the group does assemble at  
10 the ECS, and I don't know whether Joe DeMann, who is the  
11 foreman who takes over during my absence and will begin  
12 setting up the area, whether he communicated with them or  
13 not.

14 I don't know.

15 Q Is it your understanding that in your and Mr.  
16 Dubiel's absence, the first foreman on the site assumes  
17 responsibilities that either you or Mr. Dubiel has?

18 A That is correct.

19 Q Did you supervise emergency repair party teams  
20 throughout the day on the 28th?

21 A Yes.

22 Q I direct your attention to Figure II-2-4, which  
23 appears on page II-2-13, which purports to be another  
24 emergency organization chart, this time one which purports  
25 to have been in effect from 9:00 in the morning to 11:00.

DAR gsh

1 As I read this chart, the emergency repair party leader  
2 has been moved from under your supervision to under direct  
3 supervision of the emergency director, Mr. Miller.

4 Do you recall that change having taken place sometime on  
5 the 28th?

6 A Not a formal change, no. And somebody saying,  
7 now he reports to this individual, no. But in reality, this  
8 individual, if it was Dan Shovlin, normally reports to that  
9 man.

10 Q Normally, in the sense of reporting to Mr. Miller?

11 A On a daily basis.

12 Q In a non-emergency context?

13 A In a non-emergency context. And we found it  
14 sometimes difficult, I'm sure, that an individual who normally  
15 reports to somebody of that magnitude to report to a lesser  
16 individual under the circumstances is difficult.

17 So I imagine he gravitated toward that individual.

18 Q I want to try to clarify my questions so that we  
19 are talking about the same thing.

20 Although these are organization charts, I am interested in  
21 the organization as it did work and not as it was prescribed.

22 In other words, I'm not asking you if an organization  
23 chart such as that depicted on Figure II-2-4 was published  
24 sometime during the emergency and handed out to people.

25 Is that what you have understood to be the case when I

DAR gsh 1 have been asking you the questions?

2 A That they have been published and handed out.

3 Q Now, how things actually worked.

4 A Yes, I understand you to be questioning on what  
5 really took place.

6 Q Was it your impression that during the early phase  
7 of the emergency, the emergency organization tended to follow  
8 the regular lines of authority or chain of command that  
9 applied in ordinary operations, rather than the prescribed  
10 emergency organization from the plan that was to take  
11 effect in an emergency?

12 A We began the plan as stated. In time, over the  
13 day, the 28th, it gravitated toward, I think, a normal chain  
14 of individuals that would communicate one with the other.

15 Q And when you say -- excuse me.

16 A I kept the same communication throughout the day  
17 from Unit 1 when I went over there to Unit 1. I kept the  
18 same communication with Dick Dubiel and did the function of  
19 dispensing the teams from Unit 1, dispensing the teams.

20 And my only change in my duties was the place in which I  
21 performed those duties.

22 I still communicated with the off-site teams. We still  
23 placed the off-site teams in places where Dick Dubiel wanted  
24 to see them.

25 And if I could anticipate his thoughts, I sent them there

UAR gsh 1 first.

2 And then I called them and said, this is what I'm going  
3 to do. Do you concur?

4 We had a better communication, we found, from one control  
5 room to the other than standing in the same control room  
6 trying to find each other in that rather full room.

7 So it worked out better.

8 Q When you referred in your last answer to "normal"  
9 in the context of the organization and reporting  
10 responsibilities of individuals, am I correct that you meant  
11 normal, non-emergency?

12 A Yes.

13 Q Chains of the command?

14 A Yes.

15 Q Was it your impression, if you had one, during the  
16 28th that the emergency repair teams were reporting to  
17 someone other than you?

18 A I don't recall that really ever passing through  
19 my mind, that that group was not mine any longer.

20 Q Do you recall issuing instructions to the emergency  
21 repair part teams?

22 A When I was in Unit 2 control room, yes.

23 Q After you left the Unit 2 control room?

24 A I did not issue any more instructions to that  
25 group. Their leader stayed in the Unit 2 control room.

DAR gsh 1 Q And is it your understanding that their leader,  
2 then, issued the instructions to them?

3 A What do you mean by "their leader"?

4 Q You said their leader stayed in —

5 A The leader of the repair party?

6 Q Yes, sir.

7 A And yes, sir.

8 Q And do you know who, if anyone, issued instructions  
9 to their leader after you left the Unit 2 control room?

10 A No.

11 Q Had you issued any instructions to the emergency  
12 repair party leader when you were in the Unit 2 control  
13 room?

14 A Yes.

15 Q Is it a fair statement that the principal activity  
16 in which you engaged during the 28th was in connection with  
17 monitoring?

18 A Yes.

19 Q Is it also a fair statement that the principal  
20 monitoring for which you were responsible was off-site?

21 A Yes.

22 Q The organization charts which we have been discussing  
23 appear consistently to place you in charge of on-site  
24 monitoring.

25 A From Unit 2 control room, when we were having

DAR gsh 1 problems on-site increase in activity near the reactor  
2 building on the west side of the island, and so forth — I  
3 did direct their activities, yes.

4 So I directed both of them.

5 Q When you left Unit 2 control room, did you continue  
6 to direct any on-site monitoring?

7 A Yes, I did.

8 Q Was there more off-site monitoring going on than  
9 on-site monitoring?

10 A More movement of that group off-site, yes.

11 Q And that's the reason you spent more time on the  
12 off-site?

13 A Yes, yes. The on-site team we held in certain  
14 areas.

15 Q During the day of the 28th, was the off-site  
16 monitoring conducted by Met Ed employees only?

17 A Yes.

18 Q Did there come a time after the 28th when other  
19 organizations or individuals than Met Ed became involved in  
20 off-site monitoring?

21 A Yes.

22 Q Did you have responsibility for the supervision  
23 of those other organizations?

24 A Not after about the first week.

25 Q Who had that responsibility after the first week?



AR gsh 1 A I can only assume that it became the responsibility  
2 of the individuals located at the observation center.

3 Q When did you leave TMI, if you did, on the 28th?

4 A I did not leave until the next day.

5 Q When on the next day did you leave?

6 A I believe it was during the morning of the next day  
7 somewhere mid-morning.

8 Q During the long stretch from 7:00 in the morning  
9 on the 28th to the time you left on the 29th, and I may be  
10 repeating myself, but let me just make it clear, your  
11 activity was principally involved in off-site monitoring?

12 A That is correct.

13 Q Did you return to work on the 29th?

14 A I did, at 7:00 in the evening.

15 Q How long did you remain that day?

16 A Until 7:00 the next morning.

17 Q What did you do in general terms during that span  
18 of time?

19 A Again, assumed the ECS director of monitoring of  
20 directing the teams, the monitoring teams.

21 Q Did you work on the 30th?

22 A Yes.

23 Q What hours did you work?

24 A The same. We went on 12 and 12.

25 Q You were the night shift?

AR gsh

1 A Yes.

2 Q 7:00 in the evening every evening to 7:00 in the  
3 morning?

4 A That is correct.

5 Q And you on the 30th, you continued to have  
6 principal activity in the area of off-site monitoring?

7 A That's correct.

8 Q You said you worked on 12 and 12. Who worked on the  
9 other 12?

10 A Dick Dupiel.

11 Q At that point in time, was his principal activity  
12 off-site monitoring?

13 A I believe it was. We shared that duty.

14 Q While you and Mr. Dupiel were alternating those  
15 12-hour shifts, as you understand it, who was responsible  
16 for on-site activity?

17 A We did that also.

18 Q How long did the 12 and 12 rotation last?

19 A Off the record, forever. No, it must have seemed that  
20 way. I think it was a week. Again, things ran together. I  
21 think it was a week and then we began to come up with  
22 somewhat of an organization where Dave Limroth came in.

23 We got some of the foremen introduced into some semblance  
24 of order. We set up an HP control point at the Unit 2 old  
25 supervisor's office off of the control room in Unit 2. And

AR gsh 1 we began our survey program and began to get things back  
2 together as far as an HP department.

3 I can't tell you when we actually left the emergency plan  
4 and began HP activities.

5 Again, I really don't know.

6 Q Until that time, you and Mr. Dubiel alternated 12  
7 and 12?

8 A That is correct.

9 Q And during that rotation, when you were on, did you  
10 report directly to Mr. Miller?

11 A There was -- no, I did not report directly to Mr.  
12 Miller.

13 Q To whom did you report?

14 A Well, I went to the Unit 1 control room. To tell  
15 you the truth, I guess I really didn't have a formal  
16 individual to report to. We were in communication with  
17 Unit 2 control room, but I don't know who was in control of  
18 Unit 2's control room for that first week.

19 Q During the time that you were on duty during that  
20 first week, did you have occasion to meet to communicate with  
21 a supervisor or a superior to ask a question and get a  
22 clarification, discuss a matter?

23 A Yes.

24 Q And under that circumstance, who did you call?

25 A Sid Porter, Porter & Gertz, consultants. They were

DAR gsh 1 there.

2 Q What role was he playing?

3 A Dose assessment on off-site dose calculations.

4 Q And he was working the same shift you were?

5 A He was here quite often, yes.

6 Q Does he appear as the person in any of the boxes on  
7 either of these organization charts?

8 A I don't believe so, no.

9 Q Why would you have -- why did you, or would you have  
10 called Mr. Porter?

11 A Information purposes and off-site, we were quite  
12 concerned with off-site doses and calculations and so forth.  
13 We were doing them in the control room and communicating with  
14 an individual who I felt didn't know what was going on in the  
15 outside.

16 Q Did you not assume him to have any formal  
17 responsibilities?

18 A No, not at the plant, no.

19 Q If you had a problem or a question that you felt  
20 needed to be dealt with in the formal chain of command --

21 A Excuse me?

22 Q What would your next step up have been?

23 A I believe at that time we were in communication with  
24 the observation center, who was rapidly setting up a chain.  
25 Dave Limroth was over there, a man by the name of Grabber

DAR gsh 1 from General Dynamics was there, who I understand at the time  
2 was picking up the HP program.

3 In fact, he called me a couple of times and said, I want  
4 to meet you. Come over and see us.

5 Well, that was quite congested over there. So after  
6 spending 12 hours, I did finally go over to Mr. Graber, and  
7 he said, do you realize that I'm in charge of the HP program?  
8 And I said, no, I did not know that. Who are you, first of  
9 all?

10 And then I, after leaving him, went to see Dave Limroth and  
11 ask what the story was. And he said, no, that was not  
12 taking place.

13 Q Limroth said no, Graber wasn't in charge?

14 A That's right.

15 Q Who did Limroth say was in charge? Limroth?

16 A Limroth. Again, he was our department boss.

17 Q Did there come a time when it was established that  
18 Mr. Graber was in charge?

19 A No.

20 Q What role did Mr. Graber play?

21 A They were an HP support group and which I did not  
22 understand at the time, but I understand now, that they were  
23 hired through the GPU office, General Public Utilities  
24 office for Met Ed, higher up management, that they were here  
25 as a support group to follow HP, health physics.

DAR gsh 1 Q Was it your understanding that Mr. Grabber played  
2 a role similar to that which Mr. Porter played?

3 A No, I didn't relate him to Sid Porter.

4 Q How would you compare the two?

5 They were both outside people who came on the island. Is  
6 that correct?

7 A I couldn't compare the two because I knew Sid  
8 Porter. I did not know Grabber. And I think it was rather  
9 confusing and to have someone else come in and say he was  
10 in charge and having not heard anything from Met Ed, I said,  
11 fine.

12 Q Did Mr. Grabber tell you how he got the  
13 information that he was in charge?

14 A He showed me a formal plan that had been drawn up.

15 Q Did he tell you who drew the plan up?

16 A I think it was Mr. Lawyer. But I think at the time  
17 that that was he.

18 Q Who is Mr. Lawyer?

19 A He is a vice president.

20 Q So it's your understanding -- he is vice president  
21 of Met Ed?

22 A Yes.

23 Q And is he Mr. Limroth's boss, or was he Mr. Limroth's  
24 boss?

25 A I can't answer that. At the time he may have been.

DAR gsh 1 Q Is it your understanding that Mr. Graber had --  
2 strike that.

3 Did Mr. Graber tell you that Mr. Lawyer had told him that  
4 he was in charge?

5 A Yes.

6 Q Did Mr. Graber tell you that his authority derived  
7 from any other individual?

8 A I don't recall.

9 Q Apart from the meeting that you had with Mr. Graber,  
10 in which he told you that he was in charge, did you have any  
11 other dealings with him during the time when you were in  
12 an emergency situation as opposed to resuming normal  
13 operations?

14 A Yes, we did communicate back and forth a few times.  
15 I never did understand his function and it did not become  
16 paramount. He did not take over the group and we went back  
17 to our same group before.

18 He did not enter. He did not come over to the island to  
19 control room. He was confined to the observation center.

20 Therefore, we did not interface and Dave Limroth did begin  
21 to emerge out of this area and he was not happy with the  
22 Graber situation.

23 And because I did talk to him about it and he said, if there  
24 is a change, let me know. I don't really care, but he wanted  
25 to know who we were working for. And he came on quite strong

DAR gsh 1 then and appeared to write night orders for us, and so forth.  
2 And seemed to take over the situation.

3 Q This was during the time that you were in the  
4 emergency?

5 A This was during the first couple of weeks, yes.

6 Q So would it be fair to say that during that period  
7 you understood that the person to whom you should report to  
8 who was immediately above you in the current organization was  
9 Mr. Limroth?

10 A Yes.

11 Q And not Mr. Dubiel?

12 A That's correct.

13 Q Did Mr. Graber or his group provide any useful  
14 service, in your view?

15 A Yes. There were individuals from his group such  
16 as -- well, I don't know if I mentioned names or not, whether  
17 that is of any importance, but there were engineers from  
18 Electric Boat/General Dynamics that did come and they became  
19 our ALARA men.

20 Q Can you tell us what ALARA stands for?

21 A ALARA is a concept which is As Low As Reasonably  
22 Achievable. And it relates to personnel exposure.

23 Q Were they stationed at various places in the plant?

24 A They were stationed with us at our control plant,  
25 which we had set up in Unit 2.



DAR gsh 1 Q And these individuals assisted you in determining  
2 matters of exposure?

3 A We gave them a specific job which was to look at  
4 all of our radiation work permits as they came through and  
5 to do the ALARA function, to determine whether that job was  
6 going to be done and what exposure was going to be received.

7 Q If you can, tell me when during the incident the  
8 people from Mr. Graber's group began to perform this function.

9 A To my recollection, probably a week after the  
10 accident.

11 Q Prior to the time that they began to perform that  
12 function, were you following the prescribed procedures for  
13 issuance of radiation work permits?

14 A Yes.

15 Q As you understand it, was there a period of time  
16 after the incident began when radiation work permit  
17 requirements were dispensed with?

18 A During the accident, yes. During the first three  
19 days of the accident, we did not have an order set up in  
20 order to follow our normal chain of dispensing RWP.

21 Q Were work permits used at all during those first  
22 three days?

23 A The first day, no. The second day, I would say  
24 no. The third day I believe we began to come back to some  
25 semblance of order when we established our control point.

DAR gsh 1 Q Am I correct that during the first two days there  
2 were tasks that were performed that normally would have  
3 required radiation work permits?

4 A Yes.

5 MR. DIENELT: Off the record.

6 (Discussion off the record.)

7 BY MR. DIENELT:

8 Q Why, as you understand it, were the RWP requirements  
9 not followed during the first two days?

10 A Things were done at a rate which we could not  
11 follow normal procedures and do those type of things -- in  
12 order to have a RWP, needs a survey prior to it and that's  
13 what these men were doing.

14 Q Do you know whether there were provisions in the  
15 emergency plan for emergency RWPs?

16 A No.

17 Q Were there any procedures in any plan or any  
18 document that you were aware of that made provision for  
19 emergency RWPs?

20 A Not emergency Radiation Work Permits, no.

21 Q So there was no shortcut method available to  
22 fulfill the requirements for obtaining an RWP and having  
23 some procedure with respect to RWPs?

24 A No. To my knowledge, no. We have under our normal  
25 procedures a radiation work permit. If an individual is going

DAR gsh 1 into an area to determine the information required on the  
2 radiation work permit, the individual may go in that area  
3 without a radiation work permit.

4 However, he must make out one when he returns with that  
5 information.

6 In an emergency, it is my feeling that because of an  
7 emergency, time would not permit this to be done.

8 Q You testified earlier that during the time that you  
9 and Mr. Dubiel were rotating 12-hour shifts, you had the  
10 responsibility for on-site, as well as off-site monitoring?

11 A Yes.

12 Q Did you also have responsibility for in-plant  
13 monitoring and in-plant activities?

14 A Yes.

15 Q What was the role which Mr. Porter played in the  
16 response to the incident?

17 A Off-site dose assessment.

18 Q Was he useful?

19 A Yes.

20 Q Were there other consultants or outside organizations  
21 apart from General Dynamics and Porter & Gertz who  
22 assisted in the response from the health physics radiation  
23 point of view?

24 A As far as supplies, instrumentation, and so forth,  
25 there was a group — and I can't tell you who it was — there

DAR gsh

1 was a group set up at the observation center who I found  
2 very helpful inasmuch as if we needed supplies, equipment,  
3 and so forth, there was a group that responded to those  
4 requests.

5 Graber was part of that particular group.

6 I do recall communicating with him on a few instances  
7 when we were asking for instrumentation and I found that  
8 group to be very helpful.

9 So I'm saying that an off-site group that responds to your  
10 needs as far as your supplies is a definite necessity.

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187 03 01

kapDAR 1 Q Is it fair to say that there were not on site at  
2 the beginning of the incident enough people, and there was  
3 not enough equipment properly to respond to the incident?

4 A People to run the HP department, we found it to be  
5 shallow. We felt that there were enough individuals to  
6 operate in an emergency situation as we had it planned,  
7 utilizing the auxiliary operators as Health Physics  
8 personnel. Instrumentation, no. As far as portable  
9 instruments go, as far as we found this out later on --  
10 however, the portable instruments, the beta/gamma  
11 instruments, we had just come out of Unit 1 outage, a  
12 refueling outage where we had utilized an awful lot of  
13 instrumentation.

14 We had taken some of Unit 2's new instruments and used  
15 those in Unit 1 to complete our refueling outage, and we did  
16 not, at that particular point, due to the outage, have  
17 enough portable instrumentation for our on-site teams.

18 We had already set aside kits, of which there were only  
19 four, set aside kits for off-site monitoring teams.

20 Q Is it your view that if the outage had not just  
21 taken place, you would have had enough personnel and enough  
22 equipment to respond adequately to the emergency without  
23 calling in outside consultants?

24 A To initially take care of the emergency, yes.

25 Q Would it have been necessary in that circumstance

187 03 02

kapDAR 1 to call in outside consultants at all?

2 A Not for the first emergency, no, not for the first  
3 day.

4 Q What about subsequent to that?

5 A Yes.

6 Q Why would that have been necessary?

7 A I think the outside help was necessary.

8 Q For what purpose?

9 A Off-site dose assessing. For taking a look out of  
10 the madhouse that was going on inside the plant, to take a  
11 look. We were totally inadequate in our TLD program. We  
12 just couldn't handle it, or the repeated readings that were  
13 needed to determine personnel exposure. We needed that  
14 help.

15 As far as actually doing survey work and so forth, I  
16 think we could have handled that. In recovery, no, we  
17 needed that help.

18 Q We have referred to a Mr. Porter, a Syd Porter and  
19 Porter & Gertz. Is Mr. Porter the Syd Porter of Porter &  
20 Gertz?

21 A He is that, yes.

22 MR. DIENELT: Can we take a short break?

23 (Recess.)

24 MR. DIENELT: Back on the record.

25

27 03 03

kapDAR 1 BY MR. DIENELT:

2 Q Let me just try to clarify a couple of things,  
3 Mr. Mulleavy.

4 During the time that you and Mr. Dubiel were alternating  
5 12-hour shifts, am I correct that you were in charge during  
6 your shift of off-site monitoring?

7 A That's correct.

8 Q On-site monitoring?

9 A Correct.

10 Q On-site personnel and vehicle monitoring?

11 A Yes.

12 Q On-site decontamination activities?

13 A Yes.

14 Q In-plant Health Physics?

15 A Yes.

16 Q Including TLD matters?

17 A Yes.

18 Q Is there a day or an event which, in your mind,  
19 marks the time when your activities changed from response to  
20 an emergency to recovery?

21 A There was no definite time. In fact, we asked  
22 many times, which phase are we in? We never knew, other  
23 than Day 1, that this is an accident situation and we are in  
24 our emergency plan.

25 Q Who is "we" in this context?

87 03 04

kapDAR 1 A Our Met Ed individuals.

2 Q You and who else?

3 A We as Met Ed personnel. We as a station, a  
4 plant.

5 Q And whom did you ask?

6 A Oh, not anyone particularly. It was just a topic  
7 of conversation. Where do we stand? Are we still  
8 emergency? Are we in a recovery plan? What is our mode?  
9 We never -- we, as an HP department at that time, never  
10 really found that there was a transition and a definite,  
11 say, from emergency situation to a recovery situation.  
12 There was never any definite transition one to the other.  
13 We just kind of flowed.

14 Q Is there one person, or is there a group of  
15 persons, who, as you understand it, had the responsibility  
16 for declaring the emergency to be over and the recovery to  
17 be in operation?

18 A That should have been our Emergency Director.

19 Q That would have been Mr. Miller?

20 A Yes.

21 Q And you are not aware of any such decision or  
22 announcement that he made?

23 A No. No.

24 Q Can you approximate a time, or focus on an event  
25 when you felt that, as a practical matter, your activities



87 03 05

kapDAR 1 were now in a recovery-oriented mode, rather than oriented  
2 toward responding to an accident or an emergency?

3 A My attitude was changed by an event, maybe in the  
4 second week, when we had NRC men in the plant. And I was  
5 told that if we did not pull our act together as an HP  
6 department that the NRC would take over the Health Physics  
7 aspects.

8 The -- it was at that particular point that I said, No  
9 way is anybody taking over our particular activities. And I  
10 told the techs that it's time we did our own HP functions  
11 and that is when we began to get back to some semblance of  
12 order.

13 Q Who said that the NRC would take over the HP  
14 program, if you didn't get your act together?

15 A I can't tell you exactly who said that -- wait, it  
16 was a feeling conveyed to me, if we don't, I have heard that  
17 the NRC is going to take us over. It was one of my  
18 technicians that came up to me and mentioned this first, and  
19 then it was a feeling that all of a sudden developed. And I  
20 can't tell you where that feeling came from.

21 An NRC man did not tell me that, but it was felt by those  
22 who were working with us in the HP department at the time,  
23 that, Hey, if we don't -- I heard that they're going to take  
24 us over. And it was at that particular point -- myself, I  
25 didn't discuss this with anyone else -- it was myself that

87 03 06

kapDAR 1 said, All right, it's time to come back and do the things  
2 the way we are supposed to do them.

3 Q Did you discuss it with Mr. Dubiel?

4 A I did not?

5 Q Mr. Limroth?

6 A I did not.

7 Q Who was the technician or foreman who told you  
8 that he understood that NRC was going to take the Health  
9 Physics program over if you didn't get your act together?

10 A I think it was Pete Bolitz, but I can't be sure.

11 Q Were those the words that were used by the person  
12 who told you?

13 A Yes.

14 Q "If we don't get out act together"?

15 A Yes.

16 Q What other things, if any, in the conversation  
17 that you just described, contributed to the impression that  
18 you had that NRC might take over the Health Physics program?

19 A That was the only one.

20 Q What did "getting your act together" entail?

21 A Detailed survey work, documentation. Up until  
22 that particular point, we were not meticulous in our  
23 documentation. We were jumping here and there to different  
24 duties as they were listed to us by the Operations  
25 Department. Air survey work, documentation of air survey

187 03 07

kapDAR 1 work. Attention to some samples -- all of this.

2 We had been sort of looking to others for our direction  
3 and it was through that particular statement that I felt  
4 that we, as HP personnel, should begin to follow our own  
5 program and not wait for direction from others.

6 Q This was as best you recall, approximately two  
7 weeks after the incident?

8 A About a week and a half to two weeks.

9 Q Am I correct that it is your view that during this  
10 week and a half or two weeks, you essentially agreed with  
11 the view that the Health Physics program did not have its  
12 act together?

13 A No, I didn't agree that we did not have our act  
14 together. We were functioning as an HP department, wringing  
15 RWPs and -- but we had an awful lot of direction from  
16 everywhere. Syd Porter was asking for samples to retain  
17 this, we should be doing this, we better start doing this,  
18 watching the off-site calculations, watching air sampling  
19 programs. We were, in the meantime, getting a lot of  
20 different equipment in. There were an awful lot of people  
21 directing our particular activities. There were people from  
22 the observation center, there were our vice presidents.  
23 There was the NRC -- all giving ideas on things that should,  
24 they felt, be done. Confusing, at best, to the  
25 technicians.

187 03 08

kapDAR

1 They weren't sure whether they should be working this  
2 schedule, what schedule should they be working, and so  
3 forth. There were a lot of things hanging at loose ends.  
4 You would come into work and you wouldn't have a chance to  
5 have a turnover. There were too many things, people asking  
6 you to do so many different things that it was time that we,  
7 ourselves, began to run our own program.

8 And I'm not saying we weren't running the program  
9 beforehand. Yes, we were, but we were not directing it  
10 ourselves. We were getting direction from some different  
11 places. That was confusing -- on who was doing what. We  
12 were being directed from a control room, from the  
13 observation center, from a place called Trailer City, that  
14 had just developed overnight.

15 We had gone from our 533 people that we were responsible  
16 for, to 7000 people. All of a sudden, we were responsible  
17 for, and answering to. And it was time that we developed  
18 our own little organization again and came back together.  
19 That is what I mean about getting our act together.

20 Q And after this conversation with the other  
21 employee, did you get your act together?

22 A Yes, sir.

23 Q And what did you do?

24 A We began to formally document this. We  
25 communicated with our own operations department, and on my

kapDAR 1 particular shift, I believe Jim Floyd was in charge of this  
2 particular group. We met together. We discussed what was  
3 going to happen on our particular shift. And we began to  
4 communicate, one with the other, to find out exactly what  
5 the plant's needs were and how we were going to respond to  
6 the plant's needs.

7 We did not take direction from anyone else, other than to  
8 come through the control room and through the man who was in  
9 charge of our particular shift. We met. We began to meet at  
10 the beginning and at the mid points and at the end of each  
11 shift to find out what each was doing and some semblance of  
12 order came from that.

13 Q During this time, you and Mr. Dubiel were still  
14 alternating at 12-hour shifts?

15 A Yes, sir.

16 Q Did you discuss the efforts to get your act  
17 together with Mr. Dubiel?

18 A Yes.

19 Q Did you discuss them with Mr. Limroth?

20 A No.

21 Q Did you and Mr. Dubiel agree on an approach?

22 A Yes, sir.

23 Q So as you understand it, he did essentially the  
24 same kind of things that you did in getting the act  
25 together?

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kapDAR 1 A Yes. Develop the HP department back to its normal  
2 station.

3 Q When someone called you or approached you after  
4 this watershed and asked for something or directed you to do  
5 something, am I correct that you told that person through  
6 the control room?

7 A Yes.

8 Q Did that kind of thing actually happen?

9 A Yes, it did. We began to have plans drawn up and  
10 we did function that way, and we began to have jobs  
11 discussed before we just responded to them, on why they were  
12 necessary and why they were needed, and why the exposure was  
13 necessary.

14 Q On the 28th, there had been an organization  
15 pursuant to which you reported to Mr. Dubiel.

16 A Are you speaking of an emergency organization or a  
17 normal situation?

18 Q An emergency situation.

19 A An organizational chart for emergency situation,  
20 that is correct.

21 Q Now, the impression I got from the testimony you  
22 just gave is that some time after that a situation developed  
23 in which you really had no one to report to, and you had a  
24 large number of people who, in some sense or another, were  
25 giving you directions, some instructions or requests; is

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kapDAR 1 that a fair statement?

2 A I think you are grouping too much together there.  
3 The first three days when I began to report to the Unit 2  
4 control room, we were still following what I would term the  
5 emergency plan. And from there we took the direction of the  
6 Emergency Director. When we began our Health Physics  
7 department again, as a department working from the Unit 2  
8 control room -- and Dick Dupiel and I shared that  
9 responsibility on a 12-hour shift.

10 When the direction was assumed through Dave Limroth --  
11 and this is when I had the conflict with Graber and Limroth  
12 and so forth, at that particular point, direction was rather  
13 hazy on who, actually, was supplying the direction.

14 We had a lot of directors at that point.

15 Q And that situation prevailed until the time you  
16 got the impression that NRC might take over?

17 A Yes.

18 Q Do you have a view as to why or how that situation  
19 between the end of the third day and the time when you  
20 decided to take some positive steps developed?

21 A Why that developed, or from that point?

22 Q Right.

23 A From the third day on?

24 Q Correct.

25 A Confusion in direction was the main point. Our

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kapDAR 1 structure as written down was not a valid structure any  
2 longer. We, I assumed, were in the recovery phase and there  
3 is not a delineation of responsibility in the recovery  
4 phase. We merely, in all of our particular drills, had  
5 terminated the emergency portion of the drill, but never got  
6 into a discussion on what recovery was made or what would be  
7 done in a recovery phase, or what structure would be  
8 developed during that.

9 In an emergency plan you take care of the emergency and  
10 say, well, then that's over, now we go into the recovery  
11 phase. But we had never dealt with that before so therefore  
12 direction was rather spotty.

13 Q During the period between the third day and the  
14 time -- a week and a half or two weeks into the accident --  
15 how many times did you talk to Mr. Limroth?

16 A That's a rather difficult question to answer, how  
17 many times.

18 Q Maybe --

19 A His office or his -- well, office, I guess, was  
20 set up at the observation center. We did communicate and  
21 talk via a telephone. He then began to come to the control  
22 room as we opened up access to the control room.

23 Sometimes during the shift he was rather difficult to get  
24 a hold of. I'm not exactly sure what his full  
25 responsibility was other than at some point in time we did



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kapDAR 1 begin to see him. He did write some communications, as far  
2 as what he termed a night order book, which is the first  
3 time I had ever seen that.

4 I assume that is an offshoot of a Navy situation and he  
5 did give some direction that way, on what he felt should be  
6 being done.

7 Q Would you say that you spoke to him on a daily  
8 basis?

9 A No, not at the beginning. I would say --

10 Q At the beginning, being at the end of the third  
11 day?

12 A At the end of the third day. I would say there  
13 might have been a day or two that went by without direct  
14 communication with him. There may have been a written  
15 communication in what we term the night book, in passing on  
16 from Dick to myself, of things that Limroth may have desired  
17 to be done.

18 Q Did you discuss with him the apparent lack of one  
19 person in a supervisory position over you, during this  
20 period?

21 A No.

22 Q Did you discuss that situation with anyone?

23 A No, never occurred to me to discuss that. The  
24 lack of organization, of course, is always a topic and we  
25 face that today.

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kapDAR 1 (Discussion off the record.)

2 BY MR. DIENELT:

3 Q During the 28th, did you have any role in  
4 directing or discussing any sampling or surveys of radiation  
5 levels inside the plant?

6 A Direction was given to the individual at the HP  
7 control point, or our ECS, when we saw our hand and foot  
8 monitor and our -- monitoring go off, and into an alarm  
9 situation.

10 Again, I directed that we take air samples at our ECS and  
11 take radiation surveys, and that was prior to our  
12 evacuation of the RCS. That particular point is the only  
13 survey I had directed, myself, to be done right then and  
14 there.

15 Q Had you any role in connection with surveys that  
16 were taken, or samples that were obtained in the auxiliary  
17 building during the 28th?

18 A In the Unit 1 auxiliary building, or Unit 2  
19 auxiliary building?

20 (Discussion off the record.)

21 MR. DIENELT: Back on the record.

22 BY MR. DIENELT:

23 Q Either one.

24 A Either one? All right. No, not directly did I  
25 give the on-site team, which is inside the plant, direction

87 03 15

kapDAR 1 to go inside the auxiliary building, nor did I ask them to  
2 take any samples of the coolant system or anything of that  
3 nature.

4 I did direct, later on, from Unit 2 control room,  
5 individuals to go outside on the west side of the plant and  
6 what we term on-site monitoring team ought to go around the  
7 plant site getting off-site dose site calculations and  
8 off-site -- meaning off-site survey team, outside the  
9 building -- to go do survey work.

10 Q You were not involved in a sampling or survey of  
11 the auxiliary building which Mr. Janouski took; is that  
12 correct?

13 A That's correct.

14 (Discussion off the record.)

15 BY MR. DIENELT:

16 Q Were you involved in the decision to take any  
17 samples of the primary coolant on the 28th?

18 A No, sir.

19 Q Were you involved in any sampling of the primary  
20 coolant on the 29th?

21 A No, sir.

22 Q Are you familiar with any instances of  
23 contamination of persons who did any monitoring or sampling  
24 on the 28th or 29th?

25 A I am now. I was not at the time.

87 03 16

kapDAR

1 Q When did you become aware of these instances?

2 A Again, I can't give you an exact date. But there  
3 was one night when I encountered Mr. [REDACTED] and he was  
4 concerned about contamination that he had received and he  
5 apparently had not anyone to turn to. He had told his  
6 situation to an HP foreman, and he hadn't received any word  
7 on exactly what he should be doing, or what his situation  
8 was.

9 And I told him that I had not heard about it, nor did I  
10 know of his situation. So we sat down and we talked for a  
11 short while. This was in the Unit 1 turbine hall, and I  
12 felt badly that I did not know about it.

13 And that is when I went to Syd Porter, after having  
14 talked to him and I asked to have Dr. Linneman come and  
15 talk to [REDACTED] of which then Syd did respond and  
16 Dr. Linneman did come within the next few days, I believe.

17 Q Do you know how many days after he had become  
18 contaminated, Mr. [REDACTED] came to you and discussed his  
19 concerns with you?

20 A I don't know. I don't know the date.

21 Q Who is Dr. Linneman?

22 A Radiation Management Corporation doctor whom we  
23 did go through. We had a commitment by Radiation Management  
24 Corporation out of Philadelphia, to provide us with the  
25 expertise in dose assessment with internal contamination,

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kapDAR 1 and in the event that we do have a problem, they should be  
2 notified to take care of that particular situation.

3 We do have the capability of going to the University of  
4 Pennsylvania, through them, for any studies that should be  
5 done.

6 Q When you say "internal contamination," what do you  
7 mean?

8 A Internal intake.

9 Q Not contamination on the skin?

10 A That also.

11 Q Did you understand that Mr. [REDACTED] had been  
12 internally contaminated?

13 A No.

14 Q Externally, in this case?

15 A Externally, yes.

16 Q In accordance with either the organization chart  
17 which was in effect or the organization which, as a  
18 practical matter, operated, who, as you understand it, was  
19 the person responsible for making decisions whether or not  
20 to take a particular sample or engage in a particular  
21 monitoring activity in the plant during the first three  
22 days?

23 A Dick Dubiel was the one I would look to for that.

24 Q So that as you understand it, it would be  
25 Mr. Dubiel who would have been the person to make the

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kapDAR 1 decision to take a sample of the primary coolant?

2 A Yes.

3 Q Would it also have been Mr. Dubiel who would have  
4 been the person responsible, ultimately, for dealing with  
5 instances of contamination which came about as a result of a  
6 sampling activity?

7 A No.

8 Q Who would that have been?

9 A It would not have been, ultimately, his  
10 responsibility, no. That should have been shared through  
11 our particular department, the foreman and myself.

12 Q Do you know which, if any, foreman was aware at  
13 the time that Mr. [REDACTED] had been contaminated?

14 A Yes.

15 Q Which foreman was that?

16 A It must have been Peter Velez, because Peter Velez  
17 was with him at the time, I understand.

18 Q Were you surprised that you had not been informed  
19 about the contamination prior to the time that Mr. [REDACTED]  
20 approached you?

21 A Yes, I was upset by that fact, that no one had  
22 discussed that with me, because here was a man who was  
23 concerned, and evidently had been concerned since the  
24 incident. And no one, really, was doing anything for him.

25 Q Did you ask Mr. Velez -- strike that.

87 03 02

kapDAR 1 Did you discuss your concern with Mr. Velez?

2 A No, we did not interface because Pete Velez and I  
3 were at opposite ends of the spectrum. We did not  
4 communicate.

5 Q Did you discuss your concern with any person other  
6 than Mr. Velez and Mr. [REDACTED]?

7 A I did not discuss it with Mr. Velez.

8 Q I'm sorry. You're correct. Did you discuss your  
9 concern with anyone?

10 A Porter-Gertz, or Syd Porter, excuse me, and in my  
11 plea to get Dr. Linneman here with him, I then told Dick  
12 Dubiel what I had done, and he concurred that Linneman was  
13 the one to come in and speak to him about the situation.  
14 I wanted his fears alleviated.

15 Q "His" being Mr. [REDACTED]?

16 A Mr. [REDACTED] And that upset me, that we had not  
17 done anything prior to this point.

18 Q Why did you discuss your concern with Mr. Porter?

19 A I needed Dr. Linneman's help. Syd Porter, who was  
20 a member of RMC at one particular point, knew Dr. Linneman  
21 personally. And I knew that's how I could get him.

22  
23  
24  
25

AR gsh

1 Q Were you -- did you become aware of any evidences  
2 of contamination during the response to the accident?

3 A Yes.

4 Q How many others?

5 A I then became aware of Mr. [REDACTED] and [REDACTED]  
6 [REDACTED], who was a chemist from Met Ed.

7 Q Were those three instances of contamination all  
8 associated with the same event?

9 A I believe they were.

10 Q Did you become aware of any other instance of  
11 contamination?

12 A Not at that particular point. We did have others,  
13 of course, during the course of the incident, or the  
14 accident, and we, indeed, took care of those as they occurred.

15 But this particular one was due to, I believe, taking of  
16 the reactor coolant sample and, yes, I became aware later  
17 on of the magnitude of that particular incident and followed  
18 it since then.

19 Q Did you become aware of contamination of a man  
20 named [REDACTED]?

21 A Yes.

22 Q Had you any role in the decision to engage in the  
23 activity which led to Mr. [REDACTED] contamination?

24 A I don't recall the job in which he went on to  
25 perform that particular duty.



DAR gsh

1 That is vague in my mind. I do recall the contamination  
2 of that particular individual. It may be I recall it because  
3 it was related to me. But I don't recall it as being a  
4 paramount point at the time.

5 Q Do you recall discussing a valve change for the  
6 reactor coolant evaporator tank?

7 A I hesitate to say yes or no because the incident  
8 is in my mind. But my part in that, again, I don't recall.

9 Q Do you recall having someone appeal to you with  
10 respect to the refusal by Mr. DeMann and Mr. Donnachie to  
11 issue a radiation work permit for the valve change to the  
12 reactor coolant evaporator tank?

13 A No.

14 Q And you don't recall when you learned of Mr.  
15 [REDACTED] contamination?

16 A No, I don't.

17 Q Do you recall whether you learned about it within  
18 a matter of hours of the time it occurred or within a matter  
19 of days of the time it occurred?

20 A I do recall the report that [REDACTED] had been  
21 contaminated. I don't right now know the magnitude of that.  
22 I don't recall the magnitude of it, but I do recall being  
23 told of the incident.

24 Q Do you recall who told you?

25 A No.

DAR gsh 1 Q Were you involved in making or supervising any  
2 arrangements for decontamination of individuals during the  
3 response to the accident?

4 A I'm not sure what your question means. Was I  
5 responsible for organizing a group to decontaminate?

6 Q Yes, sir.

7 A We had over in Unit 1 facility for decontamination  
8 because we could not get into Unit 2.

9 So, therefore, all decontamination was done through NSS  
10 over nuclear support service as a group that we had hired  
11 for Unit 1 responsibilities.

12 It was done over there as far as organizing the group to  
13 do this; not formal organization of a group to perform  
14 decontamination personnel, no.

15 Q But you made some arrangements or were aware of  
16 the arrangements that were made?

17 A Yes.

18 Q Did there come a time, to your knowledge, when it  
19 was not possible to do decontamination in the Unit 1  
20 facility, either?

21 A There were a couple of occasions where Unit 1  
22 could not be used due to contamination level in that  
23 facility. But that was brief. We never closed that facility  
24 for any length of time that we could not use it, after  
25 cleaning up and going back into the unit.

UAR gsh 1 Q Were you aware at the time when Unit 1 facility  
2 was not available that it was not available?

3 A Yes.

4 Q And did you have any role in making interim  
5 arrangements for decontamination facilities?

6 A No.

7 Q Do you know who did that?

8 A No, I don't.

9 MR. DIENELT: Off the record.

10 (Discussion off the record.)

11 BY MR. DIENELT:

12 Q Were there any other instances of contamination  
13 during the first several days of the incident of which you  
14 became aware?

15 A No. There was one other incident of a possible  
16 radiation exposure which we later proved not to be true, but  
17 nothing that I recall as being of grave concern.

18 Q What was the potential overexposure?

19 A There was an off-scale dosimeter, and we later  
20 had the TLD developed and it showed that the exposure was  
21 not valid. The off-scale dosimeter was not valid.

22 The TLD took the precedence in its evaluation of the  
23 situation.

24 Q Were you involved in supervising the methods by  
25 which personnel exposure control was maintained?

0AR gsh 1 A I'm taking that question to mean I was instrumental  
2 in setting up a TLD program.

3 Q Were you?

4 A Instrumental in implementing that program, but not  
5 setting it up.

6 Q Who set it up?

7 A A Mr. Mike Buring was instrumental in developing  
8 the TLD program or the personnel monitoring program for the  
9 plant.

10 Q This is during the emergency?

11 A No, no, no, no. This was the beginning of the  
12 TLD program.

13 Q Tell me how that program worked.

14 A Individuals are issued a TLD when they come on the  
15 plant site, and if they are in a controlled area, we require  
16 that the individuals wore them.

17 Further development of that particular program, as far as  
18 monitoring and how we used it during the accident, was -- well,  
19 let me go back and describe what we actually had to do with  
20 that particular program.

21 The TLD were originally, under normal conditions, read  
22 here at the site by our radiation protection technicians.  
23 During the accident, we began to do some reading on-site,  
24 found that our background readings were too high, and it was  
25 moved from the plant site. It was taken to the observation

DAR gsh

1 center and moved to the mezzanine floor of the observation  
2 center, I believe on day one, the 28th because when I went  
3 over that evening to the observation center with Mr. Dupiel,  
4 or I did see it at the observation center on the mezzanine  
5 floor, it was ultimately moved from there to a trailer and  
6 taken over by many different people.

7 Our use of the program then was to utilize these TLDs as  
8 issued by the observation center. We were instructed by the  
9 observation center to return our TLDs to that particular  
10 drop point. We used the situation, or we used the monitoring  
11 program from the observation center.

12 They would issue readings from there, as spotty as they  
13 were, and that's how we utilized our particular program as  
14 far as monitoring personnel.

15 We used their documentation from the observation center  
16 which was transported each shift and we were given -- I have  
17 forgotten the terminology -- we were given a point by  
18 supervision and I believe this came from observation center.  
19 From whom, I can't tell you.

20 We were given a point at which each individual Met Ed  
21 person could not exceed that limit for the day. And we  
22 understood that it was a computation made on what the  
23 individual had received for the quarter, so that if he  
24 received this on a day, he would not exceed his quarterly  
25 limit.

UAR gsn 1 That was sent to us from the observation center on a  
2 daily basis and we utilized that as our control mechanism  
3 for personnel exposure.

4 Q In normal times, how frequently were TLDs read?

5 A Once a month.

6 Q During the emergency, how many -- how frequently  
7 were they read?

8 A On a daily, to begin with.

9 Q Did that change?

10 A Yes, it did.

11 Q What did it change to?

12 A It changed to a week. And we are now back to a  
13 month.

14 Q Approximately when, if you can recall, when did it  
15 change to a week?

16 A I'm sorry, I can't tell you, no.

17 Q During normal times, each TLD is read each month?

18 A Correct. Correct.

19 Q During the emergency, was each TLD ready each day?

20 A Yes. And by each TLD, I'm taking you to mean each  
21 person's TLD.

22 Q Yes.

23 A Yes.

24 Q During normal times, what kinds of records are  
25 maintained of the TLD readings?

DAR gsh

1           A           The TLD readings are imprinted on what we call  
2 a Form 5 which comes out every month. And we at the control  
3 point maintained a weekly self-reader dosimeter print-out  
4 sheet which had on the weekly exposure, the monthly exposure  
5 and the quarterly exposure for each individual who used the  
6 self-reading dosimeter.

7           Q           During the emergency, what records were kept?

8           A           The Form 5s were sent to the HP control point and  
9 Form 5 gives the individual's lifetime exposure and the  
10 quarterly exposure.

11           With each input of the TLD, it was printed out. They were  
12 sent to the control point, which was the Unit 2 control room,  
13 and we utilized that.

14           Then we, and I can only say they as the group running the  
15 TLDs over at the observation center, were sending us on a  
16 shift basis, handwritten form on exposure for each individual.  
17 And that was kept up, I believe, for about a month. And then  
18 that kind of disappeared and went by the wayside and we  
19 relied on the Form 5 print-out.

20           Q           Was there a period of time during the incident when  
21 the TLD reader was not available?

22           A           During its transport from the island to the  
23 observation center and its ultimate set-up again, I would say  
24 it was not available.

25           Q           How long a period did that take?

UAR gsh 1 A Three hours, perhaps four.

2 Q And your understanding is that once it arrived at  
3 the observation center, it was put immediately into use?

4 A It was put up on the mezzanine floor and when I  
5 went out there later that night, it was in operation up on  
6 the mezzanine floor of the observation center.

7 Q As you best recollect, was it late at night on the  
8 28th?

9 A Yes.

10 Q Yesterday, Mr. Velez, I believe, testified that  
11 he thought that there was a period of as much as two or three  
12 days in which the TLD was not available, either because it  
13 was -- strike that.

14 He testified, as I recall, that there were several days  
15 that he lapsed before the TLD reader was brought to the  
16 observation center and that once it was brought to the  
17 observation center, it took as much as 48 hours to get  
18 working.

19 A No. When that day -- and the individual was Ed  
20 Eginreider, who is one of our Met Ed techs, who reports to  
21 me that the background was too high to be TLD read at our  
22 normal facility, which is located on the northeast side of  
23 the island by the Unit 1's cooling towers.

24 It was then decided to do it off-site at the observation  
25 center.



DAR gsh 1 Now the actual time that it left, I can't tell you, but I  
2 know when I arrived at the observation center, I was surprised  
3 to see it on the mezzanine level, which is the overlook onto  
4 the island.

5 And Ed was there opening TLDs -- we call it "shucking"  
6 TLDs -- like crazy and reading them at a particular point.

7 So I know at that point it was operational.

8 From then on, there was a point when -- I don't know, but  
9 it moved from there to this trailer that was brought in and  
10 we had individuals from Harshaw come in with another reader  
11 and the whole operation was there in this trailer.

12 And Mike Buring came back, who was the man who originally  
13 set it up. Fred Huwe, who was one of my foremen who was  
14 instrumental in running the TLD program under normal times,  
15 was there.

16 They brought in a whole bunch of personnel, secretaries,  
17 key punch operators, et cetera, to function out of this  
18 trailer. And the whole area was set up there.

19 Later on, there was another movement and again, I can't  
20 tell you exactly what time because that was taken over for  
21 us and we were glad to have that being taken care of.

22 It was brought back to the south end of the island and  
23 set up there and then ultimately where it is now at the  
24 south gate on the island, which is an area that we call the  
25 brass gate, which is on the island, right over there.

DAR gsh 1 Q Was there any time during the sequence of events  
2 you just described during which the TLD reader was not  
3 available for as much as an eight-hour period?

4 A I can't answer that.

5 Q Is it your understanding that the TLD data which  
6 were recorded from the reader were available within a day  
7 of the time that the TLDs were submitted?

8 A The data from reading a TLD was made available  
9 within a day's time, say as March 29th.

10 Q Yes.

11 A That data, I believe, was not available and the  
12 reason that I say that is that the office in which it was  
13 put out, which was in the Unit 1 service building, I don't  
14 believe was able to be occupied at that particular point.

15 Thus, quickly they brought in keypunch operators and  
16 a facility to do that off-site.

17 Now there is an individual who I do know did come in and  
18 function from that office, but I believe that was a little  
19 later on.

20 So the first day or so that data may not have been  
21 available.

22 Q Is it your best understanding that it was not?

23 A It is my best understanding it was not available.

24 Q And it's also your best understanding that within  
25 several days the data were available?

UAR gsh 1 A Yes.  
2 Q Within a day of the time that the TLDs were read?  
3 A Yes.  
4 Q Was the second TLD reader which was brought in by  
5 Harshaw, to your knowledge, cost-calibrated with the other  
6 reader?

7 A I can't answer that with any accuracy because I  
8 had nothing to do with the TLD facility at that time.

9 Q Who would know?

10 A M e Buring.

11 Q Were the TLD data, as you understand it, complete?

12 A The results we were getting were very spotty. The  
13 individuals whom we were taking care of, we were kind of  
14 maintaining our own records at the HP control point and not  
15 relying on that TLD data that came through.

16 It was spotty. We were unsure of its accuracy and did not  
17 completely rely on it.

18 Q You made records of your own?

19 A Yes, we did.

20 Q For what people by category?

21 A Operators who were going in and out of the area at  
22 that particular point. We had only emergency entries into  
23 the area. We were very selective on individuals we would  
24 allow to go in and we didn't have that many to take care of.

25 Q Were the exposure of these individuals based on

JAR gsh 1 TLD readings?

2 A They were on dulcimeter readings, self-reading  
3 dulcimeters.

4 Q Did you regard them as complete and accurate?

5 A It is an instrument that you may use as a guideline  
6 for exposure. They are inherently and do innerently read  
7 higher than a TLD.

8 So there is some feeling of conservatism on them and,  
9 yes, we regarded that as a means of controlling exposure.

10 Q What was the form of records which you mainted on  
11 those individuals?

12 A Handwritten. Nothing that we published and nothing  
13 that I believe we retained because ultimately, the TLD does  
14 supercede that information.

15 Q When you got TLD information, did you find any  
16 significant discrepancies?

17 A Yes.

18 Q Would you tell me about that?

19 A Well, not discrepancies in what we had recorded and  
20 what the TLDs said. There was -- or the paperwork said --  
21 out individuals would come beck and say, hey, I know that  
22 we had more than this and we would have to call over and  
23 have them checked out, or I would stop over in the morning  
24 and say, hey, I have this problem with this guy. Check on  
25 his particular record. They were confusing.

DAR gsh

1 Q Were there instances in which the record that you  
2 prepared showed a lower exposure than what you learned from  
3 checking the TLD data at the observation center over where  
4 the reader was?

5 A I don't recall that we had any great discrepancies  
6 in -- once we got the TLD report, we would discount what we  
7 had. We were keeping it during our particular shift to see  
8 if this guy had stayed within his limits and we were  
9 maintaining it below what I believe we were told was the end  
10 point for the individual per day.

11 If we were allowed to get 20 per day, we said, all right,  
12 you have five here and ten here and you only have five more  
13 for the day.

14 This is what we were limiting, the daily limit that was  
15 imposed on us at the time.

16 Q Am I correct that the manner in which you resolved  
17 the discrepancy was to accept the TLD data as presented to  
18 you?

19 A Yes.

20 MR. DIENELT: Off the record.

21 (Discussion off the record.)

22 BY MR. DIENELT:

23 Q In terms of the record that you maintained, did you  
24 have, for example, a sheet on each individual that might have  
25 said "Janouski" at the top?

187.04.14

UAR gsh

1 A No, that was -- oh, gosh, there was a form that  
2 came out giving us a handwritten figure on what an individual  
3 did have and what his limit was and we utilized those. They  
4 came to the control room. As I said before, they came to the  
5 control room over a shift basis. We added or subtracted from  
6 those and utilized that.

7 We did not save them. There may be some somewhere in an  
8 archive, but I did not save them on a weekly basis, and so  
9 on.

10 They were changed by the ILD people every day and these  
11 were 8-1/2 by 11 little packets with all the people on our  
12 shift on them.

13 Q So you got something every day from the ILD people?

14 A Yes.

15 Q And you used that on this to --

16 A To record their readings for the day on our shift.

17 Q And then at the end of that day, what did you do  
18 with the piece of paper?

19 A Left it on the desk for the next shift to take a  
20 look at and then ultimately another one came in the next day.

21 Q So you tossed out the ones from the prior day?

22 A Yes, because we were reading on a daily basis at  
23 that point.

24 Q Who imposed the daily quota to which you testified?

25 A Again, that group from Trailer City. I can't give

DAR gsh 1 you a name.

2 Q Do you know what the basis for the imposition of  
3 the quota was?

4 A Not to exceed a limit for the quarter.

5 Q Apart from the TLDs and the self-reading dulcimeter,  
6 did you use any other equipment or instruments for measuring  
7 exposure during the incident?

8 A For measuring personnel exposure.

9 Q Yes.

10 A No, sir. TLDs and dulcimeters were the method.

11 Q During normal times, is decontamination part of your  
12 direction or ultimate responsibilities?

13 A It falls under my control, yes.

14 Q In normal times, can you describe for me how  
15 decontamination works, what the procedures are for it?

16 A We have a procedure for control of contaminated  
17 individuals or decontamination of individuals. There is a  
18 form which we make out that documents the incident.

19 HPP -- that is, Health Physics Procedure -- 1612 has a form  
20 which deals with the contamination of an individual and how  
21 the individual was decontaminated with an investigation by the  
22 tech who does the decontamination and a follow-up by either myself  
23 or HP foremen.

24 Our methods of decontamination can vary and the ultimate  
25 goal is to remove that contamination without abrading or

UAR gsh 1 breaking the skin.

2 Q Are you personally familiar with what the different  
3 methods are?

4 A With the methods that are used at the plant site,  
5 yes.

6 Q Can you tell me briefly what they are?

7 A Washing with normal soap and water. If it's the  
8 hair, we do shampoo the hair of an individual in a shower,  
9 cautioning the individual to keep his mouth closed so that  
10 no internal contamination does occur.

11 It then becomes our responsibility until the individual's  
12 decontaminated. In the event that we cannot decontaminate  
13 the individual and it is documented that there is in that  
14 particular procedure a response to contamination above the  
15 neck, nasal swabs are taken.

16 There is a response by the tech who does that, a response  
17 that he must follow in the event that he has certain levels  
18 of contamination.

19 That's what we found.

20 Q What procedure is there if, or what technique is  
21 there if a person is unsuccessful in removing the contamination  
22 by use of normal soap and water?

23 A There are various and sundry other items that you  
24 can use, too. Waterless hand cleaners. There is another  
25 method of using oatmeal. There is another method of trying to



187.04.17

DAR gsh 1 sluff off the outer layer of skin. If that fails and we're  
2 going to risk the possibility of abrading the skin or making  
3 the contamination go internal, then we can cover that and  
4 try and let perspiration take this out of the skin.

5 We have done that in many instances and it works.

6 Q What materials, apart from normal soap and water,  
7 such as special soaps or other liquid material or granular  
8 material are normally available at the plant for purposes  
9 of decontamination?

10 A We have RADIAC wash.

11 Q What's that?

12 A That has an agent that -- and I pronounce the whole  
13 name -- it has an EJTH in it. It is a very good  
14 decontaminating agent and -- oh, it's running through my mind  
15 and I can't think of the one other agent that we do use for  
16 deconning of equipment. And we have used it for  
17 decontamination of individuals.

18 It is a chemical with a citric acid bath afterwards.  
19 Potassium --

20 Q Potassium permanganate?

21 A Thank you.

22 Q Do you use any hydrocarbon solvents?

23 A No.

24 Q In normal circumstances, is a doctor or some medical  
25 personnel on hand for decontamination?

LAR gsh

1 A Under normal circumstances?

2 Q Yes.

3 A Here at the plant site, no. We do have two  
4 doctors on retainer whom we can confer with.

5 Q What is the standard that you follow for deciding  
6 whether you should confer with one of those doctors?

7 A There is no set standard.

8

9

10

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25

*Handwritten mark*

187 05 01

kapDAR 1 Q It is an ad hoc basis of case by case?

2 A That's correct.

3 Q How readily available are the doctors?

4 A I am told -- and I have never availed myself of  
5 their services -- that a phone call will get one of the two  
6 of them here.

7 Q Have you had occasion in normal times to refer  
8 someone to a doctor in connection with decon?

9 A To doctors on retainer here?

10 Q Yes.

11 A No.

12 Q Who are the doctors?

13 A Dr. Neumann and the one in Middletown, Barnowski.

14 Q What standard would you employ for deciding whether  
15 a person should be referred to a physician or some medical  
16 personnel?

17 A If there was going to be -- and I use the word  
18 "substantial" exposure to that particular individual, then I  
19 would employ the services of one of these particular  
20 physicians.

21 Where I was going to allow an individual to have an  
22 extreme exposure above the quarterly limit, that is when I  
23 would get them involved.

24 Q For decontamination?

25 A Yes.

187 05 02

kapDAR

1 Q From the degree or level or amount of  
2 contamination, can you calculate the amount of exposure?

3 A Yes, there are varied ways of doing it, and that  
4 is where our man Syd Porter comes in, and we have utilized  
5 his services on all the contamination levels that we  
6 received since the accident.

7 Q What about prior to the accident?

8 A Prior to the accident, we have an engineer that  
9 had done that for us, in the past, and he is assigned to Met  
10 Ed as an engineer in the Health Physics department,  
11 utilizing whole body counts and that method of determining  
12 the total exposure to the individual.

13 Since then, the individuals that were exposed,  
14 contamination and radiation-wise, due to the taking of the  
15 reactor coolant sample -- you ask me for a method and there  
16 are two. The NRC came up with different numbers than  
17 Porter-Gertz did, and there is a little controversy right  
18 now. So the methods -- yes, there are methods of  
19 determining that.

20 Q Do you know the background of the two doctors you  
21 have on retainer in radiation contamination?

22 A Yes.

23 Q What is it?

24 A None.

25 Q What's the basis on which they were retained; do

187 05 03

kapDAR 1 you know?

2 A I do believe originally that they were retained as  
3 medical advisors only, and not experts on decontamination  
4 and dose assessment.

5 Dr. Neumann has expressed a desire to be sent and to  
6 learn more. In fact, now he is becoming interested and we  
7 did, just last week, have him here. He is becoming  
8 interested in our emergency situations such as the emergency  
9 cabinet we have set aside by Radiation Management  
10 Corporation as a hospital facility here to be set up on the  
11 plant site. And he is becoming very, very interested in  
12 that. And he has also requested that he be sent to school  
13 for methods of decontamination.

14 So whether that is in the works or not, I can't answer.  
15 But I know his desire is there and it will be taken care of  
16 soon.

17 Q Does his retainer and the retainer of the other  
18 physician include responsibility for general medical matters  
19 as well as for radiation matters?

20 A Yes, they were originally on retainer as an  
21 individual who could be called here to the plant site in the  
22 event we couldn't move an individual due to a medical  
23 situation.

24 Dr. Neumann does get involved in our annual medical  
25 emergency that we involve our plant staff, HP and

187 05 04

kapDAR 1 operations, and we extend it over to Hershey Medical, who  
2 does our contamination medical portion.

3 Q As you understand it, are both these doctors  
4 general practitioners?

5 A Yes.

6 Q You mentioned Hershey Medical Center. What role,  
7 prior to the accident -- if any -- did that have in  
8 connection with medical response to problems of radiation  
9 contamination?

10 A They are the facility that we will go to in the  
11 event that we have a medical and a contamination problem of  
12 an individual. Contamination, as far as a contaminated  
13 individual who needs medical attention. We go directly  
14 there.

15 We have in our medical emergency plan, their plan,  
16 implemented along with ours, so that we take care of first  
17 aid here. The ambulance crew gets involved. The ambulance  
18 crew then takes this individual to Hershey Medical, no other  
19 place.

20 Q And then one of the two doctors on retainer is the  
21 physician in charge at Hershey?

22 A No.

23 Q There is another doctor or another nurse?

24 A There is a Ken Miller there who is radiologist,  
25 who handles that particular situation and then those nurses

67 05 05

kapDAR 1 and doctors there, the ones on call, and the nurses in the  
2 emergency room, are then trained to handle that individual.

3 Q During the response to this incident, you made  
4 arrangements for Dr. Linneman to come to see Mr. [REDACTED] is  
5 that correct?

6 A That's correct.

7 Q Why did you go to Dr. Linneman rather than to  
8 Hershey Medical Center or to one of the doctors on retainer?

9 A Dr. Linneman is an expert in the field. I don't  
10 consider the others to be.

11 Q As you understand it, were all of the materials  
12 which are normally available for decontamination available  
13 during the emergency?

14 A Yes.

15 Q The RADIAC wash was available?

16 A Yes, sir.

17 Q Do you know whether those materials were, in fact,  
18 used by any person who was contaminated?

19 A No, sir.

20 Q Do you know whether records with respect to the  
21 contamination and decontamination were prepared during the  
22 emergency?

23 A I do not know. I have not seen them, if they do  
24 exist.


25 Q Who would be the person or persons who would, in

87 05 06

kapDAR 1 your view, be in the best position to give us that  
2 information?

3 A There is no one that is ultimately responsible for  
4 that. There are copies sent. It is my responsibility to  
5 review them. At that point in the game, they may not have  
6 been made up. It may have been one of the records that was  
7 not.

8 Q You don't recall reviewing them?

9 A I don't recall reviewing them, no. Had I, I would  
10 have found out about Mr. 

11 Q I asked you a moment ago if the material such as  
12 RADIAC wash were available and you indicated that they  
13 were. Let me see if I can clarify that or make the question  
14 a little more precise.

15 Do you know whether there was a time when materials such  
16 as RADIAC wash, although available, were in a contaminated  
17 area which was inaccessible to people who needed to be  
18 decontaminated?

19 A There may have been, during the times the Unit 1  
20 HP control point was inaccessible due to contamination  
21 levels. And that would have been when we evacuated the  
22 area, and before we ultimately went back in to the Unit 1 HP  
23 control point. Unit 2's HP control point was inaccessible.

24 Q Am I correct that the reports with respect to  
25 contamination of an individual are supposed to be initiated



87 05 07

kapDAR 1 by the individual?

2 A They are initiated by the Health Physics  
3 department. The individual who was contaminated must report  
4 to the HP department. That form is then started at the HP  
5 control point.

6 Q Is there a -- strike that.

7 Does the person who is contaminated report to a foreman,  
8 a technician, to you?

9 A The person who is contaminated reports to a  
10 technician at the HP control point. If it is the backshift,  
11 again, he reports to that area. There are technicians and  
12 that -- we do make a senior technician that.

13 Q And a technician or a senior tech would supervise  
14 the decontamination effort?

15 A Yes.

16 Q What -- strike that.

17 Who originates the report, or is responsible for  
18 preparing the report if the person who is contaminated is a  
19 Health Physics person?

20 A The Health Physics tech himself.

21 Q He is not required to go to another Health Physics  
22 tech?

23 A No, obviously that is his job.

24 MR. DIENELT: Off the record.

25 (Discussion off the record.)

187 05 08

kapDAR 1

MR. DIENELT: Back on the record.

2

BY MR. DIENELT:

3

Q Have you seen any reports of contamination or

4

decontamination during the period beginning on March 28 and

5

ending on April 15th?

6

A No.

7

Q Am I correct that those reports would come to you,

8

normally?

9

A Yes.

10

Q Do you know whether there are any reports?

11

A I do not.

12

Q For contamination during that period?

13

A No.

14

Q When Mr. [REDACTED] came to you to discuss his

15

contamination --

16

A No, Mr. [REDACTED] didn't come to me to discuss that.

17

I met Mr. [REDACTED] in my coming from Unit 2 through Unit 1's

18

turbine hall, which was our mode of travel. And I saw him

19

there.

20

Q When you discussed it with him, had he already

21

been decontaminated?

22

A He still at that time, I believe, had a spot in

23

his hair, I think.

24

Q Did you discuss with him --

25

A And his thumb.

187 05 09

kapDAR 1 Q -- what he had done in order to attempt to  
2 decontaminate?

3 A No. We did not discuss the method by which he was  
4 decontaminated. We discussed the incident whereby he got  
5 contaminated, the -- his talking to a foreman, saying, I  
6 told So-and-So about it.

7 And then I got upset with him, inasmuch as he didn't come  
8 to me sooner and tell me about it. And that's when he said,  
9 I told -- I can't remember who he said at that point -- and  
10 that's when I told him what I was going to do.

11 Q Are you aware of the presence of any potassium  
12 iodide or iodate at the TMI site beginning on March 28th?

13 A March 28th? No, we didn't have it then. It was  
14 brought in from Electric Boat, I believe, to the plant site,  
15 and it appeared at the Unit 2 HP control point, which we had  
16 established off the control room in Unit 2.

17 Q Do you know when it was brought in?

18 A I can't give you a date, no.

19 Q Okay, do you know what form it took?

20 A I don't understand.

21 Q Was it in the form of pills, liquid?

22 A It was in pill form.

23 Q What were the plans, if any, with respect to  
24 distribution and use of the potassium iodate?

25 A There were no plans discussed with me or my crew.

187 05 10

kapDAR 1 We were just to put it on the shelf at the HP control point,  
2 watch it, that nobody got to it, keep it sealed up. And  
3 that was that.

4 Q Who would have given the order or the instruction  
5 to make use of the potassium iodide?

6 A To my knowledge, there is no one in the plant  
7 organization that is specified to give that particular type  
8 of an order. I would assume that it would come through  
9 Administration Management Corporation, who are our  
10 consultants in that aspect.

11 Q Were you aware of any potassium iodide or iodate  
12 in liquid form?

13 A No.

14 Q At any time during the response to the emergency?

15 A No.

16 Q Now, you said it was in the HP control room?

17 A The HP control point off of the Unit 2 control  
18 room.

19 Q Do you know what the dose of the pills was?

20 A No.

21 Q Do you know approximately how many pills there  
22 were?

23 A I was told at the time that there was enough for  
24 thousands of personnel, but I can't give you a number.

25 Q Did you ever see the pills themselves?

187 05 11

kapDAR 1 A No, I saw the packets but I did not see the  
2 pills.  
3 Q They were in individual packets?  
4 A Yes.  
5 Q Did the packets indicate who the manufacturer was?  
6 A I can't recall.  
7 Q Do you recall anything about what was said on the  
8 packets?  
9 A No.  
10 Q Do you know how old the pills were?  
11 A How old?  
12 Q Yes.  
13 A The pills were? No.  
14 Q Who told you about the pills?  
15 A I believe it was Dave Limroth.  
16 Q Do you know how he learned about them?  
17 A No.  
18 Q Do you know who, if anyone, requested that the  
19 pills be obtained?  
20 A No.  
21 Q Am I correct that the use of the pills is as a  
22 thyroid blocking agent?  
23 A That is correct.  
24 Q Do you know whether any of them were, in fact,  
25 used?

7187 05 12

kapDAR 1

A No.

2

Q Do you know where they are now?

3

A Yes.

4

Q Where?

5

A Unit 2 control room.

6

Q Is it your understanding that they are there now,

7

permanently there for potential use in an emergency?

8

A We do not have a procedure and for their use --

9

we don't have an individual who would administer their

10

use. We, and I -- well, rather not "we," I have spoken to

11

our Safety Director, who in turn has spoken to Dick Dubiel

12

and in fact, that happened yesterday, on a procedure for

13

their use and under whose direction they would be used.

14

Right at the moment we do not have that direction for

15

their use.

16

Q Who is the Safety Director?

17

A Earl Gee is our Safety Director at the plant,

18

along with a Jim Whalen and a Peggy Werney. Fred Grice is a

19

GPU systems director of safety and he is now here on the

20

plant site. It is Fred Grice with whom I talked yesterday.

21

Q In what manner, if any, are the pills secured?

22

A To my knowledge, they are not locked up. They are

23

in the shift supervisor's office. Unit 2 control room. In

24

our discussion yesterday, we discussed locking of these

25

pills.

187 05 13

kapDAR 1 Q Do you know whether a decision has been made to  
2 lock them up?

3 A No.

4 Q Is the office in which the pills are located  
5 ordinarily open or locked?

6 A It's ordinarily open.

7 Q Is it fair to say that anyone with access to the  
8 control room could walk in and take some of those pills?

9 A Correct.

10 Q During the days of March 28 and March 29, did you  
11 have any role in controlling access to the auxiliary  
12 building of either Unit 1 or Unit 2?

13 A When I left the control point Unit 1 on the 28th,  
14 I was the last one to leave that particular area, and left a  
15 Robert McCann, who was an HP foreman at that particular  
16 point, in charge of that particular access point. Unit 2,  
17 when we arrived over there on the 28th, access was limited  
18 by direction to either go or no go through to Unit 2 control  
19 room and the ECS Director, myself and also Dick Dubiel, in  
20 looking for survey work and so forth on on-site and off-site  
21 teams. From there, after, I left the control room of Unit 2  
22 and returned to unit 1's control room. My ability to  
23 directly control access in and out of those areas was  
24 diminished. Not physically, I could not prevent that from  
25 happening.

7167 05 14

kapDAR 1 Q Do you know whether anyone did attempt to exercise  
2 control after you had gone back to the Unit 1 control room  
3 over access to the auxiliary building?

4 A No, no, I don't know that.

5 Q Who would know?

6 A I can't answer that. I don't know. Dick and I  
7 did not discuss that, although we did direct individuals in  
8 and out of Unit 1 from Unit 1's control room and the  
9 operators were the only ones that were functioning in and  
10 out.

11 We did make one entry to Unit 1's secondary side, through  
12 the turbine hall, and when we had high activity there -- it  
13 was by our direction to go in and out through that area,  
14 through Unit 1. I can only surmise that we were controlling  
15 that area, but I was not physically able to control that  
16 access.

17 Q Do you know how many entries were made into the  
18 auxiliary building during the time prior to the time that  
19 you moved back to the Unit 1 control room?

20 A No.

21 Q Do you know whether there were any records kept of  
22 those entries?

23 A Any written records? I can only surmise, the only  
24 way to control that would be through the issuance of an RWP  
25 and I do not believe we had them issued at that point.



187 05 15

kapDAR 1 So my answer to that question is no.

2 Q As you understand the emergency plan, was it your  
3 responsibility as ECS director to establish access control  
4 over the auxiliary buildings?

5 A No, not stated as such, to control that access. We  
6 controlled Unit 1 only because Unit 1 was established as the  
7 emergency control station and all individuals who were  
8 supposed to report there reported. The accountability  
9 aspect of the emergency plan required that all non-essential  
10 individuals report to a certain spot. If those individuals  
11 were not accounted for, then we had to go get them or  
12 account for those individuals.

13 Our control of the access to Unit 1 would be only through  
14 accountability. We were never directed, nor was it in the  
15 plan, that that was one of our responsibilities, to control  
16 access to that area. It would normally be a function that  
17 we would follow because we are there.

18 Q Who, if anyone, had the responsibility to, under  
19 the emergency plan, to control access to Unit 2 auxiliary  
20 building?

21 A I don't believe that exists.

22 Q Did anyone have the responsibility under the plan  
23 to control access to the Unit 1 auxiliary building?

24 A No.

25 Q Do you know who an individual who wanted to gain

187 05 16

kapDAR 1 access to the Unit 2 building would have to go to?

2 A Again, access to the Unit 2 building -- auxiliary  
3 building, if it were me I would go to the Unit 2 control  
4 room.

5 Q And who would you ask?

6 A At that particular point it would have been the  
7 Emergency Director, Gary Miller. Had I been an outside  
8 individual who wanted to go to that control point, had I  
9 been an operator and said I wanted to go in, because those  
10 operators of the affected unit who were on duty at that time  
11 and not part of our emergency control station, report to  
12 Unit 2 control room.

13 Q Do you believe that there should have been or in  
14 the future instances that there should be one person who has  
15 the responsibility for controlling access to the two  
16 auxiliary buildings, in an emergency situation?

17 A You could never rely on the possibility that one  
18 person would be available all the time. Perhaps a  
19 responsibility of a job title.

20 Q Is it your view that that responsibility should be  
21 lodged with one job title?

22 A Yes, then you would be assured that it would be  
23 done.

24 Q When you were supervising access to the Unit 1  
25 auxiliary building, did you issue any instructions with

87 05 17

kapDAR 1 respect to the manner in which entries could be made?

2 A Accordir to the manual, entries are done with an  
3 HP escort, and the only group that does go in is the  
4 emergency repair party or the group that may go in through  
5 the emergency repair party -- to go in and retrieve an  
6 individual should he so happen to be incapable of coming out  
7 himself, and that is done through the muster and through the  
8 list of individuals and the accountability.

9 All other individuals are to report to their stations as  
10 defined by the plan.

11 Q Are you saying that when an individual needs to or  
12 wants to have access to the auxiliary building which you are  
13 supervising, that individual would have an HP escort?

14 A Yes.

15 Q And that individual would come to you --

16 A Well, you're speaking of an individual such as a  
17 separate entity. The plan does not call for an individual  
18 to do that type of things. All individuals had a place in  
19 which to report and account for themselves. If you were  
20 non-essential, such as, should something happen right now at  
21 the moment, this group -- all due respects -- is not  
22 essential. This group would then report to a specific point  
23 and account for themselves. I would report to the Unit 1  
24 emergency control station. All operators who were on duty  
25 have their reporting points. There would be no reason for

187 05 01

kapDAR 1 someone to say, I want to go into the auxiliary building.  
2 He doesn't do that. He is then directed by the Emergency  
3 Director to function after that accountability.

4 You have the emergency repair party, who goes in and  
5 shuts valves or does whatever has to be done. If an  
6 operations group is formed, they come through Emergency  
7 Directors, through the emergency control station and  
8 function in that manner. There isn't supposed to be anyone  
9 wandering around.

10 Q Were you aware of anybody entering the auxiliary  
11 building without following the sequence which you just  
12 described?

13 A I'm not aware of it, but I'm also not saying it  
14 could not have happened, if it did.

15 Q You are not aware of any entries, specifically  
16 made by Mr. Janouski?

17 A No.

18 Q Are you aware of entries into the auxiliary  
19 building for Unit 1 on March 28th?

20 A I am now aware of it. I was not at the time.

21 Q So that you were not part of the sequence --

22 A No, I did not direct a special survey to be done  
23 of any auxiliary building. When I arrived, we had already  
24 gone over what I actually did when I came in, as far as  
25 directing a team to go into an area. My main responsibility

187 05 02

kapDAR 1 was the on-site team and the off-site team, directing  
2 individual -- and to go inside the building to do surveys in  
3 cubicles or in the Unit 2 auxiliary building. No, I did not  
4 direct any of those activities.

5 Q You subsequently became aware of them?

6 A Yes, I now know that.

7 Q When did you become aware of it?

8 A Well, after the accident. After these inquiries  
9 began.

10 Q During the first three days of the incident, were  
11 you consulted with respect to any plan operational matters?

12 A No.

13 Q Were you aware of the venting of the makeup tank  
14 in Unit 2?

15 A Into the Unit 2 auxiliary building?

16 Q Yes.

17 A Only after it happened.

18 Q You were not consulted.

19 A No.

20 Q Do you know whether Mr. Dubiel or anyone else in  
21 the HP area was consulted?

22 A No, I don't. I don't know whether Dick was  
23 consulted or not. Again, we were in separate parts of the  
24 plant.

25 Q Do you know whether the emergency plan makes

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kapDAR 1 provisions for consultation between the operational team or  
2 staff in the plan, in the radiation protection team or  
3 staff, with respect to any matters?

4 A In a recovery mode, no.

5 Q In an emergency?

6 A We never went that far into the details of what  
7 would be discussed and what didn't. I could only assume,  
8 having Dick in the control room, that he was consulted, only  
9 because he was there.

10 But there was never any formal discussion on, this is  
11 what we are going to do, what does everyone think. Is this  
12 the best way?

13 No, there was no time for that.

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pv DAR 1 Q Do you believe that health physics personnel ought  
2 to be consulted with respect to operational decisions in an  
3 emergency or recovery mode?

4 A Absolutely.

5 Q Why?

6 A Because in knowing what we do now, it seems to be  
7 a health physics nightmare, this type of an accident. And I  
8 do not feel that we were fully aware of the total situation,  
9 nor were we taken into any confidences. And I'm talking  
10 from my level down. I could only, through the grapevine and  
11 through rumors, relate to the technicians who worked for us,  
12 what was going on.

13 Our biggest problem was communication and finding out  
14 what actually was happening. I had found out more later on,  
15 obviously, than we knew at the point. And the health  
16 physics department was always considered a necessary evil in  
17 plant operation, and we're here only because I think it is a  
18 requirement and something to be tolerated.

19 That sounds like kind of a "poor me" situation here, but  
20 it really isn't. I think, after having gone through the  
21 accident, the health physics department could have played a  
22 much bigger role if allowed to do so.

23 We certainly have the capability, but weren't allowed to  
24 exercise that capability. However or whomever's fault that  
25 was, I can't say. I think it was the situation's fault

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pv DAR 1 mainly that it just took place.

2 Q What you are saying is that from your level down  
3 you not only were not consulted but you were not advised?

4 A That is true. Not informed.

5 Q Did you make efforts to find out what was going  
6 on?

7 A From the day-to-day situation, we did try. As I  
8 said before, once we "got the act together" again, we did  
9 begin to communicate with the operations personnel;  
10 information was flowing a little better. Charts began to  
11 appear on the wall where information was recorded, so we  
12 could go look and see what was happening. This was later  
13 on.

14 Semblance of order was returning, but in the first few  
15 days, no, it was just total chaos with many, many directors  
16 and a lot of experts here, including the NRC, who all had  
17 their own idea on what to do.

18 Q But you did not, on the 28th, 29th, or the 30th,  
19 call up Mr. Dubiel and say, "Dick, I don't know what's going  
20 on, my guys don't know what's going on. Tell me what's  
21 happening"?

22 A No, no, there wasn't time.

23 Q And you didn't call anybody else to ask that  
24 information?

25 A On the 28th, when we were together in the control



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pv DAR

1 room, that was a little better. We couldn't get phone calls  
2 to communicate on a "hey, what's going on" basis.

3 When I first arrived, it took me about 20 minutes to find  
4 out what the problem was because they nearly did not know at  
5 the ECS.

6 I did finally get a hold of Dick Dubiel after that  
7 particular period of time, but all of a sudden our activity  
8 began to go up, so I did not try at that particular point  
9 other than, "Dick, what are we doing here? What's going on?  
10 What's the problem?"

11 At that particular point in the game, I'm not sure that  
12 the control room fully understood what the problem was.  
13 Activities and so forth, they could tell me what was  
14 happening in the auxiliary building, what some of the  
15 levels were. A lot of monitoring was off scale -- couldn't  
16 give me those.

17 So therefore, the total picture couldn't be given in a  
18 matter of a few minutes over the phone in that situation.  
19 We were never taken aside later on into a grand and glorious  
20 meeting on "this is what happened and this is where we feel  
21 we are."

22 Rumors are mostly the way that we learned things and  
23 from, as I said, from 533 people to 7000, or around that  
24 area, when you grew like that and people just came in in  
25 droves, it is very hard to find out what is going on.

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1 Q Your testimony also is that no one, whether  
2 Mr. Dubiel or someone else, made an effort to communicate  
3 with you and the people whom you were supervising to advise  
4 you or inform you of what they knew about the plant status  
5 so that you would have as much information as you could?

6 A I do recall one instance when Dick and I did leave  
7 at 11:00 o'clock at night, and this is where we think we are  
8 and we did have that moment alone from the gate of Unit 1  
9 when we drove over to the observation center because we had  
10 had nothing to eat since early morning, 7:00 o'clock or  
11 before that.

12 And this was 11:00 o'clock at night when we finally said,  
13 "Hey, let's get together, go over to the observation center,  
14 and see what's happening," because things had begun to quiet  
15 down a little bit. And so we did, and that's the only time  
16 that I found out what our possibilities were, what was going  
17 on, and where we stood.

18 Q And your view is that it would have been helpful  
19 to you in the performance of your duties if you had been  
20 given or had been able to obtain more information and more  
21 current information about plant status?

22 A I think so. As to what our plans were, what we  
23 wanted to do, and where we wanted to head. We all knew from  
24 drills what our responsibilities were, and we responded like  
25 rote: this is what I do first. Which is not bad, because

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pv DAR 1 that takes care of the first few hours, because you  
2 automatically know what you have to do, and it happens.

3 Fortunately, and during one of our drills, we simulated  
4 that the Unit 1 HP control plan was inaccessible, and we did  
5 that in a drill, and I thought at the time, "Why are we  
6 doing this," and we went to the Unit 2 control room. As it  
7 happens, that's the best thing that happened to us, because  
8 we knew what to do.

9 So that function did happen, and it was automatic. All  
10 the men who were there took the directions that I gave them  
11 and they reported immediately to the Unit 2 control room.  
12 But we had done it through a drill once and so it did work.

13 Q You testified earlier that, if I recall correctly,  
14 you were not allowed to exercise the kind of authority in  
15 the health physics matter that you felt was necessary? Do  
16 you recall that?

17 A Something similar to that, yes.

18 Q That's accurate?

19 A I think it was in relationship to making some  
20 decisions on plant operations as far as relating to the  
21 health physics aspect.

22 Q Was it a person or persons, or was it, in your  
23 view, events that did not allow you to have that role?

24 A Oh, I'm sure it was events. It had nothing to do  
25 with personnel. It was the monstrous thing that we were

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pv DAR 1 into that grew without the ability to consult individually.  
2 It was just the whole thing.

3 I'm sure that if we sat down today and said, "Gee, we  
4 should have talked at this particular point," now very  
5 calmly now, but you couldn't do it then. There was too much  
6 going on.

7 Q Do you recall what shift or what hours you worked  
8 on the 29th?

9 A I believe on the 29th that I left in the morning  
10 and I returned again at 7:00 o'clock that evening.

11 Q And you worked the seven-to-seven shift?

12 A Seven-to-seven, yes.

13 Q Do you know who was working the operations side at  
14 that point?

15 A No, I can't remember.

16 Q You don't know whether it was Mr. Roth or  
17 Mr. Floyd or someone else?

18 A I have no idea, no. No, because I was in Unit 1  
19 control room, and Jim Seelinger and I went to the control  
20 room together, Unit 1. So, I think he was on, and he was  
21 one individual whom we did talk together.

22 Q And from 7:00 a.m., or thereabouts, on Friday, the  
23 30th, until 7:00 p.m. at night, you were away from the  
24 plant?

25 A Yes.

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pv DAR 1 Q Did anyone from NRC work with you in connection  
2 with the activities in which you engaged on the first three  
3 days of the incident?

4 A No.

5 Q Was anyone from the NRC observing your activities  
6 during that time?

7 A They may have been, but I don't recall having any  
8 interface at that particular time with or being aware of the  
9 presence of an NRC inspector.

10 Q Did you have any dealing with NRC inspectors or  
11 other NRC personnel within the first two weeks after the  
12 incident?

13 A Sure. Oh, yes.

14 Q What was that?

15 A Inasmuch as they were allowed -- and everytime  
16 some incident happened, they appeared, strongly, saying,  
17 "What's going on? What are you doing about this?"

18 Q Would you characterize their role as a role of  
19 observers?

20 A No.

21 Q How would you characterize them?

22 A Actors -- strike that. Taking an active role in  
23 health physics. They were all over. They really were. And  
24 some were tough to deal with; others were helpful.

25 You asked about information and so forth before. We all

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pv DAR 1 carried little pieces of paper in our pocket, in our back  
2 pockets and all, jotting down information as we went along.  
3 And I do recall one inspector who was doing the very same  
4 thing, and I happened to comment to him, "Ah hah, your  
5 method of recordkeeping is just like mine." And we both  
6 said, "Yes, that is about all we have at the moment."

7 And then we began to carry little books around, but it  
8 was funny because everyone carried little books and it was  
9 like wildfire: when a piece of information as a result came  
10 back and you wrote something down, then someone was looking  
11 over your shoulder and saying, "Oh, let me copy that." And  
12 that is how information got around, and NRC and ourselves  
13 shared information in that respect.

14 Q Did anyone from NRC give you advice or suggestions  
15 with respect to your activities?

16 A Yes.

17 Q Did you solicit the advice, or was it volunteered?

18 A In many cases, it was volunteered. In fact, I  
19 think in all cases it was volunteered.

20 Q Did you on some occasions follow the advice?

21 A Yes, sir.

22 Q Did you follow the advice on all occasions?

23 A No.

24 Q Did you find the advice generally useful?

25 A If it was a new and a fresh idea, yes. If an

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pv DAR 1 individual came up and said, "Hey, I just saw a situation.  
2 What are you going to do about it?" And I would tell him,  
3 "We are going to do this," and he would say, "I wouldn't  
4 handle it that way," and I said, "Well, this is the way I am  
5 going to handle it according to my procedures and the way I  
6 see it."

7 There were times when we wouldn't see eye to eye on  
8 something like that. There were some individuals who were  
9 very forceful in saying, "You can't do it that way," but we  
10 did it anyway.

11 There were just so many. There were many helpful  
12 individuals, some that I really appreciated some of their  
13 responses. There were others that came in like gang-busters  
14 whom I did not appreciate.

15 Q Did you follow the advice that NRC inspectors or  
16 other NRC people gave you more often than not?

17 A I would say "Yes," because that's only -- I did  
18 respect some individuals. I appreciated their position, and  
19 I felt that they were, in many cases, experts in the field,  
20 and I appreciate that.

21 Q Were there any particular matters you recall on  
22 which you found the advice they gave especially useful?

23 A There was one which I mentioned before which was  
24 not stated by an individual. That was the one thing where,  
25 "Get your act together," whoever said that to begin with or

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pv DAR 1 whoever indicated that there would be a takeover by the NRC,  
2 was the one thing that I do appreciate, though I hated it at  
3 the time. But I appreciated it because it did perhaps put a  
4 little fear in me by saying, "Wait a minute, now, somebody  
5 is saying they're going to take" -- self-preservation --  
6 "take my job away." That spiked me into action, which  
7 before I was taking a rather passive, "Hey, somebody else is  
8 doing this; fine, let them go ahead."

9 That was a blessing in disguise, and I think whoever did  
10 that, because it did put me back into action, and saying,  
11 "Hey, we have a job to do; let's go ahead and do it," and we  
12 did.

13 Q Was there any advice that stands out in your mind  
14 as particularly unsound?

15 A No, not really. There were a lot of criticisms  
16 and so forth, that individuals were saying they wouldn't  
17 handle it that way. A lot of confusing things. Because  
18 many of them were things we couldn't do. It was a situation  
19 that didn't allow us to do that. You'll have to -- an  
20 inspector had always been somebody to deal with and take  
21 care of while he was here, and all of a sudden we had them  
22 all over the place. That in itself was a little  
23 disconcerting to myself who, in the past, had always been  
24 rather standoffish or fearful of an inspector.

25 I had one tell me once as we were going out the door, I



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pv DAR

1 said, "You go ahead, my friend," and he said, "Wait a  
2 minute. Let me correct you. NRC inspectors are never your  
3 friends."

4 Well, with that in mind, I find it very difficult to take  
5 direction from someone who is supposedly auditing my  
6 actions. So -- and I had another one, during the accident,  
7 when it was an interview, at the end of the interview -- it  
8 was supposed to have been a half hour and I think it lasted  
9 three hours. And so, after the tape was off and we were  
10 finished, I said, "Gee, I thought this was only going to be  
11 a half hour," and I was told that that's the price we pay  
12 for whatever -- and I didn't "whatever" up.

13 But I didn't appreciate that, and so there had been some  
14 adverse effect.

15 Q Well, this last incident occurred prior to the TMI  
16 incident?

17 A It had occurred afterwards.

18 Q Afterwards?

19 A Yes. That was during one of the interviews.

20 MR. DIENELT: Off the record.

21 (Discussion off the record.)

22 BY MR. DIENELT:

23 Q Did you regard the NRC's efforts during the  
24 response to the incident as being more helpful than it was  
25 harmful?

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2 here longer than they did, we had -- I think the average was  
3 two weeks, and we had them from regions all over. There  
4 are different ideas in different regions. We -- I, rather  
5 -- grew to know some of them, and all of a sudden when we  
6 finally got a means of communicating with those individuals  
7 -- and I'm saying that some of the individuals did help.  
8 Some were not of any help; they were more of a hindrance  
9 than a help -- excuse me -- some individuals did help me  
10 very much in the performance of my HP duties, but then those  
11 individuals would leave, and you would get a fresh new crew  
12 who came in all excited and were getting ready to change the  
13 world.

14           Again, it is very difficult to cope with a new crew every  
15 two weeks to function that way, specifically when we had  
16 been here day after day after day, functioning. And it was  
17 beginning to get very tiresome, and these new fresh people  
18 came in bouncing all over the place, who had new ideas, "Why  
19 aren't you doing this, why aren't you doing that type of  
20 thing," and so forth, rather than understanding what we were  
21 doing. And that was difficult.

22           So, I would -- I would appreciate if we -- heaven forbid  
23 if we ever have to go through all this again -- individuals  
24 be sent as a team to help us along the way, rather than --  
25 we felt we were just educating the world and they were all

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pv DAR 1 getting a chance to build up their resumes by being here.  
2 And that we share that opinion with many other individuals  
3 because we were getting so many different people here, and  
4 it is difficult.

5 Once you establish a group, I think that group should be  
6 allowed to handle it until we say that group is no longer  
7 necessary.

8 I don't know the reasoning behind sending so many  
9 different people to take over a situation that existed all  
10 the time.

11 Q Apart from the suggestion you just made, are there  
12 any other suggestions that you have for improvement in the  
13 NRC's response if, heaven forbid, we ever have to face an  
14 incident such as this again, here or at another plant?

15 A I found, as I said, that there was some help. I  
16 think that we should have instrumentation, guidelines; we  
17 should have air-sampling guidelines. We should have some  
18 experts in dose assessment, rather than relying on a  
19 consultant to be doing that for us.

20 A team set up of NRC men, as they are going to be  
21 directing us to do this, such as a team to come in and help  
22 with specific directions on areas in which to help, so we  
23 know how to relate to these individuals. We -- well, I'm  
24 just reiterating what I said before. I didn't know how to  
25 relate to these individuals. Were they inspecting us? Were

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pv DAR 1 they here to say we're not doing what we are supposed to be  
2 doing, "What was your function?"

3 Why so many? I would like to be able to relate to a  
4 group and say they're here to help and then get down to the  
5 business of working. It took us too long to decide who was  
6 doing what. Perhaps these individuals from outside could  
7 see this, and they come in and provide this. This is the  
8 direction in which you go. I really am not sure whether the  
9 NRC knew which direction to go because they didn't know how  
10 to relate to the company.

11 My outside contractor people didn't know what their --  
12 what the extent or to what extent they could function in the  
13 HP field. I had two different groups here. We had nuclear  
14 support services, we had rad services, two different  
15 contract HP groups here whenever they met each other. That  
16 was another thing we had to face. We got rid of one of  
17 them.

18 Q Which one?

19 A Rad services left a month after the incident.  
20 Nuclear support services came over and took over Unit 2's HP  
21 control point. Metropolitan Edison technicians gravitated  
22 back to Unit 1, and that is when I began my relationship  
23 with the nuclear support services and still have that now.

24 But a definite reason for having NRC people here, whether  
25 it be for information purposes or for a purpose to aid us in

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pv DAR 1 the performance of our job, that was never specified. We  
2 just knew that we had literally hundreds of individuals  
3 reporting on and off every two weeks. And they went every  
4 which way, and we had some come back and say, "Why aren't  
5 you doing this or that? How come?"

6 This was all different individuals stating this, that I  
7 found to be rather confusing. Did I relate directly to  
8 these individuals and perform what they were asking, or did  
9 I use my own management to give me that direction, in a  
10 hurry, which added to the confusion.

11 Q As you perceived it, did the NRC role change  
12 during the course of the response to the accident from an  
13 observer role to an active role?

14 A I don't recall the observer role.

15 Q Okay.

16 A I only recall the active role, which, until about  
17 a month ago, did that active role become more of an  
18 inspector's role, to sit back and see how we are doing and  
19 to comment on our activities rather than actively asking  
20 what are we going to do about this and how are you going to  
21 accomplish that.

22 Q Do you draw a distinction between observer role  
23 and an inspector's role?

24 A Yes.

25 Q Did the NRC role change during the course of the

187 06 16

pv DAR 1 response to the incident from an inspector role to an active  
2 role?

3 A The inspector role was not observed by myself,  
4 either. It was always an active role.

5 MR. DIENELT: Off the record.

6 Back on the record for a second.

7 We would like to request copies of contamination exposure  
8 reports and radiation over-exposure reports for persons who  
9 exceeded their quarterly limit for the period between March  
10 28, 1979, and June 30, 1979, and any other documents in  
11 existence which deal with the contamination exposure reports  
12 and the radiation over-exposure reports which were prepared  
13 or which were supposed to have been prepared during that  
14 period.

15 Off the record.

16 (Discussion off the record.)

17 MR. DIENELT: Back on the record.

18 By the request for documents relating to contamination  
19 exposure reports or radiation over-exposure reports, what I  
20 am looking for is any letter or memorandum or report which  
21 was prepared dealing with the reasons why those reports were  
22 or were not prepared in the manner in which they were or  
23 were not prepared, and specifically any final report  
24 relating to the question of the exposure, contamination  
25 exposure and the radiation over-exposure.

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Off the record.

(Discussion off the record.)

(Whereupon, at 12:40 p.m., the taking of the deposition was recessed, to reconvene at 2:00 p.m., this same day.)

e-l

AFTERNOON SESSION

1 MR. DIENELT: Back on the record.

2 BY MR. DIENELT:

3 Q During the lunch break I understand that Mr.  
4 Mulleavy was kind enough to call Mr. Velez and ask Mr. Velez  
5 about the comment which Mr. Mulleavy thought Mr. Velez had  
6 related to him from an NRC employee regarding what would happen  
7 if the health-physics program didn't get its act together,  
8 and I believe that Mr. Mulleavy is now in a position to  
9 elaborate his conversation with Mr. Velez, and I would like to  
10 ask him to do so.

11 THE WITNESS: All right. In my conversation this  
12 noon time with Mr. Velez, he did recall mentioning that incident  
13 to me, but he did not recall whether it was made specifically  
14 by an NRC inspector or it was a feeling that he developed in the  
15 plant. He does not know that. And in any event, his response  
16 was similar to mine that we did begin to get our act together  
17 and began to go back to our HP control point and function as a  
18 group.

19 BY MR. DIENELT:

20 Q As you understand it, the phrase "get our act  
21 together," then came from Mr. Velez rather than from someone  
22 else and through Mr. Velez to you?

23 A That's correct.

24 Q I have marked as Exhibit 3037 an eight-page excerpt  
25



s1s-2  
1 from an interview by the I&E branch of NRC with John P. Donnachie  
2 which took place on May 17th, 1979.

3 (NRC Exhibit No. 3037 identified.)

4 I believe that the excerpt represents a discussion  
5 in an interview of an instance of contamination of a  
6 Mr. [REDACTED]

7 Mr. Mulleavy, this morning I asked you about your knowledge  
8 of contamination of Mr. [REDACTED] and you told me that you did  
9 not recall any such instance, and I gave you, during the  
10 lunch break, a full copy of the interview with Mr. Donnachie,  
11 the excerpt from which has now been marked as an exhibit.

12 Does reading the exhibit or reading whatever portions of  
13 the full interview that you did read, refresh your recollection  
14 with respect to the [REDACTED] incident?

15 A First of all, to add one thing before I do answer,  
16 I do recall and believe that I said I did know of the incident  
17 that where Mr. [REDACTED] was contaminated, but that was after  
18 the fact, and I had heard of it. The incident which I do not  
19 recall is how it happened, and what job constituted the  
20 contamination of Mr. [REDACTED]

21 After having read this testimony by Mr. Donnachie, I still  
22 do not recall the incident, and it could seem -- and I thought  
23 rather hard in trying to recall, if I was that instrumental in  
24 allowing that particular job to happen, I should remember  
25 something about the incident other than being told at some

sls-3 1 later date that Mr. [REDACTED] had been contaminated. I really  
2 feel that should this have happened as stated, I really should  
3 have a better recollection of that incident. However, I do not.

4 Q When you learned of the incident after it had  
5 occurred, were you told when it occurred?

6 A I may have been told when it occurred, I cannot  
7 recall at the moment when the incident took place, other than  
8 the outcome of it.

9 Q You don't recall whether it was your shift or  
10 Mr. Dubiel's shift on which the incident occurred?

11 A No, sir.

12 Q Am I correct that radiation work permits are act .y  
13 signed by the person approving them with a signature or with  
14 initials?

15 A It depends on which approval you are speaking of.

16 Q Now, there is a discussion in this excerpt of a  
17 radiation work permit and of who, if anyone, was going to sign  
18 it.

19 What I am trying to find out is whether if we had a copy  
20 of the RWP we would be able to find out from examining it who  
21 had signed off.

22 A That is correct, yes.

23 Q Let's go off the record.

24 (Discussion off the record.)

25 MR. DIENELT: Back on the record.

sls-4

1 I'd like to ask for a copy of the radiation work permit  
2 relating to this incident. I am informed that the incident  
3 occurred on or about April 2, but I did not know and I cannot  
4 represent exactly what the date was.

5 As the excerpt from the Donnachie interview indicates, the  
6 subject matter of the work permit would be changing of a  
7 reactor collant evaporator tank valve.

8 BY MR. DIENELT:

9 Q Just one more question on [REDACTED] When you learned  
10 of his contamination, did you learn about the manner in which  
11 any contamination efforts were carried out?

12 A As to the manner in which it was carried out, no,  
13 the details were not discussed.

14 Q Would it be fair to say that you learned he had  
15 been decontaminated or you learned what had happened?

16 A Yes, the outcome was that he had been decontaminated.

17 Q But you didn't learn what the details were?

18 A No.

19 Q Would you have expected an incident such as  
20 described in Exhibit 3037 to have been reported to you?

21 A Yes.

22 Q Is it fair to say you have not seen any written  
23 reports regarding the answer?

24 A That's correct.

25 Q Prior to March 28th, were any outside consultants

sls-5 1 employed in connection with health-physics matters?

2 A Prior to March 28th, we had quite a number of  
3 outside consultants being radiation management, Porter/Gertz  
4 consultants, on occasion, yes.

5 Q Had you used NSS or Rad Services prior?

6 A Not as consultants, no, but as a health-physics  
7 support group.

8 Q What had been the role of RMC prior to the accident?

9 A Radiation Management Corporation has set up our  
10 medical emergency plan, the medical emergency cabinet located  
11 in Units 1 HP Control Point and ultimately helped run the  
12 medical emergency drill for the plant. They had provided a  
13 sample counting for us in the past and the medical expertise  
14 for contaminated individuals.

15 Q What role had Porter/Gertz played?

16 A Porter/Gertz Consulting Firm has played a role with  
17 us in writing the emergency plan or portions thereof,  
18 providing off-site dose calculation classes for the performance  
19 of that particular duty.

20 Syd Porter himself is on a retainer to Met Ed, an annual  
21 retainer for his services and has been asked at different times  
22 during my career here to come and provide health-physics  
23 functions for whatever we need him to do.

24 Q Do you regard him as more expert in health-physics  
25 in matters than either you or Mr. Dubiel?

sls-6 1 A I can only speak for myself and I do believe, yes,  
2 he is much more expert in many aspects to myself.

3 Q But you don't have an opinion whether he's more expert  
4 than Mr. Dubiel?

5 A Mr. Dubiel in management of the Department, his  
6 scientific knowledge and so forth is far beyond anybody's here  
7 at the plant site. In relationship to Syd Porter, I can only  
8 equate their health-physics expertise and not their managerial  
9 qualifications in health-physics matters. I can only assume  
10 they equal.

11 Q What kind of health-physics support function did  
12 NSS play prior to the accident?

13 A NSS had been here for the refueling of the Unit 1  
14 which had taken place prior to the accident. We had discharged  
15 the body of that group, retaining for decontamination purposes  
16 and so forth, I believe, a staff of less than ten technicians  
17 and they were slated to leave us, I believe, at the end of the  
18 month. And so therefore, we had a very small group of NSS  
19 people here during the accident time.

20 Q Would it be fair to say that you had needed NSS  
21 during the outage in order to ensure that there were sufficient  
22 number of health-physics personnel to deal with the particular  
23 problems of the outage and to continue to perform other health-  
24 physics functions in the plant?

25 A That's correct. That was the main purpose for hiring

sls-7 1 the individuals -- was to support the outage.

2 Q What functions prior to the incident had Rad Services  
3 performed?

4 A Rad Services was not here. We had a few years ago  
5 had Rad Services as our support group. The HP support group  
6 during an outage, but we had a two-year contract with NSS and  
7 they were awarded the bid for that contract.

8 Q You indicated in your testimony this morning that  
9 there was some conflict between NSS and Rad Services after the  
10 accident. Can you elaborate on that?

11 A We had one group taking care of Unit 1, and another  
12 group taking care of Unit 2. A conflict arose only because  
13 there are two different vendors supplying the same support.

14 Q And what was the nature of the conflict?

15 A A jealousy, one with the other.

16 Q Which one was Unit 1?

17 A NSS.

18 Q Had you used General Dynamics or Electric Boat  
19 to your knowledge as a consultant prior to the incident?

20 A To my knowledge, no.

21 Q Had consultants or other companies performed audits  
22 of the health-physics program prior to the incident?

23 A Yes.

24 Q I show you a document that has been marked 3018  
25 entitled General Review of the health-physics program at Three

sls-8 1 Mile Island Nuclear Station dated March 20, 1979.

2 (NRC Exhibit 3018 identified.)

3 Had you seen that report prior to March 28th?

4 A Yes, I had.

5 Q When had you seen it?

6 A Shortly after it was presented to the company, which  
7 I believe was near March 20th, the date that it was published.  
8 They were sent down, I did not get a personal copy, but there  
9 were copies given to Dick Dubiel and I know Dave Limroth had a  
10 copy.

11 Q Do you know if anyone higher up than Messrs. Dubiel  
12 and Limroth had received a copy of the report prior to March  
13 28th?

14 A I can only assume that Mr. Herbeing had received a  
15 copy because he was the one who wanted the service.

16 Q Had you been interviewed by anyone from NUS in  
17 connection with the preparation of the report?

18 A Yes.

19 Q How long did you spend with them?

20 A Approximately four hours.

21 Q Was your meeting attended by anyone other than you  
22 and people from NUS?

23 A No.

24 Q Are you aware of other audits conducted prior to  
25 the one which became the subject of Exhibit 3018?

sls-9

1 A Other audits that became a portion of this Exhibit  
2 3018?

3 Q No, sir, other audits that resulted in other reports?

4 A Findings?

5 Q Yes.

6 A Similar to this type of report?

7 Q Yes.

8 A Yes, a Don Reppert through GPU has done an audit on  
9 the department, through a group that he was secretary for. These  
10 audit findings were presented through that particular group.  
11 That's one that I can recall.

12 Q Can you recall any others?

13 A Not that resulted in an audit finding program to look  
14 for ways of helping the department, no.

15 We have our own internal audits and we have had our QC  
16 department from the NRC audit and so on. That type of  
17 compliance audit, but never one that I recall that was designed  
18 to upgrade the department as a whole.

19 Q Approximately when was the report with which  
20 Mr. Reppert was associated, published or made available to  
21 you?

22 A I hesitate to give a date, but I would say it was  
23 probably six months prior to that.

24 Q Do you know why Mr. Herbein asked NUS to do an  
25 audit and prepare a report?



sls-10 1 A I believe I know what prompted it, it was the  
2 Oyster Creek citations that they had received.

3 Q What were those?

4 A Their health-physics department had received quite a  
5 number of citations for their performance and before a similar  
6 thing happened here, he wanted to be sure that this particular  
7 department was functioning as it should.

8 Q Do you know what prompted the Reppert audit and  
9 report?

10 A No, I don't.

11 Q When you refer to the Oyster Creek matter, were you  
12 referring to citations that had been made by the NRC?

13 A That's correct, yes. They were fined, I believe.

14 Q And you had an opportunity to review Exhibit 3018?

15 A Yes, I had.

16 Q When was the first time that you reviewed that  
17 document?

18 A Dave Limroth showed me his copy and I perused through  
19 it. That was shortly after it came out. This is the date,  
20 March 20th, and it was shortly thereafter.

21 Q Between that time and today, have you reviewed the  
22 report?

23 A I have scanned it during our lunch break today.

24 Q From your review of the report, are there any  
25 statements or conclusions in it with which you disagree?

sls-11

1           A           I don't recall any particular statement that I  
2 highly disagree with. I am in favor of the report. It's not a  
3 surprise, it's something that I could have written myself.  
4 But in general, the report does state what problems do exist  
5 in the Department.

6           Q           Do you recall the conclusions and recommendations, if  
7 there were any, which were made by the Reppert report?

8           A           I can't, no, that was too long ago.

9           Q           Do you have any recollection whether the Reppert  
10 report made the same kind of criticisms, if I may call them  
11 that, of the health-physics program, which were made by the  
12 NUS report?

13          A           There were similarities in and I can recall one  
14 incident because Don Reppert did talk to me about the audit,  
15 and we did relate back and forth our feelings toward it, and  
16 that was with the PLD program.

17          Q           That was a specific criticism?

18          A           That was a specific criticism. And in an area we  
19 both agreed upon should be one of the starting points to begin  
20 a correction of.

21          Q           After the Reppert report had been made known to you,  
22 did you discuss his suggestions such as the suggestion made  
23 with regard to TLD's, with any superior of yours?

24          A           Yes.

25          Q           With whom did you discuss it?

sls-12

1 A Dick Dubiel.

2 Q Did you discuss it with anyone else?

3 A No.

4 Q Was anyone else present when you discussed it with  
5 Mr. Dubiel?

6 A No.

7 Q What in substance did you tell Mr. Dubiel?

8 A We agreed with the report and the area, the one I  
9 can recall, is the PLD section. We were both in agreement at  
10 the time, and in agreement now that we did need a special area  
11 set up for TLD's. We both knew it. We had both tried to get  
12 this area set up because it is a concern and was of concern to  
13 both of us at the time.

14 To get a TLD set up, which was a meaningful set-up that  
15 could be deployed away from the general duties of a supervisor,  
16 we both recognized its need and it was brought out by the  
17 report.

18 A person -- someone to take over, that one I can  
19 specifically recall discussing because it was paramount at the  
20 time.

21 Q From the time you and Mr. Dubiel agreed on the need  
22 for a dosimetry person to the date of the incident beginning  
23 on March 28th, was a dosimetry person hired or selected?

24 A No.

25 Q Do you know whether any efforts were made to create

sls-13

1 or fill such a position?

2 A Other than talked about, no, no effort was made  
3 to fill that position because the position did not exist in  
4 our structure.

5 Q And I take it that no effort was made to change the  
6 structure to create a position so that it could be filled?

7 A That's correct.

8 Q Do you know if Mr. Dubiel took your mutual concern  
9 regarding the TLD matter higher up the chain of command?

10 A I do not know. I can only surmise that it fell on  
11 deaf ears if he did, because nothing was done about it.

12 Q Were there other matters than the TLD matter?

13 A Yes.

14 Q Which you discussed with Mr. Dubiel?

15 A Training, department training, which all of us in  
16 the department recognized a need for, a commitment that we were  
17 not meeting. We were meeting a commitment to the NRC that we  
18 would provide the 40-hours per year. We were meeting that on  
19 paper, whether it was meaningful or not, could be questioned.  
20 Although we were meeting a training commitment of a certain  
21 amount of time.

22 Q What is your view -- was it your view that it was  
23 meaningful?

24 A No.

25 Q What else in addition to training that you can recall

sls-14

1 now?

2 A A lot of technicians. We knew that came holiday  
3 time, came Christmas time, vacations and so forth, we were  
4 getting to a point in the game where after so many years of  
5 which our technicians were getting and growing to that point  
6 where we would have to begin to fulfill three weeks of vacation  
7 time rather than the two, we were having difficulty meeting  
8 two weeks of vacation time, we knew this was going to be a  
9 problem because Christmastime, everybody wants to be on  
10 vacation. We needed a new -- that we needed more technicians.  
11 We were working two units, we were using the same work force  
12 as we were using for one unit.

13 We then had two separate laboratories to take care of.  
14 Physically they're totally opposite each other. The units  
15 designed here are not for one staff to take care of, although  
16 we were confined to one staff to take care of the two units.  
17 Our lack of personnel was recognized by everyone in the  
18 department, and this is another area in which we had discussed  
19 and not only because of this report, but had discussed this  
20 many times, our capabilities of getting more individuals were  
21 extremely limited.

22 Q Why was that?

23 A Monies was one problem. We were financing -- we were  
24 a department. We were doing what we had to do to the very  
25 surface of collection of our radiation surveys, our contamination

sls-15

1 surveys.

2 We were not able to dig into situations. We were skimming  
3 the surface as far as health-physics and keeping people out of  
4 trouble. We were continually able to do this type of thing and  
5 therefore staying out of trouble and therefore, I believe, that  
6 the Department was not considered to be not functioning  
7 properly. However, we did not have the depth we needed to train  
8 an individual. We didn't have the time to really take to delve  
9 into situations, we kind of knew were foundering.

10 Q Are you familiar with any requirements established  
11 by NRC for the number of health-physics personnel necessary on  
12 particular shifts?

13 A A commitment that the NRC --

14 Q A requirement.

15 A Requirement?

16 Q Yes, sir.

17 A No, no. To my knowledge we told the NRC what we  
18 had on each shift.

19 Q You don't know whether that was set forth in the  
20 form of specifications or anything like that?

21 A No, I don't believe there is a specification.

22 Q In addition to the TLD's, as I hear you identify,  
23 essentially two other areas, training and stopping?

24 A Yes.

25 Q Those were concerns that you and Mr. Dubiel discussed

sls-16

1 in light of the Reppert report?

2 A Yes.

3 Q What, if anything, was done subsequent to the Reppert  
4 report and prior to March 28th, regarding either of those  
5 matters?

6 A Well, I believe because of that -- we're authorized  
7 -- and I'm not sure whether it was four new technicians, and we  
8 were in pursuit of those technicians. There may have been an  
9 outcome of that, although we did have an increase in staff of  
10 technicians.

11 Q Was an increase of force sufficient, in your view, to  
12 solve the problem?

13 A No, but it certainly was better than none.

14 Q How many in your view was necessary?

15 A It was my goal to double the staff.

16 Q Which meant, what?

17 A Which meant an extra 24 technicians.

18 Q Had you increased the size by four before March 28th,  
19 to your knowledge?

20 A We had two of the four, we had two.

21 Q Were there any changes made with respect to training?

22 A No.

23 Q In this time interval between the Reppert report and  
24 March 28th?

25 A We had taken one foreman and made him responsible for

sls-17  
1 the training that was important, the documentation and the  
2 setting up of the training. His goal was to be sure we met  
3 the commitment of the 40 hours per week for each technician.

4 He then -- and that was Pete Velez -- he then made booklets  
5 for each individual for each technician that we had on the  
6 staff, and I believe that was as far as we went.

7 Q Do you know whether -- strike that.

8 Did you take your concerns with respect to training or  
9 staffing higher than Mr. Dubiel?

10 A No.

11 Q Do you know whether he took your mutual concerns with  
12 regards to those matters prior?

13 A I do not know that, no.

14 Q Were there any concerns other than those relating  
15 to the TLD training and staffing which you and Mr. Dubiel  
16 discussed at approximately the time the Reppert report was  
17 issued?

18 A I think we talked about communication in the  
19 department which again was of mutual concern, who related to  
20 whom, just where we were going, what were our goals, this type  
21 of thing.

22 Q Were there any specific recommendations that you  
23 had with respect to communication?

24 A No, I don't recall any if there were.

25 Q Did you discuss that matter higher than Mr. Dubiel?



sls-18

1 A I did not.

2 Q Were there any other matters that you and he  
3 discussed in light of the Reppert report?

4 A I don't believe so, no.

5 Q Was Mr. Limroth Mr. Dubiel's boss prior to the  
6 Reppert report?

7 A No, I don't believe he had joined the company yet.

8 Q Do you know whether the Reppert report had anything  
9 to do with brining Mr. Limroth on?

10 A No, I don't.

11 Q Do you know what approximately he did?

12 A I was afraid you'd ask me that.

13 Q Take charge?

14 A No.

15 Q Did you discuss the concerns that you had discussed  
16 with Mr. Dubiel at any time with Mr. Limroth?

17 A Yes.

18 Q When was that?

19 A It was after he had joined us and we got to know him  
20 and we brought our problems to him. He was aware of those  
21 particular problems. I thought at the time, hey, good, we had  
22 somebody else who maybe would have some horsepower to go ahead  
23 and take our concerns to management and yes, we did discuss all  
24 of those aspects.

25 Q When Mr. Limroth did come aboard, did you receive any

sls-19

1 explanation from anyone as to why he had been brought in?

2 A No.

3 Q Do you have an opinion as to why he was brought in?

4 A It was my understand that he was brought in as an  
5 administrator, and under his control he had the administrative  
6 department, which included Carol Nixdorf and all of that  
7 clerical staff. And we did not know why HP and the Chemistry  
8 Section fell under his domain since, at the time, it was felt  
9 that he did not know the HP or the Chemistry Departments.

10 I understood it to be a commitment made to the NRC that this  
11 type of an administrator would be hired.

End t-7

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t-8  
sls-1

1 Q Did you express your concern about Mr. Limroth's  
2 apparent lack of background in the HP area to anyone?

3 A Yes.

4 Q To whom?

5 A Dick Dubiel.

6 Q To anyone higher?

7 A No.

8 Q Did Mr. Dubiel agree with you?

9 A I believe he did, yes.

10 Q Did he, to your knowledge, express your mutual  
11 concern to anyone higher than --

12 A I don't believe he did, no.

13 Q -- Dubiel?

14 With respect to the Reppert report, do you recall preparing  
15 or receiving any memoranda or other documents?

16 A I am not sure what you are asking me.

17 Q Well, did you for example write a commentary or  
18 critique of the Reppert report?

19 A No.

20 Q Did you ever see one?

21 A I did not see the final report.

22 Q Did you ever see any comments that anybody had  
23 written on it?

24 A No, I don't believe I did, because Don Reppert and  
25 myself grew up together in the industry. He and I communicated

1 very much during that particular audit. And I think that's  
2 where I learned of it. He was in communication with the GORB  
3 at that particular time and I felt that at that time that we  
4 again could make a plea to this group and that's where we were  
5 going to make some corrections. That didn't happen.

6 Q Tell me what the GORB is?

7 A It is, as I understand it, is a group that discusses  
8 plant situation, plant problems and acts on them. It's a  
9 high group of managers.

10 Q What does G-O-R-B stand for?

11 Off the record.

12 (Discussion off the record.)

13 BY MR. DIENELT:

14 Q Tell us for the record.

15 A General Office Review Board.

16 Q It is a GPU organization?

17 A It is a GPU functioning organization.

18 Q Did you submit anything in writing to G-O-R-B  
19 with respect to the record before you?

20 A I did not.

21 Q Do you know whether anybody other than Reppert  
22 did?

23 A The GORB did call individuals and review  
24 individuals, I believe, as a function and part of his report  
25 or the report was an offshoot of the projection.

sls-3

1 Q Were you not one of the individuals?

2 A I was not.

3 Q Was Mr. Dubiel?

4 A Yes, he was.

5 Q Was Mr. Limroth?

6 A I can't answer that, I don't know.

7 Q Did you feel that you had direct access to Mr  
8 Miller if you wanted to go to him to express concerns?

9 A Yes.

10 Q You chose to express your concerns through  
11 Mr. Dubiel?

12 A Yes.

13 Q As you understood it, did MR. Dubiel have free  
14 access to Mr. Miller?

15 A Oh, yes, Mr. Miller has extended that opportunity to  
16 anyone to go to his office and discuss at will.

17 Q What, as you understood it, was Mr. Limroth's  
18 background?

19 A Mr. Limroth, I understood to be out of the Navy. He  
20 did have naval nuclear background as a captain in the Navy.  
21 His knowledge of health-physics was questionable. I had no  
22 idea where his knowledge lay

23 Q Did you ever discuss any health-physics matters with  
24 him?

25 A The only time that I came into contact with

sls-4 1 Mr. Limroth's knowledge in health-physics was a course that he  
2 was going to be given through NUS. And that particular course  
3 did not take place, and Mr. Limroth came to me for a quick  
4 little HP course to get him up to speed to what we were  
5 doing.

6 Q After you reviewed the NUS report which is Exhibit  
7 3018, did you have a discussion with Mr. Dubiel similar to the  
8 discussion you had with him regarding the Reppert report?

9 A Yes, we both discussed that particular one, again,  
10 with Dave Limroth involved in this particular one at this time.  
11 We all agreed that it was a rather painful thing to see in  
12 print, although in general, things that we knew about, and  
13 that perhaps through this outfit we might have some help in  
14 correcting some of the situations we knew existed.

15 Q Did you take that -- strike that.

16 Did you prepare anything in writing in connection with the  
17 NUS report?

18 A No.

19 Q Do you know whether Mr. Dubiel and Mr. Limroth  
20 prepared anything in writing?

21 A No, I don't.

22 Q Do you know whether either of them took the concerns  
23 that the three of you had higher up the chain of command?

24 A Mr. Limroth may, but I don't know that to be a fact.

25 Q And you did not?

sls-5

1 A I did not.

2 Q Were there any concerns, in addition to those  
3 regarding TLD's, training, staffing and communication, which  
4 you and Mr. Dubiel had discussed in light of the Reppert report  
5 that you, Mr. Dubiel and Mr. Limroth discussed in light of the  
6 NUS report?

7 A Instrumentation, I believe, was another area in  
8 which we tried to get some function because at that particular  
9 time we were toying with the idea of sending instruments off for  
10 calibration as opposed to doing them on site, because of the  
11 staff that we had and because the staff that the NRC staff had.

12 I think that is probably the only difference that we had  
13 in the other.

14 Q It is fair to say that the four of you after the  
15 NUS report, shared concerns regarding TLD's, training, staffing  
16 and communications?

17 A Yes.

18 Q Between March 20th and March 28th, were you aware  
19 of any decisions that were made to attempt to improve the  
20 problems which had been identified by the NUS report?

21 A No.

22 Q You are not aware of any?

23 A I don't think the NUS report had been out that long  
24 for any response really or action to be taken, but I am not aware  
25 of anything that was done to it.

sls-6 1 Q Do you have an opinion as to why in the period from  
2 time from the Reppert report, no changes other than perhaps an  
3 authorization of form or technicians were made to improve the  
4 health-physics program?

5 A I believe I stated before we were functioning as a  
6 department and staying out of the trouble. Therefore, there was  
7 no grand and glorious reason to change other than our feeling  
8 that yes, we have got to do that, but our organization does not  
9 make changes that easily.

10 Q Did you have the impression that there was one or  
11 more individuals in the organization who were holding things up  
12 or was it simply a matter of priorities and bureaucracy?

13 A I believe the priorities and bureaucracy, I don't  
14 think there is one individual who said no, you can't do it.  
15 It is exceedingly difficult to get new people and it takes  
16 a lot of preparation and justification.

17 Q Were you optimistic after the March 20th report that  
18 improvements would be made in a fairly prompt manner?

19 A What, that improvements would be made in a prompt  
20 manner?

21 Q Yes.

22 A No, I was hopeful that maybe this documentation  
23 through an outfit that was hired to make that evaluation would  
24 hold some power. We had all intentions of using this as part of  
25 a document to get something done.



sls-7 1 Q Who is we in that context?

2 A Dick Dubiel, myself and Dave Limroth. This was  
3 another tool.

4 Q How were you going to use the tool?

5 A It's always nice to have another outfit concur with  
6 some of the ideas you've come up with. We were hoping that  
7 that would add a little power to it.

8 Q Would it be fair to say that what you intended to do  
9 was to continue to lobby management?

10 A Absolutely, and we were going to use that.

11 Q Now, you testified that -- strike that.

12 I believe you indicated earlier in your testimony  
13 that if you had had the task of writing a report or a summary of  
14 problems with the health-physics program, you would have  
15 included many, if not all, of the points that were made in the  
16 NUS report. Is that a fair statement?

17 A That is correct, that is correct.

18 Q Are there any criticisms of the health-physics  
19 program or recommendations with respect to improving the  
20 health-physics program which you would have made in addition  
21 to those that appeared in the NUS report?

22 A Yes, there may have been. There was one problem that  
23 I see, and I am not sure that that is in that particular  
24 report, and that is the physical location of the Department and  
25 how it functions in relationship to the rest of the plant.

sls-8

1 I did mention before that physically, to run two health-  
2 physics departments with a group of 22 technicians at opposite  
3 ends of an island is very difficult, specifically when there  
4 are four men on a ship, one man in each department per unit.  
5 If the one man needs help, it takes 15, 20 minutes to get from  
6 one lab to another. That is extremely difficult. So, the  
7 physical layout of the plant should be changed as far as  
8 functioning in our department.

9 We have already submitted and had submitted before the  
10 accident, a new HP area in which to function from.

11 Q Has that been implemented?

12 A That has not been implemented.

13 Q Do you know of any current plans to implement it?

14 A Yes.

15 Q What are they?

16 A In Unit 2 Beckett is doing quite a study on new  
17 laboratories, new functioning areas and so forth. This is as  
18 a result of the accident and in the recovery reorganization.  
19 So, we will get that, I hope.

20 Q You are anticipating that the physical locations  
21 will be consolidated?

22 A Yes.

23 Q And do you know where that is going to be?

24 A There is going to be a new building, I can't tell you  
25 where.

sls-9 1 Q Are there any other changes which have been planned  
2 or which have been implemented since March 20th report in the  
3 health-physics program?

4 A Since that particular report, and since the  
5 accident, we now have a TLD person, a dosimetry person who was  
6 hired through GPU who helped the TLD program. The TLD program  
7 right now has a offshoot of it called dosimetry, with a  
8 foreman sharing duties with his Unit 2 and TLD with the 22  
9 technicians sharing their duties between two units and running  
10 a TLD section.

11 We now have a whole separate department, and that department  
12 I know of five clerks -- and many other people assigned to that  
13 discipline, with quite a few people operating. That is one  
14 aspect of what we used to take care of before the accident.

15 So, this individual has been hired. We did ask for a long  
16 time ago -- indicated that we needed this individual. He has  
17 been hired, and he is now functioning as the coordinator for  
18 all of the radiation exposures, whole body calculations, the  
19 dose assessing to scan the whole body, extremities and so on.  
20 He is coordinating that with his rather large staff. The  
21 whole body counts. We had four units at the one point here, we  
22 had two of them left. We had none before.

23 We had always advocated that we wanted one here for our  
24 use. It was thought at one point perhaps we could share one  
25 with another outfit, but we wanted at one point, TLD -- whole

sls-10  
1 body count and urine bioassay program plus a respiratory  
2 protection program, all within the confines of this dosimetry  
3 person.

4 That has now happened with the exception of the respiratory  
5 protection. That has been given to another supervisor, so he  
6 has that off-shoot of which we used to take care of in our  
7 own department.

8 Granted, our areas have grown as far as population, but our  
9 department has also grown. I have right now 113 NSS people  
10 assigned to Unit 2, whereas before on technicians, I shared 22  
11 technicians for the two units.

12 Q Any other changes that have been made since the  
13 March 20th report?

14 A Yes, instrumentation. We have another whole outfit  
15 here doing instrumentation for us. Rad Services is doing it  
16 now. We have seven individuals in that group who are  
17 implementing all the calibration and repair of just the HP  
18 sections' instruments.

19 Now, granted we went from -- I would say maybe 60, 65  
20 instruments, data/gamma neutron, alpha, survey instruments to  
21 over 500 survey instruments including air sampling devices and  
22 so forth of which they are maintaining for us.

23 But that's a whole new calibration area with new  
24 instruments and so forth. Now, that's being handled by a  
25 separate group where before our department used to calibrate our

sls-11 1 instruments. Again, with the 22 technicians.

2 Q Any other changes?

3 A The whole reporting chain has changed.

4 Q Would you tell me a little bit about that?

5 A There is a waste management group of which we have --  
6 I am in that. I am one of two Metropolitan Edison people for  
7 the HP department located in Unit 2. We have just hired a new  
8 man, a Paul Ruhter, who is a certified HP health-physicist, who  
9 has just arrived a few days ago, and he is going to be taking  
10 Limroth's place. I believe Dave Limroth is going back to Unit 1.  
11 Therefore, we will only have one Met Ed individual here besides  
12 myself, functioning as HP supervisor, and that is another change  
13 that is taking place.

14 This whole vast chain that we have grown into on the Unit 2  
15 side and Unit 1 is slowly being pulled away, so we are coming  
16 apart as a department. Myself with the rest of the HP  
17 Department in Unit 2, yet we still have station functions to  
18 perform, station HP procedures of which I must confer with  
19 Unit 1 to make sure that what we are doing in Unit 2 is going  
20 to be able to be handled in Unit 1.

21 I can take air samples every four hours. I have the staff  
22 to do it. Unit 1 does not.

23 Q Any other changes?

24 A No.

25 Q Now, you referred a moment ago to a certified HP

1 person. How does one obtain certification?

2 A Through the American Board of Health-Physics. It's  
3 quite a lengthy exam.

4 Q Are you a certified health-physicist?

5 A No.

6 Q Prior to March 28th, was there anyone in the health-  
7 physics department who was certified?

8 A No.

9 Q Do you know if Mr. Porter is certified?

10 A Mr. Porter is certified, yes.

11 Q But Mr. Dubiel is not?

12 A He is not.

13 Q Is it expected that the large complement or the  
14 larger complement of people from outside the company such as  
15 NSS and Rad Services about whom you have just testified, will  
16 remain on the premises?

17 A They will remain on the premises, yes.

18 Q That is a permanent arrangement as far as you know?

19 A As far as I know, that's as permanent as we can tell  
20 them right at the moment, yes.

21 Q There are no plans to replace these people with  
22 Met Ed employees, for example?

23 A Not at the moment.

24 Q Now, during the -- strike that.

25 Prior to the accident, when you had employed personnel from

sis-13 1 NSS and Rad Services or other companies for HP support, how  
2 had they been integrated into or blended into the activities of  
3 the HP program?

4 A We require that all the individuals submit a  
5 resume to us and when we ask for NSS support or any other group  
6 that bids on the contract, when they did receive the contract  
7 we then specified the amount of men that we need, or women, or  
8 techs we need. We need some supervisors, some foremen,  
9 some technicians, senior and junior, all of those individuals  
10 whom they do supply, we ask for resumes for those individuals.  
11 We scan the individuals and we interview the individuals.

12 Now, that was prior to the accident.

13 When the accident happened and we needed the NSS people  
14 here, we again looked through the resumes, but only for the  
15 senior techs who were going to make decisions and ANSI  
16 qualified.

17 Q A-N-S-I?

18 A Those individuals I have all the resumes for, and as  
19 we bring them in, I have a card system now that we put them in  
20 and out of the plant and I do interview those individuals as  
21 they come in and out.

22 Q When the support health-physics personnel came on  
23 prior to the accident, who supervised them?

24 A The NSS people during the --

25 Q No, prior to the accident period.

sls-14 1 A When they came in to do a refueling outage and so  
2 forth?

3 Q Yes.

4 A They were supervised by our department. And our  
5 foreman working under our procedures were sent to their company,  
6 all their employees are reviewed by them prior to coming here.  
7 We made up a booklet putting our prediscussions and so forth  
8 in this booklet, each one of their men got one of these so they  
9 were somewhat skilled in our system. They then attended our  
10 WP class and so on and our way of doing things, and they  
11 functioned under our direction.

12 Q Who supervised the health-physics support personnel  
13 from NSS and Rad Services, who are now part of the organization?

14 A I do.

15 Q Was it the intention during the response to the  
16 accident that outside personnel who were brought in to be  
17 consultants would be supervised by Met Ed HP personnel?

18 A Brought in to be consultants?

19 Q Brought in to work, excuse me, on health-physics  
20 matters.

21 A Yes. I believe it was their intention because  
22 when they arrived in Unit 2, and when Rad Services left, they  
23 arrived in Unit 2 and there was a pull-back to Unit 1 of all  
24 Met Ed people. There was a short interim period of time when  
25 we did not have a Met Ed supervisor, and HP -- and we directed it



sls-15

1 from Unit 1. Thus I came from Unit 2 and am now exclusively  
2 now Unit 2.

3 Q In your view, were the outside people who were brought  
4 in for health-physics support during the accident in fact  
5 supervised by you or some other HP personnel?

6 A Yes, yes.

7 Q Are the outside people who come in for health-physics  
8 support during an outage were in other circumstances sometimes  
9 known as rent-a-techs?

10 A Yes.

11 Q There is a section in the NSS Report at Page 2-7  
12 relating to the rent-a-techs. It's at the bottom of the page  
13 and I would like you to look at that portion.

14 MR. DIENELT: Off the record.

15 (Discussion off the record.)

16 BY MR. DIENELT:

17 Q Before the break I asked you to review a passage  
18 relating to rent-a-techs from Exhibit 3018. Have you done so?

19 A I have, yes.

20 Q Do you understand that passage to refer to the use  
21 of rent-a-techs during the Unit 1 outage which you have talked  
22 about earlier in your testimony?

23 A Yes.

24 Q One statement which is made in this passage is that  
25 a result of the use of the rent-a-techs is that the on-the-job

sls-16 1 health-physics coverage, which is required for the experienced  
2 workers and is normally performed by rent-a-techs, is grossly  
3 inaccurate.

4 Do you agree with that statement?

5 A No.

6 Q Do you agree that it was inadequate?

7 A If I may give the history of this.

8 Q All right, fine.

9 A And I will tell you why I discounted this portion.

10 We are dealing with a union group in the Metropolitan Edison  
11 system. The outside rent-a-techs are nonunion individuals.

12 I will admit that in performance or in the gathering up of the  
13 data for this particular report, not only did they talk to  
14 managerial people, they also talked to who are the union  
15 personnel.

16 The union, when we first hired rent-a-techs, was grossly  
17 opposed. Derogatory remarks were made towards the group that  
18 came in. It was rather difficult. That group that came in,  
19 I sat with and told them that this may happen. We needed the  
20 individuals. The union was told we needed the individuals, but  
21 the individuals were not accepted very well by the union  
22 personnel until they proved themselves to be adequate HP  
23 people.

24 There were those who will never accept an outside group  
25 working under a union contract house. Therefore, some of the

sls-17 1 individuals will never accept them as being equal in status nor  
2 knowledgeable in the field of rent-a-tech or health-physics  
3 rather, because then that is encouraging the usage of nonunion  
4 personnel in a union shop.

5 The first time that we utilized these individuals, the  
6 individuals completely took over the outage from the Unit 1  
7 standpoint. The Met Ed personnel were put into Unit 2 as a  
8 time for learning Unit 2 systems because Unit 2 was not in  
9 operation. They were to spend that particular time following  
10 systems, learning Unit 2. That was two years ago.

11 Last year, because of the opposition that we received from our  
12 own Met Ed union personnel in the department and union Met Ed  
13 or union officials, we only hired a very few to supplement our  
14 particular department and used our own Met Ed people as  
15 part of the group or as the group who run the outage. Thus,  
16 you see from 25 the year before to 5, I believe, that we had  
17 hired and we hired a few more than that, and still the feeling  
18 was an antirent-a-tech feeling. Although we did work together,  
19 but we had to watch it constantly, and continually, and thus  
20 some of the statements in this particular report don't necessarily  
21 reflect a true performance of these rent-a-techs, but reflect  
22 the way that they were accepted by the rest of the union  
23 personnel.

24 Not all union personnel felt that way, some felt they did  
25 a much better job than our own people. Some felt that our own

sls-18

1 people should be given top preference, such as utilization of  
2 the auxiliary operator force who were HP qualified. That didn't  
3 always take place, because they had other duties to perform in  
4 the operations department and through their management, we could  
5 not get a commitment of individuals over a week's period of  
6 time or a month when we needed that commitment of personnel.

7 So, therefore, we went to the rent-a-techs and they were  
8 not universally accepted here at the plant, although their  
9 performance by our standards was good.

10 Q Are you saying that the rent-a-techs were hampered  
11 in their performance by the attitude of union people?

12 A They were hampered, not in their performance, but their  
13 performance, I feel, was very good as far as HP. They were  
14 hampered in their performance of their duties and relationship  
15 to the Met Ed union because they would not accept theirs. We  
16 had a couple of times when an NSS man would perform a survey on  
17 an employee of another department who was union, so I don't  
18 believe that survey, I want one of our own people to do that.  
19 That posed a problem until we sat with the union again and  
20 said, this is what we have, and this is our qualifications, and  
21 you must accept because we need this additional help.

22 So, there was this conflict. Thus, that statement in that  
23 report which is not totally true.

1 Q Who are the inexperienced workers as you understand  
2 it that is referred to in this passage?

3 A Inexperienced workers would be those individuals  
4 who were here, such as outside contractors, Catalytic, Crouse,  
5 C-r-o-u-s-e, who are hired during an outage to perform main-  
6 tenance work.

7 Q And is it true that -- that the on-the-job health  
8 physics training or coverage which is required for those  
9 inexperienced workers is normally performed by rent-a-techs?

10 A State your question again?

11 Q Is it true that the health physics training that  
12 these temporary or inexperienced workers receive so that they  
13 can work during an outage is normally provided by rent-a-techs?

14 A No, they're training is not provided by the  
15 rent-a-techs. It was provided by Met Ed personnel such as  
16 myself or Pete Velez. One of the foremen would, when these  
17 individuals came in, take them to the classroom and give them  
18 their RWP training.

19 Now, since the accident we do have outside individuals  
20 doing that teaching for us, such as individuals from NUS whom  
21 we have hired to perform the training because we don't have  
22 the time.

23 Q So you're saying the statement that the on-the-job  
24 physics coverage --

25 A That statement -- before you continue on with your

1 question -- and you asked me not to do that -- but your ques-  
2 tion means or that statement means that when you as an outside  
3 contractor put yourself into -- you have never been here  
4 before. I go through a one-day training session, which is  
5 generally an eight-hour course, and then report the next day  
6 to go to work.

7 You are going into a radiation work permit area to perform  
8 your duties. You have never been in a particular area or  
9 inside the reactor building or whatever your job is going to  
10 take you. I would assign an HP man to escort you to your  
11 job site. And he then performs the health physics, radiation  
12 monitoring, the contamination survey, and makes sure you are  
13 functioning within the realm of our procedures.

14 Q And that is what is meant by on-the-job health  
15 physics coverage?

16 A That's correct.

17 Q And that is what is done normally in an outage by  
18 rent-a-techs?

19 A That's correct.

20 Q And it was done in the recent Unit 1 outage by  
21 rent-a-techs?

22 A Yes, and our own Metropolitan Edison technicians.

23 Q And your testimony is that the friction between union  
24 Met Ed employees and non-union rent-a-techs is the reason  
25 why NUS drew the conclusion that the on-the-job health

1 physics coverage was grossly inadequate?

2 A. That's correct.

3 Q. For whatever the reason, do you agree that the  
4 coverage was grossly inadequate?

5 A. I do not agree that the coverage was inadequate. I  
6 strongly insist that it was more than adequate.

7 Q. Did the people from NUS discuss this particular  
8 point with you?

9 A. Not in that context, no, no.

10 Q. Do you know what the basis on which they drew the  
11 conclusion that it -- that the health physics coverage was  
12 grossly inadequate was?

13 A. I can only surmise that that is, as I told you, how  
14 they drew their conclusion from that data.

15 Q. Because there was friction between the --

16 A. Friction between individuals, yes.

17 Q. I have asked you about that specific passage relating  
18 to the health physics coverage.

19 A. Yes, sir.

20 Q. And you told me you disagreed with it. And earlier,  
21 I asked you in general terms if there were things about the  
22 NUS report, which is Exhibit 3018, with which you disagree,  
23 and you indicated that there was nothing with which you  
24 strongly disagreed, I believe. Is that a fair statement?

25 A. That's fair, yes.

1 Q Is there anything else in the report that you can  
2 recall now with which you disagree to the same extent that  
3 you disagree with the passage that you and I have just been  
4 discussing?

5 A Not that I can recall. As I said, I only scanned  
6 it during our break.

7 Q During the break when you read the passage relating  
8 to the alleged gross inadequacy of the health physics coverage  
9 that you and I have just been discussing, did it occur to you  
10 when you looked at it that you disagreed with it?

11 A I don't recall reading that particular section. I  
12 looked at a few of the highlights in the back and did not  
13 reread entirely the whole document.

14 MS. RIDGEWAY: Off the record.

15 (Discussion off the record.)

16 MR. DIENELT: Back on the record.

17 BY MR. DIENELT:

18 Q I want to ask you about some specific statements in  
19 the NUS report and whether you agree or disagree with them.  
20 The first one is on page 2-1: "The present organization at  
21 Three Mile Island precludes the adequate performance of some  
22 critical health physics functions. The basic problem appears  
23 to be that the health physics organization has not been  
24 properly upgraded to meet current demands."

25 The question with respect to that one, as it will be with



1 respect to others, is whether you agree with that?

2 A. I do agree with that, yes.

3 Q. The second matter, also on that page, states that:

4 "Health physics and chemistry functions are combined under  
5 one department at the top, split apart at the supervisors/  
6 foremen level, then recombined at the technician level. This  
7 organizational structure is generally ineffective and has  
8 resulted in serious problems at the technician level."

9 Agree?

10 A. Agree.

11 Q. On page 2-3 at the top -- to paraphrase the statement  
12 that you have in front of you and can read, the point, as I  
13 understand it, is that Mr. Dubiel's time and attention are  
14 spread much too thin. Agree?

15 A. Yes, I do agree.

16 Q. Also on that page, at the bottom statement:

17 "Essentially, all tool, equipment, and respirator decon-  
18 tamination at TMI is physically performed by the health  
19 physics/chemistry technicians. This is the major cause of  
20 the inadequate technician staffing."

21 Agree?

22 A. Yes.

23 Q. Also on page 2-4:

24 "A crew of personnel, such as utility workers, should be  
25 permanently assigned to health physics for the specific

1 purpose of tool, equipment and respirator decontamination.  
2 Health physics technicians should be responsible to survey  
3 the decontamination items and to authorize their release to  
4 clean areas."

5 Do you agree with that?

6 A. I do agree.

7 Q. Is that one of the changes that has been implemented?

8 A. We in Unit 1, no. In Unit 2, we have, through our  
9 rad waste management group, we have an electrocon unit, we have  
10 a degreaser unit, that's being handled by a separate group out  
11 of the HP department. Unit 1 is going to be handling the  
12 decontamination of portable instruments at their request,  
13 before they go back to rad services for collaboration. Unit 1  
14 hasn't been changed that much, but the Unit 2 influence on  
15 Unit 1 has been taken away.

16 Q. On page 2-5, the statement:

17 "Technicians are presently doing a great deal of work which  
18 should be done by clerks."

19 A. Yes.

20 Q. Clerical work which is being performed by the  
21 technicians leaves much to be desired?

22 A. Yes.

23 Q. Page 2-8:

24 "TMI auxiliary operators are supposed to be trained to act  
25 as health physics technicians as they may be needed. In

1 reality, the AOs are neither trained or qualified health  
2 physics technicians."

3 A. That is not totally correct.

4 Q. Is it substantially correct?

5 A. In some cases, yes.

6 Q. In most cases?

7 A. In most cases, no.

8 Q. Are they trained?

9 A. They are trained.

10 Q. In what manner?

11 A. They have a course which they go through, which is  
12 called the advanced health technicians course. At the end of  
13 that particular course, they know the specific duties on a --  
14 that a technician should function on a routine basis, such  
15 as contamination surveys, air surveys, beta/gamma surveys.  
16 And of those three things, we would expect them to be able to  
17 handle an HP situation.

18 Q. So you regard their training as adequate?

19 A. Yes, to function as a basic health physics person.

20 Q. You do not believe that for the most part, during  
21 outages or emergencies, they have been given jobs that are  
22 beyond their training or qualifications?

23 A. No.

24 Q. What kind of examination does an AO take at the end  
25 of the course that you have just described?

1 A. Course content exam.

2 Q. How long does it last?

3 A. I have seen it last about two hours, depending again  
4 on the individual taking the exam.

5 Q. Is it written?

6 A. It is written.

7 MR. DIENELT: Off the record.

8 (Discussion off the record.)

9 BY MR. DIENELT:

10 Q. Are the auxiliary operators given any practical  
11 factors examination?

12 A. Practical factors examination? I don't know what  
13 you mean by "practical factors."

14 Q. Mr. Lynch will tell you.

15 MR. LYNCH: Practical factors would be an examination  
16 by demonstration.

17 THE WITNESS: Yes, all right. Yes, indeed. I  
18 thought you meant something like rules of thumb or something.  
19 Yes, they do in the performance of their duties -- I have --  
20 when I taught, of course, I gave them a session in which they  
21 had to go out and demonstrate their ability to take samples,  
22 to do survey work.

23 It was part of the course and I had an individual exam  
24 where they orally told me about all the instruments, how they  
25 function, what they were used for, and it was part of their

1 final exam. Then they had a written portion.

2 BY MR. DIENELT:

3 Q Did the regular health physics staff have that kind  
4 of examination, too?

5 A No.

6 Q Is there any reason why not?

7 A I can't think of any reason why they shouldn't have  
8 it nor why they should have it.

9 Q When auxiliary operators were used -- strike that.  
10 Were auxiliary operators used as health physics technicians  
11 during the most recent outage?

12 A Not as a functioning health physics technician, no.  
13 They were used in a job category that was held by a Met Ed  
14 HP person, but they were doing ROWP work at the entrance to  
15 the reactor building and at the entrance to the HP control  
16 point.

17 Q When they performed that function, did they report  
18 to HP personnel?

19 A Yes.

20 Q Did they at any time have any operational responsi-  
21 bility?

22 A Yes, they did.

23 Q Did they report to operational personnel with respect  
24 to those responsibilities?

25 A In a few instances they tried. I discouraged that

1 because I wanted them exclusively for health physics and could  
2 not perform the dual purpose.

3 Q Do you agree that the placing of an auxiliary  
4 operator in a situation where he has dual responsibilities  
5 for reporting is not workable?

6 A It is not workable.

7 Q On page 3-1 of the NUS report, it refers to a loss  
8 of credibility of the health physics program.

9 Do you agree that there has been a loss of credibility?

10 A I do not believe here that there is a loss of  
11 credibility between our technicians or regarding our technicians,  
12 no, I don't believe so.

13 Q Do you believe that the health physics program here  
14 has a high degree of credibility?

15 A Relating to some other programs that I have seen,  
16 yes.

17 Q In other words, in comparison to the way health  
18 physics is treated at other plants, it is treated better here?

19 A I believe so.

20 Q Is it still -- strike that.

21 Is it nevertheless treated poorly here?

22 A Yes.

23 Q Under 3.1 on that page -- and let me read you a  
24 statement and ask you if you agree or disagree:

25 " The inadequacies of the training of the health'

1 physics/chemistry technicians are readily apparent. Although  
2 the technicians perform most of the tests directly, their  
3 actions are by rote. When confronted by only slightly off-  
4 normal situations, they often lack sufficient understanding  
5 of their job to confidently take the appropriate action. The  
6 technicians also appear to have insufficient knowledge of the  
7 plant systems, including the radiological considerations that  
8 would apply if the system were open.

9 A. That is correct.

10 Q. Also on that page, the statement:

11 "Understaffing has precluded any technician training for  
12 at least the last year and a half."

13 A. That is correct.

14 Q. The report says "at least in the last year and a  
15 half." How long would you say the understaffing has precluded  
16 any such training?

17 A. Five years that I have been here.

18 Q. In other words, the entire five years you have been  
19 here?

20 A. Yes.

21 Q. On page 3-2:

22 "The overriding of decisions made by health physics personnel  
23 has become a routine occurrence at TMI."

24 A. A degree of overriding has taken place. Again, we  
25 are not the money-makers, and there have been times when

1 decisions made by the HP department have been overridden in  
2 lieu of the moneymakers.

3 Q When a decision has been overridden, do you have a  
4 route of appeal?

5 A Yes.

6 Q To whom?

7 A To Gary Miller.

8 Q Have you ever exercised that appeal?

9 A We have mentioned it in a certain degree that we  
10 have been overridden on our decisions, and usually it's too  
11 late.

12 Q Have there been instances, then, which you have  
13 appealed or Mr. Dubiel has appealed to Mr. Miller and  
14 Mr. Miller has reversed the overriding of a health physics  
15 decision?

16 A There have been times when we have had something  
17 come out of that to our favor from a situation that was over-  
18 ridden, but the situation wasn't reversed because of that.  
19 But in the future, it will be done this way, should it occur  
20 again.

21 Q Would it be possible to carry an appeal to  
22 Mr. Miller in time to prevent the operations overriding of a  
23 health physics decision from having its effect?

24 A I don't believe so, because usually it will happen  
25 in a confrontation of maybe health physics saying: Operations,



1 I don't think you ought to do that, and the shift supervisor  
2 saying: It will be done. It is done and then we appeal.

3 Q In other words, your appeal is one of seeking  
4 Mr. Miller to take some steps to ensure that the specific  
5 issue, if it arises again, does not result in operations  
6 overriding a health physics decision?

7 A Yes, right.

8 Q Do you believe that there ought to be a means by  
9 which health physics could go to someone in higher authority  
10 to attempt to prevent an operations decision from overriding  
11 a health physics determination?

12 A Not particularly a person, but a review chain or a  
13 mechanism whereby health physics is included in decisionmaking  
14 on specific jobs that are going to be done; a relationship in  
15 which operations must go to and health physics is included, so  
16 that operational decisions include the health physics depart-  
17 ment.

18 Q Has this suggestion been made to you by Mr. Miller --  
19 I mean, made by you, by you to Mr. Miller? Has this recom-  
20 mendation been made by you to Mr. Miller?

21 A Yes.

22 Q Has the recommendation been made by you to  
23 Mr. Dubiel?

24 A Yes.

25 Q To Mr. Limroth?

1           A.       Yes.

2           Q.       To others?

3           A.       Yes.

4           Q.       Who else?

5           A.       Our whole department. We are all in agreement that  
6 this should be done. However, it has not come about yet.

7           Q.       Why not?

8           A.       As stated earlier in the testimony, the health  
9 physics department does not command nor have that voice in  
10 decisionmaking.

11          Q.       Do any of the radiation protection personnel have  
12 stop-work authority?

13          A.       They all have that authority and they have all been  
14 told they have that authority.

15          Q.       To your knowledge, has it ever been exercised?

16          A.       It has been.

17          Q.       Frequently?

18          A.       No.

19          Q.       Infrequently?

20          A.       Infrequently.

21          Q.       Very infrequently?

22          A.       Very infrequently.

23          Q.       Rarely?

24          A.       No, not rarely.

25          Q.       When that authority has been exercised, has it been

1 overridden by operations?

2 A. Yes.

3 Q. Frequently?

4 A. Yes.

5 Q. Are you aware of any instance in which stop-work  
6 authority has been used when it was not overridden by opera-  
7 tions?

8 A. Yes.

9 Q. Can you give me an example?

10 A. In the permanent form of jobs through Catalytic or  
11 maintenance personnel. Those individuals generally do pay  
12 attention.

13 Q. Are you aware of any instance in which stop-work  
14 authority has been used by the health physics personnel with  
15 respect to a test that is being performed by Met Ed operations  
16 personnel which has not been overruled?

17 A. Which has not been overruled?

18 Q. Yes, sir.

19 A. No.

20 Q. Let's go on to page 3.3.

21 "Technician decisions are overridden by their own foremen  
22 and supervisors."

23 A. Yes.

24 Q. Is that an accurate statement?

25 A. That is true, that is true.

1 Q "And the underlying reason for overriding the decisions  
2 of the technicians and/or foremen is that they may be unquali-  
3 fied from lack of training to make the proper decisions."

4 A No, that I don't agree with. There are times when  
5 a decision is made, well, you just can't do that, and the  
6 individual may say why, and you say, because I said you can't  
7 do that. And we could get the argument back. We would have  
8 two groups coming in and you have an argument on your hands.

9 Sometimes there is a valid reason and we would let it  
10 stand. In many cases, the reason cannot be substantiated, so  
11 you have to take both views into consideration. One group  
12 wants to get the job done and we have to discuss it and so on.  
13 So there are times -- and I would say probably many times --  
14 that the decisions of the tech would be overridden due to  
15 the circumstances of the job, once they are understood.

16 There have been times when you go down to the laboratory  
17 and the tech says: I don't have time for you; we can't do your  
18 job today, flat. We do have a lack of dedication on many  
19 occasions to perform the job. I have instructed techs that  
20 I'm going to get coffee, I can't do your job now. So some  
21 of those aspects do influence the change in the decision that  
22 was made.

23 They are not, as I said, in many cases valid decisions to  
24 do the priority jobs that have to be done. Therefore, the  
25 foreman, in exercising his duty, does override that tech.

1 And I'm not saying it's done all the time.

2 Q On occasions, is the overruling of a decision by a  
3 technician based on the knowledge of the foreman or supervisor  
4 or the belief on their part that operations are going to go  
5 ahead and override the decision anyway?

6 A I do believe that that is in some people's minds,  
7 because you will have to know that on the back, the second  
8 and third shift, and on weekends, the department is under the  
9 direction of the shift supervisor. So therefore, you have  
10 an individual functioning in dual capacity. Get the job done,  
11 run the plant.

12 And he's directing those who are there to stop anything  
13 that may happen, that may cause a problem.

14 Q Have you had occasion to overrule a refusal by a  
15 technician to permit a certain task to be done because you  
16 felt that operations was going to go ahead and do it anyway?

17 A No.

18 Q Do you believe that having the shift supervisor on  
19 the back shift supervising the health physics is a good idea?

20 A No.

21 Q Why not?

22 A If we are going to be a separate entity, making a  
23 decision unrelated to the operations of the plant, which I  
24 feel health physics should be, we cannot be governed by one  
25 who has that specific duty.

1 Q When a technician is overruled, are the reasons for  
2 the overruling explained to him by the foreman or supervisor?

3 A I would hope they are, but I can't say yes, they are.  
4 There are times that you must say, because I said so.

5 Q When you overrule a decision, do you make an effort  
6 to explain it?

7 A I try to.

8 Q On page 4/1:

9 "Activities which may involve considerable changes in  
10 radiological conditions are frequently conducted by operations  
11 personnel without notification to health physics."

12 A That is correct. There was one incident in Unit 2,  
13 after their startup, that we did go to Miller on that.

14 Q What was that?

15 A This was movement of water from one tank to another,  
16 which ran through a resin column, which made one cubicle into  
17 a radiation area which had the day before been a non-radiation  
18 area. And we discovered it the next day and we did go to  
19 Miller about that.

20 It resulted in a memo, I believe, to the operations depart-  
21 ment.

22 Q But the work was done?

23 A It was finished. It's over.

24 Q Before you --

25 A That's correct.

1 Q Do you know whether anyone was contaminated as a  
2 result of the work?

3 A No, there was no one contaminated as a result of the  
4 work.

5 Q Do you know whether anyone received his quarterly  
6 exposure as a result of that?

7 A No one received a quarterly exposure.

8 (Discussion off the record.)

9 BY MR. DIENELT:

10 Q What was the substance or the nature of the memo  
11 that was written from Mr. Miller regarding this particular  
12 instance?

13 A Before movement of any water, HP would be notified  
14 as to what was going to be done prior to its movement.

15 Q Do you know when that occurred?

16 A Probably in about February, maybe.

17 Q Of 1979?

18 A Yes, sir.

19 Q Do you know if any other instance in which written  
20 memorandums similar to the one you just described resulted  
21 from an appeal to or a complaint to Mr. Miller regarding --

22 A I can't recall specifically right now, no.

23 Q Do you know whether there have been any violations  
24 of that memorandum since it was written?

25 A Well, we've shut down our plants. Yes, March 28th.

1 No, to my knowledge, not due to operations or specifically  
2 moving water around.

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1 Q Continuing on 4/1, do you agree that, "Improper  
2 description of work to be performed under radiation work  
3 permits has been a continuing problem"?

4 A Yes, that is a problem.

5 Q And has that affected the ability of Health  
6 Physics to provide correct radiological protection  
7 requirements?

8 A Yes.

9 Q Are you aware of any examples of contamination or  
10 over exposure which could be attributed to the failure to  
11 adequately describe the work which was to be done under a  
12 radiation work permit?

13 A There is one instance that comes to mind since the  
14 accident that happened a few weeks ago, and that was in Unit  
15 2. Individuals who said they were going in to do some  
16 caulking of an area, they were dressed in a certain manner  
17 according to the job they were going to be doing. They  
18 neglected to tell us they had to kneel on the floor in order  
19 to perform this, or they decided afterwards after the job  
20 had begun, and we had a contamination of the knees problem.

21 Q Has the failure to adequately describe the work to  
22 be done under RWPs resulted, to your knowledge, in an  
23 unnecessary exposure, even if they were not over exposed?

24 A No, I don't think there has been a gross exposure  
25 problem due to it.

187 10 02

mgcDAR 1 Contamination, yes. Additional work for decontaminating  
2 individuals. It's just that when an individual may be —  
3 that he said what he's going to do, but once he gets up  
4 there, he may decide to do it differently.

5 We have, due to the schooling and so forth, told the  
6 individuals that they must communicate with HP Department in  
7 order to change their work habits. They've got to tell us.  
8 It is a continuing problem.

9 Q Going back for a moment to Mr. Miller's  
10 memorandum, do you know whether Health Physics was notified  
11 in accordance with the requirements of the memorandum with  
12 respect to all movements of water during the accident that  
13 began on March 28?

14 A No, I don't believe we were notified of movement  
15 of water.

16 Q Do you know whether Mr. Miller's memorandum  
17 covered releases of gases as well as movements of water?

18 A No, I do not. But it did deal with the Operations  
19 activities to let us know what they had planned.

20 Q In other words, did it impose a broader  
21 requirement on Operations to advise you?

22 A Yes, include us in their functions.

23 Q And as you understood the instructions in the  
24 memorandum, would the decision to vent the makeup tank,  
25 which you became aware of later, have been within the letter

187 10 03

mgcLAR 1 of the requirement of the memorandum?

2 A Yes.

3 MR. DIENELT: Off the record.

4 (Discussion off the record.)

5 MR. DIENELT: On the record.

6 If it can be found, I would like a copy of Mr. Miller's  
7 memorandum.

8 MS. RIDGEWAY: Would you make that a little bit  
9 more specific for the record?

10 MR. DIENELT: Yes, I think it is the February  
11 memorandum that Mr. Miller wrote relating specifically to  
12 movements of water without notification to Health Physics,  
13 but also apparently according to the witness, dealing more  
14 broadly with requirements of consultation with Health  
15 Physics by Operations people, prior to undertaking certain  
16 activities.

17 MS. RIDGEWAY: And do you know to whom this memo  
18 is directed?

19 THE WITNESS: I believe it was to Operations  
20 Department.

21 BY MR. DIENELT:

22 Q Continuing on on page 4/2, a statement that:  
23 "Appropriate information, however, is not adequately  
24 transmitted to various members of the Health Physics  
25 organization."

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ngcDAR 1 A Yes.

2 Q The statement at the bottom, "A definite  
3 communications gap is apparent between the Radiation  
4 Protection Chemistry supervisor and the Health Physics  
5 supervisor."

6 A We functioned in two different areas, two  
7 different locations, and again, Dick Dubiel is hard to find,  
8 and he is at meetings many of the times.

9 Q "Another gap appears to exist between the Health  
10 Physics supervisor and the Health Physics foreman, and yet  
11 another between the foreman and the technicians."

12 A Between the Unit-2 Foreman, because of the  
13 physical location of the plants, it was difficult to  
14 communicate with them because their office was over there in  
15 Unit-2, and unless a concerted effort was made on a daily  
16 basis to go to that area, it was difficult to communicate.

17 Q On page 4/3: "No effective method is employed to  
18 ensure that all the technicians are aware of procedure  
19 changes, although the problem is most prevalent for  
20 temporary change notices, TCNs. It also applies to the  
21 actual procedure revisions."

22 A That is true.

23 Q During your testimony some time ago, you indicated  
24 that in your view the Health Physics program at TMI was held  
25 in higher esteem or at least was not held in as low esteem

187 10 05

mgcDAR 1 as it was in other plants.

2 Is that a fair statement?

3 A That is a fair statement, yes.

4 Q What was the basis for that comparison?

5 A I have been to other plants. Having come from a  
6 different plant, having compared it with Oyster Creek which  
7 I have been out there to take a look at their program and  
8 talk to individuals there, I felt that we were coming  
9 along. We were not bad. We had a long way to go.

10 Q Apart from Oyster Creek -- and the plant in which  
11 you worked previously -- what other plants --

12 A Peach Bottom.

13 Q What was your experience with that?

14 A We went down there and held some classes. At one  
15 particular point, it was on the Harshaw system before we  
16 received it here, and talking to their technicians there.

17 Q Any others?

18 A No.

19 MR. DIENELT: Off the record.

20 (Discussion off the record.)

21 MR. DIENELT: In off the record colloquy,  
22 Mr. Mulleavy indicated that he wanted to make a  
23 clarification with regard to the source of the memorandum  
24 which we had previously identified as being from Mr. Miller  
25 and which we requested.

187 10 06

mgcDAR

1 BY MR. DIENELT:

2 Q Mr. Mulleavy, would you put that on the record?

3 A The memorandum about Operations function on  
4 movement of radioactive material in relation to notifying  
5 Health Physics, may have been written by Dave Limroth and  
6 perhaps directed by Mr. Miller.

7 Q You mentioned a moment ago that you felt that TMI  
8 plant had been coming along in terms of health physics. Is  
9 it your testimony that TMI was already better than the other  
10 three plants that you mentioned in health physics?

11 A I felt it was

12 Q You also testified earlier that you had, or that  
13 TMI had made a commitment, I believe you said to NRC, with  
14 respect to the number of health physics personnel you have  
15 on a particular shift. Do you recall that?

16 A No. I stated that we did not have a criteria to  
17 follow through an NRC directive on how many individuals to  
18 have. We told them how many we did have on each shift, but  
19 we do not have a minimum manning per shift, so we could go  
20 down to two individuals without facing any possible  
21 violation.

22 Q What would it be a violation of if you went down  
23 below two?

24 A Nothing. There is no violation to face for that.  
25 We would just not be providing a very adequate HP program

187 10 07

mgcDAR 1 during that shift, and we would have to make some allowances  
2 for it.

3 Q Do you know what the FSAR is?

4 A Per shift?

5 Q Yes, sir.

6 MR. MIRAGLIA: Total complement.

7 THE WITNESS: I am sorry. I can't quote that.

8 Total complement of personnel for technical services.

9 BY MR. DIENELT:

10 Q Is it your testimony that the FSAR requirement has  
11 been consistently met? Has NRC indicated to you that the  
12 existing staff in terms of total complement or in terms of  
13 staff on a particular shift is, in its view, not adequate?

14 A No.

15 Q Are you of the view that there are any design  
16 deficiencies in the radiation protection area of the plant?

17 A In the design of Unit-1, as far as shielding,  
18 permanent type shielding, yes, there is a deficiency.

19 Q What is it?

20 A We have had to construct block walls around decay  
21 heat lines in order to maintain the less than five MR per  
22 hour levels in normal walkways. The handling of radioactive  
23 waste is deficient by today's standards at many plants.

24 Unit-2 was designed with some of those things in mind;  
25 however, they are not corrected adequately. The HP area of

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mgcDAR

1 Unit-2 is totally inadequate in its size and capability of  
2 handling any volume of personnel. In those areas, we are  
3 deficient and in the radiation protection aspect.

4 Q Are you also of the view that there is any  
5 deficiency in the shielding of the sampling lines of Unit-1?

6 A Those lines that come from Unit-2, yes, there is a  
7 deficiency because the shielding is non-existent.

8 Q How long have you been aware of the lack of  
9 shielding?

10 A Ever since those lines came through to Unit-1 from  
11 Unit-2.

12 Q Have you ever complained to anyone or made a  
13 recommendation with respect to the lack of shielding of  
14 those lines?

15 A Only interdepartmental, in our own.

16 Q Would you have assumed that any -- strike that.  
17 To whom did you make the complaint or the recommendation?

18 A Dick Dubiel and our foreman. We all talked about  
19 the lack of shielding on that particular line but never felt  
20 that it was going to be a problem because they were up above  
21 individuals and in a normal non-occupied space.

22 Q To your knowledge, did Mr. Dubiel ever make an  
23 issue of it to anyone higher than yourself?

24 A To my knowledge, I can't answer that.

25 Q Are you aware of any problems with air monitors or



7187 10 09

mgcDAR 1 in-plant instrumentation for monitoring?

2 A At the present time?

3 Q Well, let's say, prior to March 28.

4 A We did have instrumentation functioning, some was  
5 not. Some was in repair constantly. We had monitors in and  
6 out of their performance capabilities. We handled those  
7 through submittal of work permits to the RMC Department, and  
8 that was the normal function.

9 I didn't ever consider us to be in trouble for lack of  
10 monitoring.

11 Q Did the problems which existed within plant  
12 instrumentation create any difficulty in responding to the  
13 March 28 accident?

14 A In responding to it, no. Later on in the day when  
15 all instrumentation -- not all of it, but many of it were  
16 off-scale, yes, that would have been very difficult to  
17 remonitor devices in operation capable of reading what was  
18 there. That's got to be an area that has to be looked at,  
19 and in view of what we went through, at all plants.

20 Q Did you have any problem with alarming of air  
21 monitors because of radiation from the letdown lines?

22 A Yes.

23 Q Would you tell me about that?

24 A You said air monitor?

25 Q Yes, sir.

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1 A We had area monitors, not specifically an air  
2 monitor, due to the letdown lines. We're speaking of  
3 Unit-2's letdown and air monitors due to that.

4 I don't believe an air monitor, no. Area monitors, yes.

5 Q And what was that?

6 A Which are gamma monitors in reading out in MR per  
7 hour, and our letdown monitor was alarmed.

8 Q And what was the significance of that?

9 A A large increase in the reactor coolant activity.

10 Q Was the air monitor in the nuclear sample room  
11 operational on March 28, 1979?

12 A No, it was not.

13 Q Do you know why not?

14 A Because we were having trouble with a pump, an air  
15 pump.

16 Q How long had that situation existed?

17 A A few months.

18 Q Had you made a request for the air monitor to be  
19 repaired?

20 A Yes, sir.

21 Q How long had the request been pending?

22 A There had been repeated requests. They were sent  
23 to I&C Departments; I&C Department referred to the  
24 Mechanical Maintenance Department, who said there were no  
25 problems — that they referred it back to the I&C

187 10 11

mgcDAR 1 Department. It lasted about two to three months and was not  
2 operational when the accident happened.

3 Q What impact, in terms of either the response to  
4 the accident or knowledge of what was taking place, did the  
5 fact that the air monitor was not operational have?

6 A None. That air monitor dealt with the air in the  
7 sampling room. Because of the increase in the background of  
8 the sample coolers, it would have been totally inoperable  
9 anyway.

10 Q Is the Health Physics Department involved in any  
11 review of plant design matters?

12 A No.

13 Q If you, in the Health Physics Department, believed  
14 there was a deficiency in design, how would you make known  
15 your view with respect to the deficiency?

16 A Myself, I would go to my immediate boss, who is  
17 Dick Dubiel, and that's my responsibility.

18 Q You would leave it to him to take it higher?

19 A Yes.

20 Q If it were desirable to do so?

21 A That's correct.

22 Q Did you ever discuss any concerns which you had  
23 about the staffing our training or communication, physical  
24 location, instrumentation in the Health Physics program with  
25 any NRC inspector prior to March 28?

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mgcDAR

- 1 A Yes.
- 2 Q When did you do that?
- 3 A I can't give you an exact time, because we do have  
4 auditors here quite often.
- 5 Q Did you do it more than once?
- 6 A Yes.
- 7 Q How many times would you estimate?
- 8 A I would say probably twice or three times in  
9 casual conversations with the NRC inspector, who happened to  
10 be Karl Plumlee.
- 11 Q Did he ever respond to you about your concerns?
- 12 A Not really. No.
- 13 Q Did you ever suggest to him that he might be able  
14 to help you in your lobbying support to get improvement in  
15 the Health Physics program?
- 16 A No, not to use him in that capacity, no. But  
17 other than to pass on information that we already knew and  
18 things that we were having problems with in his audit when  
19 we were looking at the training records and so forth of  
20 which we really never did receive any citations or bad news  
21 or anything on training, although we felt within the letter  
22 of the law that it was not adequate.
- 23 In discussions of this nature, yes, we talked about  
24 training. We talked about staffing, and we talked about the  
25 problems we were having in the functioning of two different

187 10 13

mgcDAR

1 units and so forth, but that was not an avenue to travel  
2 because there wasn't much -- you've been advised not to go  
3 too far because he is inspecting you.

4 But a few casual hints now and then and discussion about  
5 it did no good.

6 Q Prior to March 28, did you regard the amount of  
7 survey equipment which was available at the plant to be  
8 adequate?

9 A How long before March 28?

10 Q Let's say January 1.

11 A With what we had available on January 1, we were  
12 marginal in going into the outage. We were beginning to  
13 prepare for that, and we were pushing to have all of our  
14 available instrumentation in operational order.

15 We did have many in the instrumentation shop waiting to  
16 be repaired, waiting for parts and so forth, and we were  
17 beginning to push because we knew we were going into an  
18 outage shortly.

19 Q Were there enough instruments available to handle  
20 the outage?

21 A With the utilization of Unit-2's, yes, sir. And  
22 we did use some of Unit-2's, because they had new ones.

23 Q Was there enough instrumentation to handle the  
24 March 28 accident?

25 A No.

187 10 14

mgcDAR 1 Q Would it be fair to say there was not nearly  
2 enough?

3 A Judging by what came in, we didn't have half  
4 enough. We did receive an awful lot from everywhere.

5 Q In your view, were there reasons other than the  
6 fact that some of the equipment had been occupied in the  
7 recent Unit-1 outage, why there was not equipment to respond  
8 to the March 28 accident?

9 A Yes.

10 Q What were those reasons?

11 A Due to the breakage during the outage of Unit-1 or  
12 the refueling of Unit-1.

13 Q My question is -- go ahead.

14 A The demand is great during an outage for  
15 instrumentation, and we did have a lot of instruments down  
16 at the time.

17 Q My question was whether there were, in your view,  
18 reasons other than those associated with the outage?

19 A Oh, I'm sorry. I misunderstood you.

20 Q As a result of which the level of availability of  
21 instruments for responding to the March 28 incident was not  
22 sufficient.

23 A No.

24 Q In other words, if the Unit-1 outage had not taken  
25 place, in your view, there would have been enough

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mgcDAR 1 instruments in adequate repair to respond to the accident?

2 A It's difficult to say because of the breakage of  
3 instruments. Our turnaround time from the I&C Department as  
4 it stood at that point was extremely slow. The calibration  
5 of those instruments once we did receive them from the I&C  
6 Department had to be done by those technicians who were on  
7 shift work or on day shift. It took about a month to get an  
8 instrument back into service once it went out of service, if  
9 the parts were available.

10 If we were in the state that we were in January 1, prior  
11 to pushing to get the instruments back on the shelf for the  
12 outage, my answer then to your question would be no. There  
13 was not enough available due to normal usage of  
14 instruments. We had to make a concerted effort to make  
15 those available for the outage.

16 Q During the outage, were there any losses of pocket  
17 chambers?

18 A Yes.

19 Q Was there a substantial number?

20 A Yes, sir.

21 Q An extraordinary number?

22 A Yes.

23 Q Why?

24 A I can't answer why there was such a loss of  
25 pocketral symmetry. And this is not exclusively here. I

187 10 16

mgcDAR 1 have been in communication with Millston, Connecticut  
2 Yankee, Vermont Yankee, and they are all indicating the  
3 same. It seems as though this is an excuse for delaying  
4 work. I don't have the equipment; I can't go to work.

5 We have found this to be the case here, and we tried to  
6 keep them -- people were taking them with them, not turning  
7 them back in to the HP control point. And I don't know why  
8 it has all of sudden happened, but we did. We lost hundreds  
9 of dosimeters during the outage.

10 MR. DIENELT: I'm going to ask Mr. Lynch to ask a  
11 couple of questions on that, if it's all right.

12 BY MR. LYNCH:

13 Q What kind of control did you have of individuals  
14 leaving a radiation area where they had been required to  
15 have pocket chambers and they showed up at the line without  
16 them?

17 A We put an individual at the HP control point at  
18 the entrance to Unit-1, and that was a tech sitting there.  
19 They were supposed to turn in their dosimeters there at that  
20 point. However, they were also using them in Unit-2, where  
21 we did not have a person to grab them as they left that  
22 control point to collect their dosimeters. They had always  
23 in the past, when an individual was responsible to write  
24 down his own dosimeter reading and leave his dosimeter in  
25 the box, and it wasn't happening.



187 10 17

mgcDAR 1 Q So you weren't getting that personnel dosimetry  
2 control, let alone control of the instrumentation. Is that  
3 correct?

4 A The portable instrument?

5 Q Yes.

6 A Which was the beta/gamma instrument. Is that what  
7 you're saying?

8 Q No. I'm talking, in this case, of the pocket  
9 chamber. You are losing two things. The one is the data  
10 from the pocket chamber -- what kind of exposure did the  
11 individual receive?

12 A That data was collected by those operators we  
13 talked about before, who were sitting there asking  
14 individuals as they came out, "What exposure does your  
15 dosimeter read?"

16 He was then allowed to keep the dosimeter until he got  
17 back to the HP control point.

18 Q Was there a possibility of exposure between those  
19 two points.

20 A No.

21 Q What is the cost of one of these pocket chambers?

22 A Depending on the amount that you buy at one  
23 particular time, but they are running about \$53 apiece right  
24 now.

25 Q Would it be cost effective to remove the pocket

87 10 01

mgcDAR 1 chambers from individuals where they were taking the  
2 readings?

3 A Yes.

4 Q Rather than letting them go?

5 A Yes. It might have been at that particular point,  
6 but we thought we could get them back at the other point.  
7 But there were a lot of losses. I don't know how it  
8 happened.

9 Q Can you give me an idea of the number, the  
10 quantity of losses? 100, 200, 500, 600?

11 A I will say -- oh, my gosh, I would say probably  
12 we went through about 600 dosimeters during that time --  
13 three months.

14 Q At \$50 a crack is how much in the way of dollars?

15 A \$35,000.

16 Q Okay. And did this happen routinely during  
17 outages?

18 A No. This was the first time we had experienced  
19 that type of a loss.

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9-10

87.11.1

AR gsh

1 Q But you indicated other power, or other utilities  
2 having experienced the same thing.

3 A Yes. Now we talked to these people before our  
4 outage began, and that was one thing that they were talking  
5 about.

6 Q You were letting these pocket chambers go out of  
7 your control because you left one point and they were not  
8 being returned at another point, and this consisted over a  
9 period of three months?

10 A Yes.

11 Q How many pocket chambers did you have on board  
12 to be able to tolerate losses of 500?

13 A We had to reorder.

14 Q How many times?

15 A I think we made one reorder during the outage and  
16 then it wasn't until the end.

17 Q What steps did you take to correct this?

18 A Placing that individual at the HP control point.

19 Q Just in one unit?

20 A Yes, sir.

21 Q Did it correct the situation?

22 A Not entirely, no.

23 Q Did it correct it in any substantial amount?

24 A Yes, it did.

25 Q What did it cut your loss rate down to?

**POOR ORIGINAL**

187.11.2

DAR gsh 1 A A second particular order of 500 dulcimeters. I  
2 think we ended up after the outage probably about 200 more  
3 had gone from us.

4 Q And that was over what period of time?

5 A That was over the last couple of months to the  
6 outage until we hit the accident.

7 Q Okay. During the outage, you said that you had  
8 a lot of instruments for repair and maintenance?

9 A Yes.

10 Q What was the nature of those kinds of problems?

11 A Dropping of an instrument, an instrument  
12 malfunctioning as far as its sticking on its scale, compacting  
13 of an instrument being put in a package and being put into the  
14 trash bin, this type of thing.

15 Q Who used these instruments? Who were they assigned  
16 to?

17 A They were HP technicians and also --

18 Q Yourself?

19 A And also those in charge of jobs, yes.

20 Q Were instruments assigned to individuals or were  
21 they just taken off the shelf?

22 A No, they were given off the shelf to those in  
23 charge of work parties.

24 Q So there was no accountability of instrument loss?

25 A No.

**POOR ORIGINAL**

187.11.3

LAR gsn

- 1 Q What is the price of one of these instruments?
- 2 A They vary in price.
- 3 Q I know. Give me an idea.
- 4 A \$900 for an E-520.
- 5 Q Okay. An RO-2?
- 6 A Approximately \$800 and teletector is now going for  
7 about \$2100.
- 8 Q Okay. Did you lose instruments by damage?
- 9 A Yes, we did.
- 10 Q In large quantities?
- 11 A No. I wouldn't say large quantities. We didn't  
12 have that many to lose, really. But yes, I would say probably  
13 about a 15 percent loss in instrumentation during the outage.
- 14 Q And about how many instruments did you have of the  
15 \$900 to \$2100 range?
- 16 A Probably about 30.
- 17 MR. LYNCH: Okay. That's all I have.
- 18 BY MR. DIENELT:
- 19 Q Prior to -- strike that.
- 20 Immediately prior to March 28th or on March 28th, was there  
21 a sufficient amount of respirator protection equipment to  
22 handle the accident?
- 23 A No.
- 24 Q Was that due exclusively to the demands that had  
25 been placed on that equipment from the outage?

**POOR™ ORIGINAL**

UAR gsh 1 A No.

2 Q What were the other factors?

3 A We merely didn't have that many to accommodate the  
4 amounts of people that came here.

5 Q Was there a sufficient supply of protective  
6 clothing to handle the accident?

7 A Yes.

8 Q I take it you needed to obtain respiratory equipment  
9 on an emergency basis.

10 A Yes.

11 Q Were you able to do that?

12 A Yes. It came from other plants and it was ordered  
13 from MSA and Scott.

14 Q Did the fact that you did not have sufficient  
15 respiratory protection equipment on site affect the response  
16 to the accident?

17 A No.

18 Q Was there a compressor or other device which would  
19 be used for recharging of Scott airpacks?

20 A Yes.

21 Q Was it in operation?

22 A Yes.

23 Q Was there a breathing air compressor?

24 A We had the capability of a breathing air compressor  
25 which is in Unit 1's instrument air unit with an additional --

**POOR ORIGINAL**

187.11.5

DAR gsh

1 what we call -- an airchart available.

2 We had used them in Unit 1. We had not ever used them in  
3 Unit 2, but we did have that capability.

4 Q Did you find it necessary to use the breathing air  
5 compressor during the response to the accident?

6 A Yes. And then we found that we had to additionally  
7 go outside and we utilized Middletown Fire Department with  
8 their big unit off-site.

9 Q But the unit that you had was adequate for the  
10 purpose that you used on-site?

11 A It was adequate for our on-site needs, initially.  
12 But if our air activity went up in the building, we could not  
13 stand that operation inside the intermediate building of  
14 Unit 1.

15 Q What was the breathing air compressor used for?

16 A Our own breathing air compressor?

17 Q Yes.

18 A Was to fill Scott airpack bottles.

19 Q Did you have any problems decontaminating or  
20 cleaning the respirators?

21 A Yes.

22 Q What were they?

23 A They had to be done by hand. We did not have any  
24 large-scale operation to clean respirator equipment. We,  
25 therefore, had to go outside and get a designed unit and bring

DAR gsh 1 it in and that is the Cappalupo & Gundal respirator cleaning  
2 facility that we now have on-site.

3 Q What kind of cleaning solution was used for  
4 decontaminating and cleaning the respirators?

5 A I believe we were using RADIAC wash.

6 Q Were there any instances in which a wrong cleaning  
7 solution was used?

8 A Not to my knowledge, no.

9 Q Did you have any equipment for radioiodine sampling  
10 at the time of the incident?

11 A Radioiodine sampling?

12 Q Yes.

13 A Yes.

14 Q What was that?

15 A Our normal air samples are equipped with a  
16 Susko-B iodine chart range to do that sampling.

17 And we also have the capability of using what we term  
18 a CP-100 iodine cartridge, which has a higher volume flow  
19 which we utilized in the Unit 2 R&M system.

20 So if we chose to go to the higher volume, we have that  
21 to use.

22 Q Can we go back just briefly to this NUS report?  
23 On page 5-3, there was a statement that there appears to be  
24 no program at TMI for radioiodine sampling other than that  
25 provided by the iodine cartridges in the plenum, p-l-e-n-u-m,



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DAR gsh 1 continuous monitors.

2 Is that correct?

3 A Okay. At that particular time, we were not  
4 routinely taking iodine samples, no.

5 Q So that statement is substantially correct?

6 A Correct as far as grab samples, that is correct.

7 Q On the preceding page was a statement both the  
8 frequency and locations at which routine air samples are  
9 taken appear to be inadequate.

10 A That is correct.

11 (Discussion off the record.)

12 BY MR. DIENELT:

13 Q Are you familiar with any problems of ventilation  
14 in the nuclear sampling room?

15 A Yes, I am.

16 Q What were they?

17 A We have frequently had a problem in that particular  
18 room where under normal operating conditions, the airflow  
19 should be into the room. We have experienced difficulty in  
20 a mismatch of the vent system whereby air has come out of the  
21 room.

22 Q How long has that problem been in existence?

23 A Oh, I believe ever since the onset of Unit 1, we  
24 have periodically had that problem due to the mismatch in  
25 the vent system.

DAR gsh

1           When that happens, we call the control room and tell them  
2           that we have this particular problem and they do whatever  
3           they can to make that problem go away.

4           Q           Have there been any effort to make the problem  
5           go away permanently?

6           A           We have the vent system people back to rebalance  
7           the system again, and that was sufficient for a while and then  
8           it seems to occur again.

9           Q           Was the ventilation problem a contributing factor  
10          to the cause of the evacuation of the ECS on the 28th?

11          A           No. The ECS was not evacuated due to an airborne  
12          problem. It was due to a radiation problem.

13          Q           Was the NRC aware of the problem with respect to  
14          the ventilation system?

15          A           We haven't established that there was a ventilation  
16          system problem.

17          Q           The problem that we were just talking about with  
18          respect to ventilating in the nuclear sampling room?

19          A           To my knowledge, on that particular day we didn't  
20          establish there was a ventilation problem.

21          It could have been in the normal mode.

22          Q           In general, there was a problem, though?

23          A           On occasion, there was a problem.

24          Q           Was the NRC aware of that?

25          A           Oh, yes. Karl Plumlee, on every visit he came, he

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AR gsh 1 brought his volumeter with him. Occasionally, we didn't  
2 disappoint him.

3 Q Who is responsible for health physics training?

4 A I would say that that responsibility lies with all  
5 the management, the HP department.

6 Q Who is the person, if there is one, who is primarily  
7 responsible for training?

8 A The duty has been given to Pete Velez, who was an  
9 HP foreman. For the documentation, not specifically the  
10 hands-on training of the individuals. But that is his job,  
11 to make sure that everything we do is documented.

12 Q Who is primarily responsible for the substantive  
13 training?

14 A That is undefined in the department.

15 Q Are you --

16 A May I correct that?

17 Q Yes.

18 A In HPP-1690 --

19 Q What's that?

20 A That is our training documentation for the plant.  
21 That may specify the responsibility either for review --

22 But I can't right at the moment say that that specifically  
23 spells out a certain individual. It may.

24 Q Do you regard yourself as being more knowledgeable  
25 with respect to the training program than is Mr. Duziel?

DAR gsh

1 A No, I don't believe I have more knowledge in that  
2 area than he does, no. We operate out of the same document  
3 and no, I don't believe so.

4 Q Do you regard yourself to be as knowledgeable as  
5 Mr. Dubiel?

6 A In the requirements for the department training?

7 Q In the operation of the training.

8 A Yes.

9 Q Do you regard yourself to be more responsible than  
10 Mr. Dubiel for the substantive training?

11 A No, I believe we share that responsibility.

12 Q You would regard yourself to be as responsible as  
13 Mr. Dubiel?

14 A Yes, definitely. Yes.

15 Q What role, if any, does the training department  
16 play in health physics training?

17 A Their role, which I might say we have been trying  
18 very hard to get changed, however, we have been unsuccessful.  
19 Their role at the present time is to schedule the training  
20 for -- general employee training, prior to the accident we're  
21 speaking of now, to schedule that general employee training,  
22 to schedule the training for the auxiliary operators whom they  
23 are responsible to for the requalification program and operator  
24 training.

25 They will in the course of that particular training tell us

DAR gsh

1 when it is time to present or HP portion of their training  
2 program. They do not teach that portion. They have always  
3 come to our department and said, such and such a week you  
4 have this section to train.

5 Q In what way do you want to have their role changed?

6 A Their role must follow all departments in their  
7 training aspects. I do want the training department to have  
8 a health physics training group, of which they do have now  
9 through NUS.

10 But prior to the accident, there was no individual in the  
11 training department who was supposedly qualified in HP  
12 training.

13 I question that, but they did not want to provide that  
14 for us.

15 Q What role, if any, does the training department play  
16 in the health physics training for health physics personnel?

17 A None. And I say none other than receiving and  
18 retaining the documents of any training that we do give in  
19 our department.

20 Q Is it your understanding that there is authority in  
21 either you or Mr. Duoiel to waive any training requirements?

22 A Yes.

23 Q Who has that authority?

24 A Dick Duoiel.

25 Q If I were employed by Met Ed as a junior rad tech,

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DAR gsh 1 what training would you refer before I started as a tech?

2 A For the last 8 technicians that we have hired,  
3 six of the 8 technicians were given a six-week HP course  
4 conducted through our direction and sanctioned by Rad  
5 Services.

6 A Ralph Jacobs came and provided that course which was a  
7 HP course. They were then sent to Alliance, Ohio, to B&W  
8 Laboratory, I believe for two weeks in a chemistry course.

9 Whether Dick has the same thing in mind for the last two  
10 which are girls that came in prior to the accident, I believe  
11 we are going to do the same for them. However, have not had  
12 a chance to do that yet.

13 So they have been on-the-job training, not functioning  
14 alone, but always with a senior tech. And that training will  
15 be forthcoming for them.

16 Q If I had been hired as a junior rad chem tech a year  
17 ago, what training would I have received prior to the time  
18 I began work?

19 A I can't answer that because we didn't have any  
20 at the time because we had the six who went through this  
21 trans program. The ones who were hired prior to my coming  
22 here were already trained by a program developed here on  
23 site because they had the individuals to do it then.

24 I can only say I would hope the same program, but it did  
25 not happen then because we didn't have the need at the time.

AR gsh 1 Q Who makes the determination as to what training is  
2 needed for a new employee in the health physics department?

3 A The procedure 1690.

4 Q Is there a person who is responsible for interpreting  
5 procedure 1690?

6 A No, not specifically would there be one individual  
7 interpreting that. It would be shared in the department by  
8 myself, Dick Dubiel, and the foremen could have an input.

9 If we felt that there was something that we had to do, I'm  
10 sure that we would discuss it and bring it about.

11 The department head is the ultimate judge because that  
12 would be his function.

13 Q In general terms, what do you understand to be the  
14 purpose of the Met Ed radiation protection training program?

15 A In general, I would assume its function to be a  
16 tech up to the present standard that we in the industry, to  
17 familiarize him with any changes in the department that would  
18 happen to introduce him to new instrumentation, so that his  
19 ultimate goal could be to protect the individuals here while  
20 they are working in a radiation contaminated area.

21 Q Am I correct that the requirements of the training  
22 program are set forth in HP-1690?

23 A That is correct.

24 Q Now how were those requirements developed?

25 A I do not know because I was not instrumental

1 in writing those requirements.

2 Q Do you know who was instrumental?

3 A No. No, sir.

4 Q Do you know whether Mr. Dupiel participated?

5 A I do not know.

6 Q Okay. You have testified that Mr. Dupiel would be  
7 able to grant a waiver of those requirements. Would he or  
8 anyone else be able to impose greater requirements than are  
9 set forth in HP-1690?

10 A There is always that possibility of a greater  
11 requirement. There should never be the possibility of  
12 diminishing those requirements.

13 Q Do you know whether he or anyone else has ever  
14 attempted to impose an additional training or greater training  
15 requirements on a particular individual?

16 A No, sir.

17 Q You don't know?

18 A I don't know.

19 Q You have not in any case?

20 A No, sir.

21 Q To your knowledge, is there kept a file on  
22 individuals which reflects the training that they have  
23 received?

24 A Is there a file?

25 Q Kept, yes. Or individual files.



137.11.15

1 Q Is it by individual?

2 A Yes.

3 Q Is it -- does it reflect classroom as well as on

4 the job?

5 A It should reflect all of their training. If it is

6 documented at all, it should be in that file.

7 Q Is it fair to say that the bulk of health physics

8 training for health physics personnel is on-the-job training?

9 A Yes.

10 Q Is it fair to say that there is not a great deal

11 of classroom training after one commences work?

12 A Yes.

13 Q Is it correct that the training week has in the

14 recent past not been employed as a training week?

15 A Yes.

16 Q Why is that?

17 A Lack of personnel. We needed the technicians on

18 the job.

19 Q In what manner is the on-the-job training reflected

20 in the personnel file or the file that is kept that indicates

21 what training an individual has had?

22 A There is a check-off sheet if used in each file for

23 each technician and that would reflect on the material that

24 they have covered and that they were signed off for.

25 Q Who checks the check-off sheet?

187.11.16

LAR gsh 1 A A foreman should be responsible for that.

2 Q Who checks to see whether the foreman checks the

3 check-off sheet?

4 A Who's checking the check-off sheet? I should do

5 that.

6 Q Do you do that?

7 A No.

8 Q Lack of time?

9 A Yes.

10 Q Are there circumstances in which individuals

11 summarize the training which they themselves received and

12 place it in the personnel file?

13 A No.

14 Q Do you have any sense of how complete the check-off

15 system for -- how completely the check-off system for the

16 on-the-job training has been used?

17 A I would say the check-off system for on-the-job

18 training is totally inadequate and not being used.

19 Q And what is the basis for that?

20 A I can't answer that. Probably inattentiveness.

21 Q What is the basis for your conclusion that it's not

22 being used?

23 A In looking at the records.

24 Q Is there any formal retraining of health physics

25 personnel?

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LAR gsh

1 A Not at the present time, no.

2 Q Was the training of health physics personnel in  
3 your view affected in any way by a sense of urgency to get  
4 Unit 2 on line?

5 A Was their training affected in any way?

6 Q Yes.

7 A No, I don't believe so.

8 Q Did you have any sense that there was an urgency  
9 or a rush to get --

10 A Yes, there was a sense of urgency to get that on  
11 the line by the end of the year, yes.

12 Q Your testimony is that that did not affect the  
13 health physics training program?

14 A No.

15 Q Did it affect the health physics program in any  
16 way?

17 A I think we were ready for the program to begin.

18 Q Did you begin of any complaints by any health  
19 physics personnel about the adequacy of their training on  
20 Unit 2 prior to start-up?

21 A Yes.

22 Q Can you tell me what those complaints were?

23 A Inability to recognize systems of which many, many  
24 of them had been given a chance to look over systems.

25 I, myself, was assigned to Unit 2 prior to its start-up.

UAR gsh 1 We did, on the weeks that the technicians had their  
2 training week, bring them over to Unit 2 and I had them draw  
3 survey maps so that they would become familiar with the layout  
4 of the land.

5 When the training week was instituted and when we utilized  
6 training weeks such as for these particular weeks, it was  
7 a week of freedom for the technician to take time off and  
8 without knowing the actual documentation, I would say out of  
9 the four that would be assigned, two of those four would  
10 habitually be off during that particular week because that  
11 would be free time.

12 They had no other duties during that week and many of them  
13 would take that time off.

14 Q Take it as vacation week?

15 A Yes. So the training week, which sounds -- I'm not  
16 saying sour grapes on the individuals who wanted the training  
17 week. I have admittedly said it was inadequate on training,  
18 but we did try to provide it many times and it was not  
19 taken seriously by the technicians, either.

20 So there was a mutual dislike for that week.

21 Q Did you consider requiring them to attend training  
22 week?

23 A We can't require that an individual be there.  
24 Sick time was taken, as well as vacation time, and unless an  
25 emergency, we can't deny any vacation time. And obviously, we

DAR gsh 1 can't do away with sick time.

2 Many of these individuals have a great accrument of sick  
3 time and that would be the week that they take it off.

4 Q What efforts or what requirements would you impose  
5 or did you understand were imposed to ensure that employees  
6 came to work during their non-training week?

7 A I don't quite understand what you're asking me.

8 Q You indicated that employees would take sick leave  
9 or would take vacation time during training week.

10 A Yes.

11 Q Is it correct that sick leave and vacation leave  
12 were available to them during non-training weeks?

13 A That's correct.

14 Q Was there any mechanism which was available to  
15 ensure that they attended work during non-training times?

16 A No, they did not. Many are — I have one individual  
17 who habitually is off on his 11:00 to 7:00 shift, and he is  
18 a senior tech. And every 11:00 to 7:00 shift, which came  
19 every six weeks, he was off for that week sick, every time.

20 And I know because I had called out and had to replace  
21 him in the middle of the night all the time.

22 So as long as an individual brings in a sick slip because  
23 he was sick from a doctor, we could not dispute that.

24 I tried on three occasions to dispute that. We called the  
25 doctor. The doctor said, look, I have been treating his

**POOR ORIGINAL**

DAR gsh

1 father and I have been treating this man, and don't question  
2 what I find on this individual. All right.

3 So that didn't work.

4 So as long as the mechanism is there and we can't do any  
5 more than that, then this will be predominant here.

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187 12 01

pv DAR 1 Q Was training in Unit 2 before a health physics  
2 person assigned to Unit 2 mandatory?  
3 A No, it was not.  
4 Q Did you recommend that it be made mandatory?  
5 A Yes, I would recommend it be made mandatory, that  
6 he understand the duties and layout of the plant.  
7 Q Did you make that recommendation prior to March  
8 28?  
9 A No.  
10 Q Why not?  
11 A It never occurred to me to do so.  
12 Q Do you ever consider rescheduling or attempting to  
13 reschedule the training week in such a way that individuals  
14 would be more likely to be present?  
15 A To reschedule that? In order to reschedule your  
16 department -- again, we are dealing with the union  
17 situation, and in order to change their particular schedule,  
18 you must go through quite a lot to do that because you are  
19 now different from the rest of the unit, and it's very  
20 difficult to do that.  
21 Q Would it have been feasible to change their work  
22 assignment on a particular day so that when they arrived for  
23 shift you suddenly announced it was training day?  
24 A No.  
25 Q Because of the union?

87 12 02

pv DAR 1 A No, no, that wasn't because of the union. We  
2 certainly, when we came to work, could assign them to any  
3 responsibility for that day.

4 The reason still prevailed for getting rid of the  
5 training week because we merely needed those personnel to  
6 function in their units.

7 Q Were all employees given a copy of the radiation  
8 protection manual or other documents regarding health  
9 physics?

10 A No.

11 Q Were such documents made available to them?

12 A They were available in the department, and those  
13 individuals on their training sessions were told so.

14 Q Was training week suggested --

15 A We jumped categories. We went away from  
16 technicians to general employees.

17 Q I am still speaking of technicians.

18 A The technicians in each laboratory have all of our  
19 particular procedures in the radiation protection manual and  
20 emergency plan. So, I took you to mean the rest of the  
21 plant personnel.

22 Q I am sorry. I misspoke.

23 A Technicians have them available to them all the  
24 time.

25 Q Going back to training week for a moment, was that



187 12 03

pv DAR

1 an item which the union negotiated for?

2 A I can't answer that. It could have been during  
3 the early days, but before my time it was a six-shift  
4 rotation that had been going on ever since I came.

5 Q Apart from the MUS report which touched on  
6 questions of training and the record report to the extent it  
7 touched on questions of training, are you aware of any  
8 external audits or assessments of the health physics  
9 training program prior to March 28?

10 A Not in the magnitude of the MUS report or the GPU  
11 report. I'm sure there had been over the years, but they  
12 didn't stand out in my mind as a look-see at the HP  
13 department. I'm sure there have been, but I can't recall  
14 specifically those documents.

15 Q Is there a periodic testing of employees of the  
16 health physics department?

17 A Testing in regard to what?

18 Q Their knowledge of their job.

19 A No.

20 Q Is there a periodic testing with respect to  
21 anything?

22 A No.

23 Q Is there a program for evaluating the performance  
24 of health physics personnel by their supervisors?

25 A There is a program for the first year, individual,

187 12 04

pv DAR 1 until he reaches his second year. There is a program  
2 whereby every three months there is an evaluation made, and  
3 that is by a Met Ed document.

4 Q Excuse me. Go ahead.

5 A That is filled out by the foreman on their  
6 evaluation, ultimately filled out and administered by  
7 myself. Now I am speaking of the past. Now I don't do that  
8 because I'm in Unit 2 now, but that's how it worked in the  
9 past.

10 Q Is that form placed in the same file?

11 A No, that is put in their personnel file in the  
12 personnel office.

13 Q That is a different file from the file that  
14 reflects the test results?

15 A Yes, that is an employee's evaluation of their  
16 work.

17 Q Is that system followed fairly carefully?

18 A Is it -- pardon me?

19 Q Followed fairly carefully.

20 A No, I wouldn't say that it is followed fairly  
21 carefully, inasmuch as if the document comes out and it is  
22 not taken care of right away there is not a follow-up done  
23 by the personnel department.

24 Q Are there similar appraisals of foremen?

25 A Yes, sir.

187 12 05

pv DAR 1 Q How frequently are they, sir?

2 A Annual.

3 Q And did you testify that the appraisal or  
4 evaluation of technicians was only during the first year?

5 A Yes. That's during their probationary period of  
6 time and then when we go to upgrade them to the second year.

7 Q Is there an appraisal periodically after that?

8 A No, no.

9 Q You testified earlier that in your personal view,  
10 the training -- I believe you were referring to the training  
11 of health physics personnel, and correct me if I am wrong --  
12 was not meaningful? Is that correct?

13 A I didn't use the word "meaningful." "Adequate," I  
14 believe, is what I said. It is not adequate.

15 Q All right. Why not?

16 A It is due to the time that we do not have to spend  
17 on training, other commitments in the department don't  
18 warrant the time to prepare an adequate program for teaching  
19 of a tech.

20 I have got to say the inability to prepare for a good  
21 class or an appropriate class. The knowledge is there. We  
22 could do it if given the technicians to take out and not  
23 leave holes. We could do it. But time is not there for us  
24 to utilize it.

25 Q Is it your view that one factor contributing to

187 12 06

pv DAR 1 the inadequacy is a lack of personnel?

2 A Yes, sir.

3 Q And another factor is a lack of training staff?

4 A Yes, sir.

5 Q And another factor is a lack of funds?

6 A The lack of funds before, yes, we were on this  
7 program.

8 Q Is another factor a lack of detailed training  
9 procedures?

10 A I wouldn't say lack of detailed training  
11 procedures, but a lack of material. And the ability to  
12 gather that material to make a presentation.

13 Q Are you aware of training textbooks for health  
14 physics which are available?

15 A Yes. Oh, yes.

16 Q Are you saying that they have not been obtained?

17 A Well, there is an awful lot of them. You  
18 certainly have to look at the program that is going to be  
19 presented to your techs, and that is an in-depth program. I  
20 can buy slides, I can buy little video tapes. We certainly  
21 made a video tape for an RWP training program. To sit down  
22 with a brochure and a catalog in a day and order an HP  
23 program is not my idea of an adequate program.

24 But they are available, yes. We get brochures on them.  
25 We have an engineer right now that, before the accident, was

187 12 07

pv DAR 1 looking into buying a slide presentation program along with  
2 textbooks and things to follow.

3 Q But your testimony is, at least prior to the  
4 accident you were not able to obtain the training materials  
5 you felt were needed?

6 A Our budget was very limited.

7 Q Is another factor contributing to the lack of  
8 adequacy of the training program a lack of management  
9 support?

10 A To say a "lack of management support" might be a  
11 little strong. A lack of management recognition might be a  
12 little better, inasmuch as we did not follow and were not  
13 following our program as specified that we would be doing.

14 It had not become a paramount problem; it had not been  
15 recognized through inspections that we had a problem.  
16 Therefore, inadequate as it was, it was not a problem.

17 Q You would not regard lack of training expertise as  
18 a factor?

19 A No.

20 Q Were you aware of any consideration of the  
21 training program which was given by NRC in its inspections?

22 A Consideration of what?

23 Q Of the adequacy of the training program,  
24 inspections.

25 A Training was mentioned a few times, and I think

7187 12 08

pv DAR 1 the largest thing was in the utilization of the 40 hours per  
2 week. I think on last year's inspection we had a little  
3 consideration of -- there was 40 hours documented per  
4 technician. Technicians wanted to know what -- there was a  
5 little bit of a problem there, but outside of that I had  
6 never been aware of an inspection report that totally said  
7 your training program is inadequate.

8 Q Was it your impression that NRC in its inspections  
9 with respect to the training program was only concerned to  
10 insure that formal requirements such as the 40 hours per  
11 year were met, as opposed to examining whether those 40  
12 hours a year were effectively spent?

13 A Yes, I think the commitment was the only thing  
14 looked for, documentation of that commitment to be met.

15 Q And was it also your impression that the  
16 orientation of the health physics training program was  
17 geared to meeting those formal requirements more than it was  
18 geared to making effective use of the 40 hours per week?

19 A Yes.

20 Q Excuse me. Per year.

21 A Per year.

22 MR. DIENELT: Off the record.

23 (Discussion off the record.)

24 BY MR. DIENELT:

25 Q Who, if anyone, at Met Ed had the responsibility

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pv DAR 1 for reviewing the adequacy of the training that was  
2 conducted in terms of its content?

3 A That would have to be in the department. And,  
4 again, I must say that it is -- it does not specify on who  
5 will be handling that.

6 Q You did not do it? You did not conduct that  
7 review?

8 A I did not conduct the review.

9 MR. DIENELT: Off the record.

10 (Discussion off the record.)

11 BY MR. DIENELT:

12 Q Who prepared the emergency plan, if you know?

13 A Oh, my, originally -- the original emergency plan  
14 I believe was prepared by Ken Beale, Dick DeCon, those  
15 individuals who were here prior to the startup of Unit 1.

16 Q Did you have any role in the preparation of it?

17 A In the original preparation of it, no, sir.

18 Q Did you have any role in any changes that were  
19 made to it?

20 A Yes, sir.

21 Q What was that role?

22 A I was given the task to monitor Sid Porter when he  
23 did a rewrite in early '78. In 1978 we had a rewrite.

24 Q What did you do in that monitoring activity?

25 A The documentation that he submitted -- he was put

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pv DAR 1 on a retainer to take a look at that particular material. I  
2 met with the NRC on what the requirements were going to be,  
3 how the format should look, and we redid the format in a  
4 generic document and into procedural documents.

5 Q Was there a significant change in the substance of  
6 the emergency plan?

7 A No.

8 Q Were you involved in any other changes to the  
9 emergency plan?

10 A No.

11 Q Have you ever become aware of any indication from  
12 the NRC that the emergency plan after the time it was  
13 revised was not adequate?

14 A Due to critiques that we had after drills and so  
15 forth, and specifically in 1978 when we were implementing  
16 our new plan, there may have been comments on sections that  
17 we should, should not, be doing and so forth. But as far as  
18 any major change, no. I think we were down to the point  
19 where those changes would have been minor.

20 Q Were the comments directed at you?

21 A No, not specifically. They were comments at  
22 general critiques after a drill.

23 Q How often were drills conducted?

24 A Once a year.

25 Q Did you participate in the drills?



7187 12 11

pv DAR 1 A Yes, sir.

2 Q Were the requirements for the drills set forth in  
3 the emergency plan?

4 A Yes.

5 Q What other training for dealing with emergencies,  
6 apart from the drills, was there for health physics  
7 personnel?

8 A The equipment training, and also I conducted some  
9 because of the techs I asked on their response during the  
10 drill.

11 Q Tell me about the latter.

12 A On the techs' response?

13 Q Yes.

14 A In the normal course of one day -- I can't  
15 remember whether it was in 1978 -- before the final drills,  
16 before we had in 1978, a few of the technicians said, "What  
17 are we supposed to do if you're not here, Dick Dubiel is not  
18 here, and so forth? Tell us. Run through it." So, I did.  
19 I tried to get all the shifts involved, and then we  
20 discussed their particular response and where the equipment  
21 was and so forth. It was a general discussion in the lab on  
22 their specific duties: who functioned where, who went where  
23 in the event a supervisor wasn't at the lab, or if it  
24 happened in the middle of the night what would you do.  
25 We went through. We did document that training.

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pv DAR 1 Unfortunately, one of the sessions that I had was mislabeled  
2 as "training on SAM-2 equipment." And I found that out  
3 after we went through some of the other inquiries. And that  
4 happened -- I don't know how -- but anyhow, it was not the  
5 class that it was stated to be, and was indeed this class  
6 that we had given on their response for an accident.

7 Now, that was in response to a plea by Pat Donnachie and  
8 Ed Eginreider, and we did try and get that to all of the  
9 shifts. But I did not hit all the shifts on that response.

10 Q This was SAM-2?

11 A No, this was the training on their response to an  
12 emergency should it happen on their shift.

13 Q Were there any other times when you provided  
14 emergency or other training to --

15 A Tailgate sessions on Saturday afternoons when I  
16 used to meet with the techs on Friday afternoon. We many  
17 times went over some of the things that they should be  
18 doing, and I'm not saying that that happened every Friday,  
19 but I used to try and get back when I worked on nights, once  
20 a week, to talk to those that were on shift.

21 Q Were you aware of a -- strike that.

22 Were a large number of complaints about the adequacy of  
23 the health physics training made by health physics personnel  
24 to you?

25 A The adequacy of the health physics training, the

187 12 13

pv DAR 1 lack of health physics training, was more of a hue and cry  
2 than the adequacy of it.

3 Q But you did receive a large number of those kinds  
4 of complaints?

5 A Large number is a large number. Complaints, yes.  
6 But I wouldn't say that there was a large number of them,  
7 no, no.

8 Q Did you provide training in the use of the SAM-2?

9 A Yes.

10 Q Are you aware of any complaints about the lack of  
11 or adequacy of that training?

12 A The lack of, in the training of the SAM-2s.

13 Q Was there a lack of training?

14 A Yes, yes.

15 Q For all the reasons that you've earlier testified  
16 to about the general lack of training?

17 A Yes.

18 Q For any in addition to that?

19 A No, on a six-shift rotation you have to have that  
20 many crosses to catch them all, or you come in in the middle  
21 of the night and get the crew that is on duty. The lack of  
22 time, I believe, is probably most responsible for the lack  
23 of the training of those techs.

24 Q Returning to the emergency drills, were there  
25 practice drills conducted prior to the emergency drills?

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pv DAR 1 A Yes.

2 Q How often were they conducted?

3 A Usually prior to the drill at which we would  
4 invite the outside people, the NRC, the drafters and so  
5 forth and so on, to come and view us. We would spend  
6 probably about a week ahead of time -- well, I'll take that  
7 back -- usually about five or six drills prior to that in  
8 preparation for the large drill with critiques after each  
9 one.

10 Q Were there as many as seven conducted in 1978, do  
11 you know?

12 A I believe there were. There were quite a few  
13 done.

14 Q Were those drills in 1978 spaced throughout the  
15 year?

16 A No.

17 Q They were all in a short period of time?

18 A Yes.

19 Q Approximately 30 days?

20 A Yes.

21 Q Why were they so bunched together?

22 A I can't answer that. That is just the way the  
23 drills were held, and they had always been held that way.

24 Q Was the main drill at which you invited outside  
25 people rehearsed in any way apart from the practice drills?

87 12 15

pv DAR 1 A No. Rehearsed in what respect? Other than they  
2 knew it was happening, those individuals. But as far as  
3 assignments go, prior to, no.

4 I knew myself who I was going to assign where because I  
5 knew who was on and who I wanted to put where. But they  
6 were not told ahead of time.

7 Q Who scheduled the drills?

8 A Lex Landry, who is a health physics engineer  
9 assigned to our particular department, was given that task  
10 through Lex Tsgaris, who was the training coordinator.

11 Q He had that responsibility in 1978 and '79?

12 A Who?

13 Q Mr. Landry?

14 A Yes.

15 Q After the drills there were critiques?

16 A Yes, sir.

17 Q Was attendance of the critiques by all persons who  
18 participated in the drills ever mandatory?

19 A No. It was by request.

20 Q Was it always available?

21 A Yes.

22 Q Was it always encouraged?

23 A Yes.

24 Q By what means?

25 A Over the PA system. As it was announced, all

187 12 16

pv DAR 1 individuals were to go to the auditorium. Many did not show  
2 up.

3 Q They were paid for their time if they went to the  
4 auditorium?

5 A Yes, sir, those individuals who were of union and  
6 hourly employees were paid for that time, yes.

7 Q Was attendance at the drills mandatory for anyone?  
8 Excuse me. Was attendance at the critiques of the drills  
9 mandatory for anyone?

10 A Those who were running the drill should have been  
11 there, yes. I would assume it was mandatory.

12 Q You testified that the technicians approached you  
13 and asked you to give them some additional training?

14 A Yes.

15 Q Part of that training included what they would do  
16 if you and Mr. Dubiel were absent?

17 A Yes.

18 Q Was that included in the emergency plan, the  
19 procedure that they would follow?

20 A Yes, yes.

21 Q So, as part of what you did, did you direct them  
22 to the portion of the emergency plan which contained that  
23 procedure?

24 A Yes. We showed them the flow diagrams and showed  
25 them -- actually talked about what they should be doing and

187 12 17

pv DAR 1 where they went.

2 MR. DIENELT: Off the record.

3 (Discussion off the record.)

4 BY MR. DIENELT:

5 Q You have testified that, if I am correct, and  
6 please tell me if I am misstating your testimony, that in  
7 your view the health physics program, the health physics  
8 personnel, were not adequately involved in decisionmaking  
9 with respect to operational matters?

10 A Yes.

11 Q You have also indicated that you believe they  
12 ought to be involved?

13 A Yes.

14 Q Can you tell me what your understanding of the  
15 view or philosophy with respect to health physics that  
16 currently prevails in management is with respect to the  
17 decisionmaking process on operational matters?

18 A Their philosophy right now, I am sure, has changed  
19 since the accident because we are one of the groups that are  
20 functioning right now in the limelight. We have grown in  
21 Unit 2 to such an immense group now, and we have an offshoot  
22 everywhere, so that health physics is being recognized only  
23 because of sheer numbers. We are everywhere.

24 We have a new group formed, which is the review -- or the  
25 recovery operating review committee, of which there is a

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pv DAR 1 health physics member assigned as part of the quorum.

2 Before we had the plan operating review committee, both  
3 Unit 1 and Unit 2, of which their quorum did not cite that  
4 an HP man be there. That in itself is a good idea.

5 We have also begun an ALARA program. This is through our  
6 own department and in conjunction with Electric Boat, so  
7 therefore there is another plus. Health physics is  
8 beginning to be recognized, but to get in on operations  
9 decision is still in a nebulous state.

10 Every morning there is a meeting between an HP foreman,  
11 one of my NSS foremen, and the Unit 2 operations group. And  
12 they at that particular point in the day do discuss what is  
13 going to happen during the day. That is a relatively new  
14 concept that has developed over the last month and a half.

15 Each shift foreman, before he begins his shift, goes to  
16 meetings similar to that. The day shift goes to Herbel's  
17 trailer. The second and third shift go to the Unit 2  
18 control room and meet with that shift's supervisor prior to  
19 the onset of his shift. That, as I said, is a new concept.

20 Before operations begins a function, they must come and  
21 get an RWP so that we know about that ahead of time.

22 Are we beginning to be in their thoughts? Yes, I guess  
23 maybe we are.

24 Q Earlier in the day, I believe you said health  
25 physics was perceived by some persons as a necessary evil.



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pv DAR 1 Do you believe that the management, prior to March 28,  
2 perceived health physics as unnecessary or as a necessary  
3 evil?

4 A As a necessary evil, in order to comply with the  
5 current regulations.

6 Q At the present time, is it your view that  
7 management regards the health physics as necessary or as  
8 still a necessary evil?

9 A I believe the concept is still there: as a  
10 necessary evil.

11 Q In order to comply?

12 A In order to comply.

13 Q Why, as you understand it, is health physics  
14 regarded as an evil?

15 A We're a governing body who stands in the way, many  
16 times, of production. We get in the way; and therefore,  
17 it's a deterrent. I have had individuals here at the plant  
18 site saying, "Why do you bother with some of the things that  
19 you make us go through?"

20 We had a meeting which we found out about through all the  
21 trades here in the plant site. We were not specifically  
22 invited, yet they were all meeting to discuss the health  
23 physics controls imposed upon them. And they were all  
24 rather upset.

25 We found out about the meeting, and we showed up. As

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pv DAR

1 long as I felt that -- I felt, if it was going to be  
2 HP-oriented, someone from HP ought to be there to defend  
3 it. And we ironed out a lot of why we imposed the  
4 restrictions on their work. They felt them as a  
5 restriction. We feel them as a necessity.

6 Therefore, I feel that they're looking to us as a  
7 deterrent.

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DAR gsh

1 Q When did this meeting take place?

2 A About a month and a half ago.

3 Q Did you make efforts within the past two years to  
4 become more involved in the decision-making with respect to  
5 operations?

6 A We tried to find out more of what was happening on  
7 the plant of the day meetings to be involved in those  
8 particular aspects.

9 Dick Dubiel is generally the one who attended those  
10 meetings, not necessarily having the time to come back and  
11 tell us what was going on with the rest of the plant.

12 In moving around the plant site, we tried to confer with  
13 different departments on what was happening, what was going  
14 on. Of course, it is very difficult when your own department  
15 needs a lot of help to go out and try and see what other  
16 people are doing.

17 Did I try and get involved more in what the decision-making  
18 was? Not a concerted effort, no. I was too concerned with  
19 my own house.

20 Q In your view, does Mr. Miller hold the view which  
21 you have characterized -- hold the view that health physics  
22 is a necessary evil, as you have characterized it?

23 A To my knowledge, through Mr. Miller, no, I don't  
24 believe he holds that because he has asked us to bring  
25 comments to him, any problems that we do have. And if he can

DAR gsh 1 at all, he is helpful.

2 Q Does Mr. Herbein have that view?

3 A Unfortunately, I don't know whether he does or not.

4 Right at the moment is the first time I have dealt with Mr.  
5 Herbein not that he is here and involved with the HP program.

6 Q Is there anyone in the management of the company  
7 above you and Mr. Dubiel whom you regard as being a  
8 particular advocate of the point of view that health physics  
9 is a necessary evil?

10 A No one has come to tell me that, no.

11 Q Have you developed an opinion that there is a  
12 particular person who is the personification of the view that  
13 health physics is a necessary evil?

14 A No.

15 Q During the emergency response beginning on March  
16 28th, would it be fair to say that health physics procedures  
17 were at least for the first several days, virtually  
18 abandoned?

19 A Yes.

20 Q Is that abandonment -- strike that.

21 I take it that you did not agree that it was appropriate  
22 to abandon health physics procedures in response to the  
23 emergency?

24 A Under those particular circumstances, you must  
25 abandon one program in preference for another. The emergency

DAR gsh 1 dictated this.

2 Q Well, how -- strike that.

3 In what way?

4 A In what way? The issuance of radiation work permits,  
5 the situation in which we found ourselves reacting to areas,  
6 my direction to an operator, go to this area and take a  
7 survey.

8 He would come back and say it is 50 MR, for lack of another  
9 number. It is 50 MR here. He would phone back and so forth,  
10 that area warranted an RWP.

11 We certainly are not going to have an RWP for that area  
12 outside. We had 10MR. We did not issue an RWP for persons  
13 to go to the north gate; nor did we take an accountability  
14 as each individual passed through that, that radiation area.  
15 This type of thing.

16 It was impossible to conform to certain of our procedures  
17 under those circumstances.

18 Q Was it your view that there was at any time a  
19 life-threatening situation which in part accounted for the  
20 need to abandon health physics procedures?

21 A Absolutely not. Life-threatening?

22 Q Yes, sir.

23 A No.

24 Q Is there someone in the upper management who, as  
25 opposed to being the advocate of the view that health physics

DAR gsh 1 is a necessary evil, is a particular advocate of the view  
2 that health physics should have a greater role in decision-  
3 making and is not an evil, but is necessary?

4 A Do I feel that person exists?

5 Q Yes.

6 A No.

7 Q In your view, is it desirable or necessary during  
8 an emergency to continue to follow procedures with respect  
9 to making records of individual's entries into exposed  
10 areas and the like?

11 A I am painfully aware of that now, yes, indeed.  
12 That is one of the areas in which we will have to most  
13 assuredly correct.

14 Q It was not your view at the time that record-keeping  
15 function was as important as it is your view now?

16 A That is correct, yes.

17 Q Is there a reason why?

18 A For the mere reason that we are sitting here today  
19 and trying to recall a lot of the material that went on.  
20 The areas in which we found, the documentation for recreating  
21 the situation. I would very much like to have a detailed  
22 list of every survey that was done, every person that was  
23 involved.

24 It was virtually impossible at the time to take the time to  
25 write all of that down.

DAR gsh 1 As things developed, you grabbed those individuals available  
2 to take survey work. We didn't write down their names, that  
3 I sent so and so to that location and he reported this back  
4 to us, that the reading at 9:00 in the morning by so and so  
5 was this number.

6 To have a scribe do that would have been great, but you  
7 would have had to have 800 scribes following each individual  
8 around as they gathered this data.

9 Q Is it your view that the kind of record-keeping  
10 we have been describing as available to you during the  
11 emergency, as well as in reconstructing what happened?

12 A Yes.

13 Q And what is that feeling?

14 A Right now, we have been asked all kinds of questions  
15 on what happened when. Documentation on the first couple of  
16 days that may have been written down somewhere, but not put  
17 anywhere chronologically.

18 There should be something done. I'm not sure what, because  
19 we haven't thought of that that much right now. But we will  
20 develop this and I hope all plants develop this because to  
21 recreate something, I'm sure that every agency that functioned  
22 during that particular time cannot recreate the  
23 minute-by-minute what happened and we have got to have that  
24 in.

25 Q In addition to recreating the facts, what role, if

DAR gsh 1 any, would the recordkeeping have made in the response to  
2 the emergency itself?

3 A What did we last do, where had we just been, this  
4 type of thing? How can we follow and retrace their steps?  
5 You had to do it by memory.

6 Q Was the absence of those records maintained  
7 contemporaneously a hindrance to the response of the accident?

8 A No, not our direct response, no. But in the  
9 response later on, yes.

10 (Discussion off the record.)

11 BY MR. DIENELT:

12 Q I believe you testified a moment ago that you would  
13 not have regarded it as necessary to encounter the delay which  
14 be involved in obtaining an RWP for activity in an areas  
15 where the radiation level was in the range of 10 MR per hour.

16 Is that correct?

17 A That's correct.

18 Q Would you hold the same view with respect to  
19 obtaining an RWP in areas where the radiation level was in  
20 the range of 50 MR per hour?

21 A The same criteria would hold true if it were an  
22 emergency. I would forego that RWP.

23 Q Would it be fair to say that you would attempt to  
24 balance the risk associated with the non-level of exposure  
25 against the need for the work being done in an emergency



DAR gsh

1 situation in deciding whether an RWP was necessary?

2 A Yes.

3 Q I take it that there was no mechanism in existence  
4 during the emergency that permitted anybody to conduct that  
5 balancing?

6 A That's correct. No, there does not.

7 Q Would it be fair to say that it is your view that  
8 there should be at least that kind of mechanism?

9 A I feel that there should be that criteria set  
10 forth that it is agreeable to all that that mechanism does  
11 exist.

12 We do not make provisions for that, but whether provisions  
13 are made or not, the question should be answered, is this  
14 an acceptable method to follow?

15 Q Are you aware of any records of work assignments  
16 that were kept during -- the period beginning on March 28  
17 and extending into the period in which you were in a  
18 recovery mode?

19 A Define the term "records."

20 Q Of work assignments. Written records. Any  
21 written records of who was assigned to do what.

22 A No. The only record I would say could exist was  
23 those who were placed on the monitoring team at the onset.  
24 But from there on in, I don't know of any.

25 Q If I wanted to trace the history of the monitoring

DAR gsh 1 activity off-site and on-site in the period during which you  
2 were in a recovery rather than in an emergency response mode,  
3 how would you do it?

4 A The mechanism that exists right at the moment is  
5 through the sample coordinated and through the ECS director  
6 who took up residence in the Unit 1 control room.

7 From there, the operations were directed in the recovery  
8 mode when we were still taking samples off-site.

9 Q And who were they?

10 A They?

11 Q Those individuals.

12 A Those individuals were NSS employees.

13 Q Do you know their names?

14 A No, I don't.

15 Q Are you aware of any instances in which workers  
16 were permitted to increase their quarterly limit in order to  
17 be able to continue the work?

18 A For what time-frame?

19 Q Let's say during the period prior to the accident.

20 A Oh, yes.

21 Q What happened in those kinds of circumstances?

22 A We have a mechanism in the department which allows  
23 for the increase on a weekly basis. Now wait a minute. I'm  
24 going to back up and ask you one point.

25 You said to increase their quarterly exposure?

DAR gsh

1 Q Yes, sir.

2 A I'm sorry. I'm relating on how to increase your  
3 exposure through the quarterly limit. Through a mechanism  
4 we don't have authority to do that because we are bound by  
5 10-CFR 20 to hold to the mechanism as stated in that document.

6 And I can relate those if you like, but I cannot increase  
7 those if we go past.

8 That's a technical overexposure if we do.

9 Q But you have a procedure for increasing the weekly  
10 dose?

11 A Which is in the department to increase the level  
12 from 300 M rem per week verbally to 600 verbally, again to  
13 900 ultimately, to 1000 millirem per quarter.

14 At that particular point, there is a hold. And a document  
15 is originated by the individual who wants the exposure, the  
16 additional exposure and by procedure, we may allow that  
17 individual to go above 1000 millirem if certain criteria are  
18 met. One being that we check all of his exposure records  
19 while he is here and elsewhere so that he has a completed  
20 NRC form 4.

21 If all of that documentation is correct and we do not  
22 exceed any limits, we then may allow them to go to 2 rem.  
23 Again, in 300 increments per week.

24 There is another hold point of 2 rem where, again, the  
25 document is checked out. And then we allow him to go to

DAR gsh 1 2500 for the quart . To exceed 2500, these are all signed  
2 by myself and the unit superintendent for which unit the  
3 individual is working.

4 In order to go above the 2500 millirem for the quarter,  
5 an individual such as one-of-a-kind individual would be  
6 allowed to do this where there was no one else to perform  
7 that function and the duty had to be performed. And an HP  
8 escort goes with that individual to monitor his exposure and  
9 that is all by procedure.

10 Q I have marked as Exhibit 3030 a one-page memorandum  
11 reportedly to you from all departments, subject to  
12 accountability, dated October 13, 1978.

13 (Exhibit No. 3038 identified.)

14 BY MR. DIENELT:

15 Q Did you prepare that memorandum?

16 A Yes.

17 Q Why did you prepare the memorandum?

18 A We instituted the processing center in Unit 1 before  
19 this memo came out, which meant that the individuals who  
20 were stationed over in the training trailers outside the  
21 security fence -- when we term outside the protected area --  
22 and those individuals at the warehouse would quickly have a  
23 problem in getting to the north auditorium, where they had  
24 originally been told to go.

25 So this made the provisions for the individuals and gave

DAR gsh 1 them a mustering point to -- in the event of an emergency,  
2 they would go to that area, which is the Unit 1 warehouse.

3 Q Was it your understanding that the change which was  
4 made by the memorandum was a change of the nature which  
5 required or should have required a formal approval by  
6 persons higher up in management or by NRC?

7 A No.

8 Q Did the change which is reflected in that memorandum,  
9 in your view, have any positive or adverse impact on the  
10 manner in which people responded to the emergency that began  
11 on March 28?

12 A I understand you to say that did this have an  
13 adverse effect?

14 Q Or a positive effect.

15 A Or a positive effect. Having not studied whether  
16 it did or it did not, nor looked into its ramifications on  
17 individuals, I can't answer that.

18 I am unaware of either way it worked.

19 Q Did you have any involvement with personnel from  
20 the Commonwealth of Pennsylvania in response to the emergency?

21 A Before the emergency, yes. During the emergency,  
22 yes. I spoke to them on the phone.

23 Q Did you do so directly?

24 A No.

25 Q What was the purpose of your conversations with them?

DAR gsh 1 A In checking on a particular iodine sample that  
2 we had sent off via them to a hospital because we couldn't  
3 read the iodine sample here.

4 Q Did you have any other relationship?

5 A No.

6 Q Are you aware of any provisions permitting the  
7 March 20 exposure limits to be exceeded under life-threatening  
8 conditions?

9 A Yes.

10 Q They do exist?

11 A Yes.

12 Q They were not employed during this emergency?

13 A No.

14 MR. DIENELT: Give me a moment.

15 (Discussion off the record.)

16 BY MR. DIENELT:

17 Q Did you have any role in asking the Pennsylvania  
18 State Police to dispatch a helicopter to TMI on the morning  
19 of March 28th?

20 A No.

21 Q Do you know for what period of time plant personnel,  
22 as opposed to outside staff support persons, were engaged in  
23 the on- and off-site monitoring teams during the emergency?

24 A I'm sorry, I didn't understand that question.

25 Q For what period of time beginning on March 28 did

DAR gsh 1 you use plant personnel as opposed to rent-a-techs, or some  
2 other non-plant personnel in your off-site monitoring?

3 A I believe for the first three days we had our own  
4 techs out there.

5 Q And after that, it was the rent-a-techs?

6 A Yes.

7 Q Did the same thing apply to the gate monitoring  
8 and the 500 KV switchyard?

9 A Yes.

10 Q Was it that point, in your view, which the change  
11 from emergency to the recovery mode was made?

12 A I can't give you a time when it was decided that.  
13 We asked many times what mode are we in, and there was never  
14 a definitive time where we said, we are now in recovery. The  
15 emergency is over.

16 Q And these plant personnel were replaced by one form  
17 or another of rent-a-techs?

18 A That is correct.

19 Q Was there a particular individual who was  
20 responsible for ordering the change at that time?

21 A That was done by the observation center through  
22 their chain. I cannot give you a name. It was through that  
23 group over there.

24 MR. DIENELT: I do not believe I have any further  
25 questions. I know you have been interviewed at length by I&E

DAR gsh 1 and at greater length than I had anticipated by us. But I  
2 do want to ask you if there is any other information which,  
3 for whatever reason, other people have not tapped, which you  
4 have and which you believe would be of use to this inquiry?

5 A I don't believe that there is any area that we  
6 have not covered that we -- that I feel should be open for  
7 discussion or in additional input.

8 The hope of mine is that after all of this particular  
9 inquiry is ended, that we come up with a better program and  
10 others have learned from this.

11 MR. DIENELT: Just one moment.

12 (Discussion off the record.)

13 MR. DIENELT: I want to thank you for your time. I  
14 don't think that we will have to call you back. But if for  
15 some reason, we will notify you.

16 (Whereupon, at 6:30 p.m., the deposition was adjourned.)

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