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NUCLEAR REGULATORY COMMISSION

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IN THE MATTER OF:

TMI SPECIAL INQUIRY  
DEPOSITION

DEPOSITION OF RICHARD W. HEWARD

Place - Parsippany, New Jersey

Date - Tuesday, September 25, 1979

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NUCLEAR REGULATORY COMMISSION  
THREE MILE ISLAND SPECIAL  
INQUIRY GROUP

DEPOSITION OF RICHARD W. HEWARD

OF GENERAL PUBLIC UTILITIES

by NRC/TMI SPECIAL INQUIRY GROUP

INTO THE ACCIDENT AT THREE MILE

ISLAND

TRANSCRIPT  
OF  
PROCEEDINGS

GPU Headquarters  
260 Cherry Hill Road  
Parsippany, New Jersey  
Tuesday, September 25, 1979

A P P E A R A N C E S :

DAVID J. EVANS, ESQ.  
R. LAWRENCE VANDENBERG  
NRC/TMI Special Inquiry Group

JAMES B. LIBERMAN, ESQ.  
General Counsel for General Public Utilities

DOUGLAS E. DAVIDSON, ESQ.

REPORTED BY: MARGARET J. TEILHABER, C.S.R.

## I N D E X

WITNESSDIRECT

RICHARD HEWARD

By Mr. Vandenberg

4,6,10,16,23,  
29,44,49

By Mr. Evans

6,10,15,20,22,  
29,32,43,45,49

## E X H I B I T S

NUMBERDESCRIPTIONFOR IDENT.

1108

Position Description

21

1109

CORB report

21

1 MR. EVANS: I want to note that this is  
2 a deposition of Mr. Richard Heward which is be-  
3 ing conducted by the NRC/TMI Special Inquiry  
4 Group. It's being held at the offices of General  
5 Public Utilities Corporation in Parsippany, New  
6 Jersey, on September 25, 1979.

7 Present in addition to the deponent is  
8 Mr. Jim Liberman, the general counsel of General  
9 Public Utilities Corporation, and also Mr. Doug  
10 Davidson of Mr. Liberman's firm.

11 Present for the NRC/TMI Special Inquiry  
12 Group is Mr. R. Lawrence Vandenberg and David J.  
13 Evans.

14 Mr. Heward, I'm going to ask you if you  
15 had an opportunity to read the Witness Notifica-  
16 tion form and the letter to you from Mitchell  
17 Rogovin which I have shown to you earlier today.

18 MR. HEWARD: Yes, I have.

19 MR. EVANS: Do you understand your rights  
20 as set forth in those forms?

21 MR. HEWARD: Yes, I do.

22 MR. EVANS: Do you have any objections  
23 to proceeding at this time?

24 MR. HEWARD: No.

25 MR. EVANS: Would you stand and raise



1 your right hand.

2 R I C H A R D W. H E W A R D, having been duly sworn accord-  
3 ing to law, testified as follows:

4 MR. EVANS: Mr. Heward, at this time Mr.  
5 Vandenberg will direct questions to you.

6 DIRECT EXAMINATION

7 BY MR. VANDENBERG:

8 Q Mr. Heward, my questions are going to deal with  
9 the area of bringing TMI-2 into commercial operations at the end  
10 of 1978 and to some extent your responsibilities at the site dur-  
11 ing that time period. I would like to start by having you describe  
12 for us your position with GPU in 1978 and who you reported to and  
13 who were your immediate subordinates.

14 A In 1978 my title was Manager of Projects and I reported  
15 to William H. Hirst and my immediate subordinates regarding the  
16 Three Mile-2 project were John J. Barton, project manager.

17 Q Can you go up the line a little bit more.

18 A Beyond Hirst?

19 Q Yes.

20 A Hirst reported to Robert C. Arnold, vice-president of  
21 generation.

22 Q Mr. Heward, were you aware of any possible finan-  
23 cial incentives for bringing TMI-2 on line before the end of 1978?

24 A No.

25 Q Were you aware that the unit was the subject of

1 a rate case and that there was a test year ending in December of  
2 1978?

3 A I believe I was aware that the unit was the subject of a  
4 rate case which I think was quite a few times. I'm not aware of  
5 a test year.

6 Q Were you aware that it was a possibility for se-  
7 curing investment tax credits based on construction of TMI-2?

8 A No.

9 Q Did you ever attend any staff meetings with Mr.  
10 Herbein or Mr. Arnold where these kinds of things might have been  
11 discussed?

12 A I never attended any with Mr. Herbein. I attended each  
13 one with Mr. Arnold that he held monthly, and it might have been  
14 discussed there. I don't recall at this time.

15 Q Did you ever hear employees below you talk about  
16 any advantages to Met-Ed or GPU that might be secured by bringing  
17 TMI on line?

18 A Well, when you set out to build a power plant, it's ob-  
19 vious that you want to produce power with it so it's obviously  
20 advantageous to get the thing on the line as soon as you can and  
21 that was the project goal. You are referring, I take it from  
22 your previous questions, to financial benefits and I don't re-  
23 call that I was aware of any specific financial benefits.

24 Q Were you aware in a general sense?

25 A Yes, sure.

1 DIRECT EXAMINATION

2 BY MR. EVANS:

3 Q Let me probe this a little bit, Mr. Heward.

4 When were you first made manager of projects?

5 A August 1, 1977.

6 Q Before that time, what was your title?

7 A Project manager.

8 Q When did you assume that job?

9 A At Three Mile Island?

10 Q Yes.

11 A November 8, 1971.

12 Q So it would be fair to say that you have been  
13 involved with Unit Number 2 of Three Mile Island since construc-  
14 tion began at the site?

15 A That's fair to say, yes, except for two years prior to  
16 November 8, 1979 when I was project manager at Forked River. I  
17 was not at all involved in Three Mile Island at that time.

18 Q So that would be 1969 or so you were involved  
19 in the Forked River project?

20 A That's correct, yes.

21 Q When you first became involved with TMI-2, what  
22 was the date that had been set for commercial operation?

23 A I don't really remember. I don't remember when it was.  
24 It was substantially earlier than when it went commercial.

25 BY R. VANDENBERG:

1 Q Did you have any understanding that there were  
2 some criteria to be met for bringing a plant into commercial op-  
3 eration?

4 A Yes, I did.

5 Q What were those criteria or how did you learn of  
6 them?

7 A The criteria defined in a corporate procedure that iden-  
8 tifies what is to be reviewed to bring a plant commercial, and  
9 my recollection is that it has to do with the level of training  
10 and adequacy of the staff and the fact that the systems have been  
11 completed, tested, and have been turned over to the operator and  
12 accepted by the operator with acceptable punch list items. There  
13 may be more criteria in that procedure. I don't recall at the  
14 moment.

15 Q Did you attend any meetings in the last half of  
16 1978 that discussed at what time or how those criteria were going  
17 to be met?

18 A Yes. I participated in a meeting in October of 1978.  
19 That was the meeting for the Commercial Operation Review Board  
20 to make the decision as to whether or not they considered the  
21 plant acceptable for commercial operation.

22 Q What was the view at that point?

23 A The view at that point was that the plant had only been  
24 tested to 75 percent power level and that the final testing had  
25 yet to be done and subject to the acceptable final testing that

1 they did consider adequate and acceptable to be classified com-  
2 mercial.

3 Q Were you involved in bringing TMI-1 into commer-  
4 cial operation?

5 A I certainly was, yes.

6 Q Was there similar criteria applied there?

7 A There were but it was not done formally. It was not a  
8 corporate procedure at that time but we did sit down and review  
9 similar things on an informal basis at that time to bring Three  
10 Mile Island commercial, yes.

11 Q Dick, have you ever been aware of a FERC and  
12 before that Federal Power Commission 120 day rule, sometimes  
13 called Electric Plant Instruction 9D?

14 A The 120 day rule vaguely rings a bell in my mind but I  
15 guess I can't tell you -- I think I know what it is. Is it a  
16 requirement that the plant is to be in commercial operation 120  
17 days after making its first power?

18 Q Is that your understanding?

19 A I'm pulling this out of my head. I vaguely remember  
20 something like that and I don't know whether that's the rule or  
21 not.

22 Q Did you ever discuss that with Bob Arnold?

23 A Yes, if that's what it is, I think so.

24 Q As far as I know, that's what it is.

25 A Okay. 120 days? Is that correct? That doesn't seem

1 reasonable. Maybe that's what it is. Offhand it doesn't seem  
2 like a reasonable time period.

3 Q Did you ever discuss with Bob Arnold or others  
4 the running of that 120 day period? You stated, as I recall,  
5 that the beginning of that period was -- how did you put it --  
6 when it's first synchronized with the grid. Was that ever a  
7 problem?

8 A Synchronized with the grid?

9 Q No, the running of the 120 day period.

10 A It was not a problem for me in that the objective of  
11 the project was to get the testing done as laid out in the test  
12 program, and in the particular case of Three Mile Island-2 we  
13 certainly were unable to get the testing done in 120 days be-  
14 cause of the problem we had with the main steam relief valves.

15 So no, it was not a problem with me offhand. If you're  
16 asking me was there a lot of pressure on me to meet the 120 days,  
17 the answer is no.

18 Q Did you talk with anybody, though, about ways to--  
19 let me rephrase that.

20 Did you discuss with anyone dealing with FERC  
21 to re-establish or stop the running of the 120 day period?

22 A I didn't.

23 Q Okay. Thank you.

24 (A discussion was had off the record.)

25 Q Mr. Heward, back in May 4 of 1978, do you recall



1 receiving a copy of a memo from Mr. Seelinger to Mr. Miller  
2 and in that memo there was a section dealing with philosophy  
3 that stated: "We must slow down and proceed forward deliberately  
4 and correctly. Senior station management must convey this phil-  
5 osophy to shift personnel."

6 Does that ring a bell with you?

7 A No.

8 BY MR. EVANS:

9 Q Let me try to refresh your recollection. On  
10 April 23, 1978, there was a transient at the plant involving  
11 main steam relief valves. Is that a correct --

12 A That certainly is, yes.

13 Q Following that transient, did you receive a car-  
14 bon copy of this Seelinger memo which was written to Gary Miller  
15 providing his comments on the transient and procedures at the  
16 plant?

17 A It's probably likely I did if he wrote it but I don't  
18 recall it now.

19 Q You were typically carbon copied on those kind  
20 of memos in the plant.

21 A Yes, that's correct.

22 Q Did you file those?

23 A I probably did, yes.

24 BY MR. VANDERBERG:

25 Q Were you in any discussions, again, the last

1 part of 1978, that there was some pressure to declare TMI-2 to  
2 be in commercial operation because to not do so might put at  
3 risk the allowance of the AFC on the plant, Allowance for Funds  
4 used during construction?

5 A I don't think so. I don't recall such a conversation.

6 Q In these staff meetings you had with Bob Arnold  
7 that you attended, what kinds of things were discussed relative  
8 to either rate cases or relations with FERC\*or the general sub-  
9 ject of commercial operation of TMI-2?

10 A Bob generally tried to keep us informed of testimony that  
11 he gave in various proceedings. I don't recall specifically any  
12 discussions of conversations with FERC. We talked about progress  
13 on the various projects and we talked about problems on the var-  
14 ious projects that were the kinds of things that should be dis-  
15 cussed at upper levels to try and assist in the resolution of  
16 those problems and maintain progress.

17 Q Did those things include establishing a schedule  
18 for completion of TMI-2?

19 A No, because the schedule for completion was done outside  
20 the scope of staff meetings. The project staff assessed the  
21 schedule and proposed that this was the amount of time they fore-  
22 saw would take to complete the remaining testing and that was  
23 reported mostly in other places. There was a monthly progress  
24 report issued to Arnold that discussed schedule each month.  
25 There was a letter to the Board of Directors that discussed



1 schedule each month.

2 I handled project review meetings each month and we dis-  
3 cussed schedule with the major contractors.

4 Q Are you saying that you didn' have any input  
5 into the establishment of the schedule?

6 A No. I said that the project produced all the input into  
7 the establishment of the schedule:

8 Q What was your role in that process?

9 A Well, the project manager reported to me at that time so  
10 I approved what he produced, if I thought it was appropriate.

11 Q Did you ever change what he produced?

12 A I probably did, yes.

13 Q Did you ever change his estimate of when certain  
14 tests should be completed or when the overall project should be  
15 completed?

16 A I don't recall a specific case of that, but that may  
17 have happened. The project manager has a very long past history  
18 of being the manager of testing, not only here but elsewhere,  
19 and is probably as expert as anybody I know in the establishment  
20 of schedule for test program for a nuclear power plant.

21 Q You are implying you wouldn't have any reason --

22 A I'm implying that it's probably unlikely. I don't always  
23 agree with things people say and I might have had a difference  
24 at one time, but I can't recall a specific case of that. By and  
25 large, if you look at the history of what happened in the year

1 1978, the plant was to be commercial in the spring. The April  
2 23rd transient put a substantial delay in that. There were  
3 other items that came up during the summer that we had to attend  
4 to and the plant went commercial when the test program was com-  
5 pleted.

6 I daresay if it weren't completed until two weeks later,  
7 it wouldn't have gone commercial until two weeks later.

8 Q You said you had a lot of interface with the  
9 different groups there. That would include the constructor, UE  
10 & C?

11 A Yes. They were on the site in 1978.

12 Q So that would be Catalytic in that.

13 A Yes.

14 Q What was the nature of your interaction with UE  
15 & C for the time they were on site?

16 A UE & C was the construction manager and constructor.  
17 They hired subcontractors to do specialty jobs and they hired  
18 labor to do jobs themselves. They essentially worked for me as  
19 the project manager for GPU when I was project manager.

20 By the way, there is a project organization responsi-  
21 bilities document that clearly defines interface of UE & C and  
22 the other major contractors with GPU.

23 Q Which document is that?

24 A It's called The Project Organization and Responsibilities  
25 Document, and it has a project number attached to it which I

1 don't remember what it is.

2 MR. EVANS: Will you be willing to make  
3 that document available to us?

4 THE WITNESS: Sure.

5 Q When was Catalytic brought in?

6 A I believe the official date was September 1st, 1977.  
7 Yet I started Catalytic in small numbers on the site as early  
8 as May or June of '77 so we could get an appropriate interface  
9 with United.

10 Q What was the reason for switching constructors?

11 A We did not switch constructors. What we did was to bring  
12 on a contractor who would ultimately wind up with the maintenance  
13 contract of the finished plant and also act as a completion con-  
14 tractor. We did the similar thing on Unit 1. It worked out  
15 very well. The only thing we decided on Unit 1 that we wanted  
16 to do different on Unit 2 was to bring the guy in earlier and  
17 we did that.

18 Q Could you give me an estimate of percent complete  
19 on TMI-2 when the switch was made.

20 A In the nineties.

21 Q Low nineties?

22 A Low nineties, mid-nineties, somewhere.

23 Q Was the switch due in any way to any of the  
24 GPU company's dissatisfaction with UE & C's performance?

25 A I discussed that switch at least a year or more before

1 it happened with the vice-president and project manager of UE &  
2 C and explained to him that we had good experience on Unit 1,  
3 which he participated in that very well, and told him I thought  
4 we ought to do it a little sooner on Unit 2 and he concurred.

5 This was something that was premeditated and in agree-  
6 ment with UE & C.

7 Q Those discussions were with Earl Nagle?

8 A That's correct.

9 BY MR. EVANS:

10 Q Let me ask at the time that UE & C left the site,  
11 do you have any indication of how many punch list items were  
12 open?

13 A I'm guessing the number was in the order of 8,000.

14 Q Would you consider that unusually high?

15 A No. In my view it was high, higher than I expected, but  
16 I would say no for this reason. When Three Mile-1 went commer-  
17 cial, it had 4,000 punch list items. UE & C left the site just  
18 prior to the hot operations in the test program which meant that  
19 there was still a lot of things not done, a lot of things not  
20 tested.

21 So if you put those two numbers in perspective, I would  
22 say that it's not terribly out of line.

23 Q Do you think when the company learned that there  
24 were that many punch list items open it was surprised?

25 A I don't know. It was higher than I thought it was but

1 I don't think it was any serious oversight or any such thing as  
2 that.

3 Q Let me ask this question. Was Mr. Arnold sur-  
4 prised when you told him there were that many open items?

5 A I don't remember. He probably was. It looks like a  
6 big number but when you sit down and look at each one of these  
7 items, you go to one item and it says test number so and so is  
8 not complete. Well, test number so and so hasn't yet been run  
9 so, of course, it's not complete and you go down there like  
10 that and there's a preponderance of those kinds of items that  
11 makes the number so large.

12 You say 4,000 items on a commercial operation on Unit 1  
13 is a very large number; well, it is a large number, but when  
14 you look at the items and you see what they are, it's apparent  
15 that they are not serious items.

16 BY MR. VANDENBERG:

17 Q You mean that most of those items could be re-  
18 solved with minimal effort?

19 A Yes. As a matter of fact, a lot of them didn't have to  
20 be resolved, may still not be resolved. If you take an extremely  
21 large and complicated thing such as a nuclear power plant and  
22 you try and get yourself to the point where you have no punch  
23 list items, even if the thing is in operation, it's not possible  
24 and the reason it's not possible is you always have a valve  
25 that's going to leak and something like that and those items



1 go on the punch list. You have electrical receptacles that  
2 don't work/<sup>or</sup>one is needed somewhere. That's a work list item.  
3 It goes on the list. The items that were important to safety  
4 and to proper operation of the plant, they got fixed.

5 Q I would like to switch the question to a differ-  
6 ent area a little bit. Mr. Heward, I want to ask you if you can  
7 identify this document which appears to be a Position Descrip-  
8 tion for you. Is that correct?

9 A Yes, I guess so.

10 Q What was the date of that?

11 A 9/1/72.

12 Q You've identified that as being the official  
13 Position Description for you at that date.

14 A It certainly looks like it is, yes.

15 Q Did your official position description change  
16 much or at all through 1978 from that time?

17 A I had a different position in 1978 than I did in 1972.  
18 I was the manager of projects in 1978. I was the project man-  
19 ager in '72.

20 Q On page 2 of this, there's a statement I wish  
21 you could explain to us. The idea that then as project manager  
22 there's a need to complete an initial warranty run prior to com-  
23 mercial operation; could you explain to us what that means.

24 A The initial warranty run was a test that was required  
25 in the Babcock and Wilcox contract that verified that the reactor

1 plant would produce so many pounds of steam an hour.

2 Q Why was that made a pre-condition to commercial  
3 operation?

4 A Well, on Unit 1 which I was working on primarily in 1972  
5 I don't believe that any large B & W plant had ever been run and  
6 it was certainly essential for us to verify that the plant that  
7 we bought would put out the amount of steam that it was adver-  
8 tised to put out, and so we ran the warranty run and, as I recall  
9 on Unit 1, the warranty run was the last thing run in the power  
10 range test.

11 As a matter of fact, I think I believe that the power  
12 range testing had all been completed prior to running the war-  
13 ranty run, and we did the warranty run just prior to commercial  
14 operation. Now, on Unit 2, the warranty run was not as important  
15 an item to us as it was on Unit 1 because once again it still  
16 required so many pounds of steam per hour from the plant and the  
17 plants, Unit 1 and Unit 2, are essentially the same reactor, yet  
18 the Unit 2 reactor operates at a substantially higher power level  
19 than Unit 1; and since we had already run Unit 1 and knew what  
20 the output was, the certainty of getting a similar output was  
21 there for Unit 2.

22 As a matter of fact, we ran at a substantially higher  
23 output than what was warranted.

24 Q Is this initial warranty run the same thing as  
25 the Unit Acceptance Test? Was that another name for the same

1 test?

2 A Yes, I think so.

3 Q Was this test run in 1978 or was it run later?

4 The reason I ask that is that --

5 A Oh, sure.

6 Q On Unit 2.

7 A I believe it was run later.

8 Q The reason I asked that was I seem to recall  
9 that in a schedule of the tests remaining to get to commercial  
10 operation that Bob Arnold supplied to the Pennsylvania PUC, the  
11 Unit Acceptance Test was shown as a milestone prior to commercial  
12 operation. Did Bob Arnold ever discuss that kind of schedule  
13 with you?

14 A Yes. We had always scheduled the warranty run to be  
15 done in the test program. If you look at the test program schedules  
16 going back where we got into power range test, they all  
17 showed the warranty run being run late in the test program but  
18 prior to commercial. The warranty run was run for the reason  
19 that I just said; namely, to verify that we got the pounds of  
20 steam per hour out of the reactor that B & W advertised it would  
21 produce.

22 There was no question about getting it here and the warranty  
23 run was simply a contract obligation, if you even want to  
24 call it an obligation, because I think the contract says if you  
25 don't run it you simply make your last payment, if you don't run



1 it so many months after it is ready for it, but it was a con-  
2 tract item and it could be run at any time on Unit 2.

3 Q Do you recall why it was decided not to run this  
4 test on Unit 2 prior to the commercial operation declaration?

5 A Well, as you are aware, Unit 2 was delayed for many  
6 reasons throughout the years, and I'm here to tell you, we looked  
7 all the time at things that may be in our program that weren't  
8 necessary. Obviously that's our job. If they aren't necessary  
9 and they don't provide you something tangible for the operation  
10 and the safety of the unit and you can delay it or defer it or  
11 not do it, why not?

12 And the warranty run on Unit 2 was an academic exercise.  
13 The data had already been taken, I believe, on two occasions in  
14 unofficial warranty runs. When the warranty run occurred, it  
15 meant we had to make a payment to B & W.

16 Q So the data was available and you proved to your-  
17 self internally that the initial warranty run test could be met?

18 A Oh, yes.

19 Q And you decided to delay the official performance  
20 of that particular test.

21 A Not only that, we were able to get 100 megawatts or more  
22 of power out of Unit 2 more than we ever got out of Unit 1.

23 BY MR. EVANS:

24 Q Let me ask a few preliminary questions. Mr.  
25 Heward, you said you participated in a meeting on October 26,

1 1978, a meeting of the Commercial Operation Review Board; is  
2 that correct?

3 A That's correct.

4 Q Did you see the final report of what has been  
5 called the CORB?

6 A The what?

7 Q The CORB.

8 A Is that the Commercial Operation Review Board?

9 Q Yes.

10 A Yes, I saw the final report.

11 Q Would you identify this as that document?

12 (A discussion was had off the record.)

13 A Is there an appendix in this?

14 Q Yes, I believe when you look at the very end.

15 A Okay. Yes.

16 MR. EVANS: Could I ask you to mark this  
17 as Exhibit 1108 and to mark the previous docu-  
18 ment that was shown to Mr. Heward as 1109.

19 (Exhibit 1108 and 1109 are marked for  
20 identification.)

21 MR. EVANS: Just to clarify this, what's  
22 been marked for identification is 1108, titled  
23 General Public Utilities Position Description,  
24 and it's a position description for Mr. R. W.  
25 Heward, Junior, and what has been marked for

1 identification as 1109 is titled Report of Review  
2 Board for the determination of technical and  
3 organizational readiness for placing Three Mile  
4 Island Unit 2 into commercial operation.

5 BY MR. EVANS:

6 Q Mr. Heward, in Exhibit 1109 there is a discussion  
7 of the testing program and it's my understanding that this dis-  
8 cussion is really the minutes of the meeting that was held on  
9 October 26 at the site, and as I will show you, it states in  
10 this section that seven tests that were originally scheduled to  
11 be done at Unit 2 were canceled or eliminated because they were  
12 determined not to involve any Federal, State or local require-  
13 ments. Would you look at that.

14 MR. LIBERMAN: Mr. Evans, don't you want  
15 to also note that the same sentence says that  
16 there were no unresolved problems?

17 MR. EVANS: That's fair.

18 Q My only question is these seven tests, are they  
19 in addition to the Unit Acceptance Test or is the Unit Acceptance  
20 Test one of them?

21 A I don't remember.

22 Q Let me ask if these tests, then, are of the same  
23 nature in your mind as the Unit Acceptance Test.

24 A Yes, that's correct. We did look and I think I even  
25 instigated looking to find out if we had -- and we did this a

1 number of times -- if we had any tests in our program that be-  
2 cause of new information that was available from other units  
3 that had been run or changes in requirements, whatever, that if  
4 we had tests that we could avoid doing, we should omit them from  
5 the program.

6 Q Would it be fair to say, then, that every test  
7 which was run on Unit 2 was necessary to meet a Federal, State  
8 or local requirement?

9 A No.

10 Q What was the criterion for eliminating a test?

11 A Well, the criterion was that it was not a requirement  
12 from some regulatory activity, it was not needed by us to satis-  
13 fy ourself regarding the acceptability of the unit, and possibly  
14 other industry information had come into play in the intervening  
15 years since we put that in the test program that did not require  
16 any further test or data to be taken in that area, so we took  
17 them out. That's a general statement of the criteria. Maybe  
18 Ron Toole can be more specific.

19 BY MR. VANDENBERG:

20 Q Dick, you mentioned earlier that in setting the  
21 schedule for TMI-2, you nearly always accepted the schedule pro-  
22 posed by the project manager, particularly the last part of 1978.  
23 Did the project manager have the responsibility to interface  
24 with Catalytic and B & W and Burns & Roe at that time?

25 A Yes.

1 Q So the project manager was responsible for coor-  
2 dinating the inputs of all those various groups?

3 A That's correct.

4 Q And assessing their impact on the schedule.

5 A Yes.

6 Q Who was the highest management official that  
7 ever made changes or provided specific input to the schedule for  
8 TMI-2?

9 A I'm not sure what answer to give you. It could have  
10 been Mr. Hirst or Mr. Arnold.

11 Q No one above Mr. Arnold.

12 A I don't know. Not that I'm aware of. I'm sure Mr.  
13 Dieckamp was aware of what the schedule was because he partici-  
14 pated in a number of reviews from time to time to understand  
15 what was going on at the site, but I can't say whether he ever  
16 input any information into the schedule.

17 Q When the operating license was granted for Unit  
18 2 in February of 1978, is it your recollection that the terms  
19 of the operating license required certain tests or certain work  
20 to be completed within specified time frames?

21 A No.

22 Q Was there any time condition associated with any  
23 part of the OL?

24 A No.

25 Q Also with regard to the operating license, what



1 was the mood of the company in February? Were people anxious  
2 and in a hurry to get that operating license? You said there  
3 were about 8,000 punch list items outstanding at the time.

4 A No. I believe I said the 8,000 punch list items were  
5 outstanding when Catalytic took over which would have been Sep-  
6 tember of 1977. I believe a good many of the 8,000 had been  
7 worked off by that time. As a matter of fact, I believe that  
8 most of them had been worked off by this time and it certainly  
9 was our desire to get the operating license and proceed with  
10 the test program.

11 Q When you say they were worked off by that time,  
12 you mean they were resolved prior to February 8th of 1978?

13 A Yes, most of them. The majority were.

14 Q Do you recall any meetings with NRC inspectors  
15 from the office of the Inspection and Enforcement regarding the  
16 approximately 8,000 item punch list?

17 A No, but I do recall that there were meetings of NRC in-  
18 spection with our test group to review the outstanding punch  
19 list prior to the operating license. I'm certain that happened.

20 Q Can you describe the substance of those meet-  
21 ings? What were NRC's concerns at that time?

22 A I did not attend the meetings but the concern was the  
23 punch list items remaining needed to be screened to ascertain  
24 if any should hold up issuance of the operating license and in-  
25 deed they agreed with us that there should not be any there that

1 would hold up the operating license issuance.

2 Q Who did that review to determine if there were  
3 any that should hold up the OL?

4 A Who was it, the I & E inspectors?

5 Q It was the I & E inspector that did the screen-  
6 ing?

7 A Yes.

8 Q Rather than you as the licensee?

9 A Wait a minute. I didn't say that. What I said it was  
10 the I & E inspectors came in to verify our decision that those  
11 punch list items should not hold up the operating license.

12 Q I'm a little confused about that February, 1978,  
13 time period. There were still some pre-operational tests to be  
14 completed at the time the OL was granted; is that right?

15 A No, I don't think so.

16 Q And all construction was complete prior to the  
17 granting of the OL?

18 A Yes.

19 Q Did, in your view --

20 A Just a minute. Construction was complete but bear in  
21 mind there are always modifications and punch list items that  
22 have to be worked and at that time there were such things being  
23 worked.

24 Q Do the punch list items relate to pre-operational  
25 test items perhaps?

1 A Some may.

2 Q Let me strike at this directly. Do you think  
3 that when you got the OL for TMI-2 that that, because you then  
4 had to live under a set of tech specs and the conditions of the  
5 OL, did that hinder in any way the completion of punch list items  
6 relating to work normally done before the granting of the OL?

7 A No.

8 Q It didn't.

9 A No.

10 Q Who do you think really had the final say on  
11 when TMI-2 went commercial?

12 A The chairman of the Commercial Review Board, Bob Arnold.

13 Q As I understand the situation, GPU Service Cor-  
14 poration was acting to perform all the power ascension tests and  
15 Metropolitan Edison was the licensee who operated equipment that  
16 needed to be operated to perform a test and responsibility for  
17 the unit/<sup>would</sup>transfer to Met-Ed upon a commercial operation declara-  
18 tion, whereas prior to that point it was the responsibility of  
19 GPU Service Corporation.

20 Am I correct?

21 A No. There's one exception and that is from the time  
22 the OL was issued until commercial, the operator had the respon-  
23 sibility to the Commission to perform under the terms of the  
24 license and that was a responsibility that GPU Service Corpora-  
25 tion could not assume.



1 Q In late 1978 as Manager of Projects you were  
2 working for which company?

3 A GPU Service Corporation.

4 Q Did you see any signs -- well, struggle is too  
5 harsh a word -- but any dichotomy between the service corpora-  
6 tion and Met-Ed, the service corporation perhaps wanting to com-  
7 plete the plan and turn it over to Met-Ed and Met-Ed perhaps  
8 saying "Hey, we don't want to accept this plan until everything  
9 is totally done"?

10 A Met-Ed certainly didn't wish to accept anything until  
11 it was complete. Indeed, they did sign off to accept every sys-  
12 tem in that plant prior to it being completed.

13 Q To your knowledge did officials from Met-Ed ever  
14 say "Hey, wait a minute, I don't think it's ready to turn over  
15 to us"?

16 A Certainly.

17 Q Can you give me a for instance?

18 A No, but in the various system turnovers that we had, I'm  
19 sure there were times when Met-Ed felt that I'm not ready to  
20 take this system because, and the becauses were resolved between  
21 the start-up and test group and the operator, and when they were  
22 resolved they took the system. There was no system shoved down  
23 their throats as far as I know.

24 Q Did Met-Ed raise any of those kinds of concerns  
25 during the month of December, 1978, on any particular system or

1 set of systems?

2 A Not that I know of. No, they didn't have to sign for  
3 turnover and receipt of a system unless they were satisfied that  
4 the punch list was small enough and inconsequential enough to  
5 accept the system.

6 BY MR. EVANS:

7 Q Let me pursue this. Who signed off for Met-Ed?

8 A I'm not sure. I think it was the superintendent but  
9 I'm not certain.

10 Q Mr. Miller?

11 A Yes, I guess Miller was the superintendent then. Yes,  
12 I believe he was.

13 Q If a Met-Ed operator and a GPU test engineer  
14 disagreed over an instruction, what was the next step in making  
15 a decision?

16 A Well, it would go to the project manager and the station  
17 manager, but I don't think that ever occurred.

18 Q You don't believe there was ever a disagreement?

19 A No, I don't. I believe that the two of them sat down  
20 and thrashed it out between them until they got it settled. I'm  
21 reasonably sure on Unit 1 that was the case, and I was a lot  
22 closer to it than obviously --

23 MR. EVANS: Could we go off the record.

24 (A discussion was had off the record.)

25 BY MR. VANDENBERG:

1 Q Dick, I'm going to show you this report which  
2 was marked in a previous deposition as Exhibit Number 1107, the  
3 report by Touche Ross Company. Have you seen that before?

4 A Yes, I believe I have.

5 Q In that report there are inclusions that con-  
6 struction momentum and productivity bottomed out in mid-1977 just  
7 prior to replacement of UE & C by Catalytic and it goes on to  
8 further talk about morale being quite low at that point.

9 Was that true?

10 A Yes.

11 Q Why was that occurring? Do you know?

12 A Well, when you take a group of people working for a com-  
13 pany who have been employed for approximately ten years on a  
14 project and the project comes to a close, why, they realize that  
15 before long they may be out of work and morale drops and that's  
16 something you get at the end of every project.

17 You see, that was another motive for bringing the com-  
18 pletion contractor early so that some of the employees could see  
19 the action of this guy coming in. Some of them were picked up  
20 on these roles because they needed people. They did some local  
21 hiring. I believe that that's a beneficial thing to do.

22 Otherwise, people lose their motivation if they see the  
23 end coming and they tend to lose incentive and you never get the  
24 job done.

25 Q Is this the kind of thing you discussed with Mr.

1     Nagle of UE & C?

2     A       Oh, sure, yes. There is an incentive for a guy who sees  
3     a maintenance contractor for a number of years beyond commercial  
4     operation. If he works hard he may get picked up by that com-  
5     pletion contract.

6            Q       You mean picked up in the sense of being con-  
7     tinued as a maintenance contractor and working with them?

8     A       Yes, that's right.

9            Q       There was also a conclusion in this Touche Ross  
10    report that the project control, at least early on, of TMI-2 was  
11    weak. Did you during your time, both as project manager and as  
12    manager of projects, see a change in the roles among CPU Service  
13    Corporation, Met-Ed, and the constructor, whether it be UE & C  
14    and Catalytic?

15    A       Yes, but that's a complex question. First of all, Met-Ed  
16    was responsible for the project management of that job until  
17    October of '71 so there was a decided change in role at that  
18    time when the service corporation took over responsibility for  
19    the project and I would say that I did see a change in the ef-  
20    fectiveness of the control that we exercised during the period  
21    of construction. I would say our control became greater as time  
22    went on.

23            Q       When you say our, you mean --

24    A       CPU Service Corporation.

1 recess.

2 (Five-minute recess.)

3 BY MR. EVANS:

4 Q Mr. Heward, in what has been marked as Exhibit 1109, the  
5 CORB report, section 2.5.2 of that document contains a discussion  
6 of a screen outage. Do you know when that screen outage was  
7 held at Unit 2?

8 A I'm not sure I recall exactly but I believe it was very  
9 late in the test program, if not after it was completed. I be-  
10 lieve it was -- I'm sorry. I don't remember.

11 THE WITNESS: May I have that.

12 (Counsel producing.)

13 A I have a schedule here or a chronology of the testing  
14 program that tells me the screen outage occurred about mid-Novem-  
15 ber.

16 Q Can you tell me why the screen outage is con-  
17 nected with the test program?

18 A Sure. When you start up a power plant, you place cer-  
19 tain screens in fluid systems so that any residual dirt or for-  
20 eign objects that might be in the system won't go through the  
21 system. They will be taken out of the screens, so after you  
22 have run your components' specified time by the manufacturer,  
23 they are satisfied that all loose dirt and so forth that may  
24 carry away has already carried away and ought to be on the  
25 screens, so there is a time in the test program where you shut



1 down for the screen outage.

2 On Unit 1 it was after the testing was completed. You  
3 take the screens out and you leave them out and that's the re-  
4 lationship of the screen outage with the test program.

5 Q Is it true to say that at TMI-2 the screen outage  
6 was not planned but it was in fact done during a period of down-  
7 time caused by another occurrence?

8 A Well, it's not fair to say it wasn't planned because it  
9 had always been planned.

10 It appears from the chronology I have that there may  
11 have been another problem at that time that caused us to proceed  
12 with the screen outage rather than delay it.

13 Q Can you tell me what is meant in Exhibit 1109  
14 when it says that plans exist to blitz deficiency list during  
15 the screen outage.

16 A Sure. What that means is that during the period of the  
17 screen outage when the equipment is not being run, the plant is  
18 not being run, it's the intention to bring in a larger than nor-  
19 mal number of crafts so that the punch list items can be worked  
20 with a larger force. Possibly it means two shifts overtime,  
21 that kind of thing. It's more than a normal work effort.

22 Q Do you recall in fact at TMI-2 how many addi-  
23 tional people were brought in?

24 A No, I don't.

25 Q But it's your recollection that more people were

1 brought in.

2 A I remember reading that item. I guess I can't truth-  
3 fully say that I remember that more people were brought in. I  
4 think at that time I was spending a good deal of my time on  
5 Forked River and probably that's why I don't remember that.

6 Q Did Ron Toole report to you?

7 A No. Ron Toole reported to the start-up and testing man-  
8 ager and in 1978, late 1978, I believe that was Don Hetrick.  
9 Prior to August of 1977, it was John Barton.

10 Q And both Mr. Barton and Mr. Hetrick reported to  
11 you?

12 A No, they did not.

13 Q Would you please continue the chain of command.

14 A Hetrick reported to Bachofer, I believe, who was the  
15 director of operations, and I believe that was subsequent to  
16 August of 1977.

17 Prior to August of 1977, I recall that John Barton re-  
18 ported to Ron Williams, who was the manager of engineering.

19 Q Let me ask the question this way. How would you  
20 be made aware of concerns that Mr. Toole had in running the test  
21 program?

22 A When I was project manager and Toole is the superinten-  
23 dent, he was under my operational control, although not under  
24 my functional directly, and he was ~~first~~ under Barton's operation-  
25 al control when Barton was the project manager and that's how

1 because there were meetings held with test superintendent at a  
2 high frequency. He participated in our review meetings and he  
3 was continually advising us of things that were of concern to  
4 him. Their trailers on site were immediately adjacent to one  
5 another and it was a close relationship.

6 Q Did Mr. Toole ever report to you major problems  
7 with running the test program as it had been set forth?

8 A If you can restate that question, I am not sure I under-  
9 stand the question.

10 Q Through your operational interaction with Mr.  
11 Toole during the course of these meetings, would he outline the  
12 problems which existed with meeting the test schedule which had  
13 been set?

14 A Oh, yes, but if your question is did he ever come to me  
15 and say "Gentlemen, I can't complete the test program" the answer  
16 is no, he never said that.

17 Q Did he ever say "I need more people to complete  
18 the test program"?

19 A I'm sure he did, yes.

20 Q Did he get the people?

21 A Probably did, yes. I did not provide people for Toole.  
22 I assisted if he had a problem getting people in helping him to  
23 get people.

24 Q Who provided the people?

25 A The people would generally be provided by his immediate



1 supervisor or by contractors. He had significant contractor  
2 assistance from the start-up test group.

3 Q What were the names of the contractors?

4 A United Engineers Constructors, Babcock and Wilcox,  
5 Stearns Roger, Burns & Roe, NUS. There may have been others.  
6 I don't recall.

7 Q All those people from various organizations re-  
8 ported to Mr. Toole?

9 A Yes, they did.

10 Q Do you know if Mr. Toole's start-up test group  
11 was required to work large hours of overtime?

12 A They were.

13 Q Did any of those people ever complain about work-  
14 ing those many hours?

15 A Everybody complains about working overtime.

16 Q Was any consideration given to extending the  
17 test schedule so that larger numbers of people and more hours  
18 wouldn't be necessary?

19 A No. That was never a consideration. The consideration  
20 was that the people that had to work these hours that were ex-  
21 empt people were given additional pay.

22 Q In your opinion did the test program suffer be-  
23 cause of that increased staffing?

24 A Because of the increased staffing?

25 Q Yes.

1 A What increased staffing?

2 Q As I understand what you've told me here today,  
3 more contractors were necessary to assist Mr. Tooie in complet-  
4 ing the test program.

5 A You have possibly interpreted my statement to mean that  
6 as time went on we had to seek the help of additional contractors.

7 Q That's my understanding.

8 A That's not correct.

9 Q Would you correct my understanding.

10 A The original intent of the start-up and test group was  
11 to incorporate the services of all those contractors. GPU  
12 doesn't maintain a permanent start-up and test group of a size  
13 that is required to start up and test the nuclear power plant.  
14 So we supplement our staff with contractor help.

15 Now, where we were shorthanded for some reason or another  
16 and we needed more people, we would get them from these con-  
17 tractors, but the personnel demand rose and fell throughout the  
18 test program, depending on what was going on and during the  
19 period when we had the mainstream safety valve outage, the de-  
20 mands on the test people slacked off considerably so they had  
21 a substantial period there when they were not working the same  
22 hours that they would have otherwise.

23 Q Did any test engineers other than Mr. Toole com-  
24 plain to you directly about the test schedule or the working  
25 conditions that they were subjected to?

1 A Yes, I believe I recall complaints about the test sched-  
2 ule and the extension of the project schedule. I don't recall  
3 that anybody complained about the working conditions.

4 Q What was your response to the complaints?

5 A There isn't much one can do about the problems one runs  
6 into except fix them and let me tell you, when a guy signs on  
7 for a test program, the people that we hired have been through  
8 it before. They know what to expect. I know what to expect  
9 because I've been doing this kind of thing for over 20 years.  
10 Some of these guys haven't been doing it that long but they know  
11 what to expect.

12 Q Does the name Rick Butler mean anything to you?

13 A Say again?

14 Q Rick Butler.

15 A No. Who is Rick Butler?

16 Q That's not important for the question.

17 Mr. Heward, did either UE & C or Catalytic ever  
18 provide GPU or GPUS with a certificate of completion?

19 A I don't know.

20 Q In your experience with these units, is that  
21 normally the case that after completing the construction a  
22 certificate of completion of construction is provided?

23 A I don't ever recall having seen such a thing except with  
24 individual contractors on the Forked River project. When a sys-  
25 tem is completed and walked for punch list items and they were

1 walked from end to end for punch list items, paint on pipe, nuts  
2 not tight on the hangers, all that kind of thing, and one gets  
3 through all that, it's a superfluous thing to ask for a certifi-  
4 cate of completion because we take it piecemeal system by system,  
5 building by building, so the answer on systems and buildings is  
6 yes, we get that. That's part of the turnover package, but  
7 there's no such certificate that I can recall ever seeing that  
8 says yes, I built you one plant; it's all done, because it wasn't  
9 all done. They left before it was finished.

10 Q Who is they?

11 A UE & C.

12 Q What about Catalytic?

13 A They haven't left yet.

14 Q Would you characterize a portion of their work  
15 as being construction work?

16 A Yes, I would.

17 Q For that construction work they do not provide  
18 a certificate.

19 A Same thing. It's building turnover, yes.

20 Q No formal piece of paper.

21 A I don't think so.

22 Q As both project manager and manager of projects  
23 with some oversight responsibility for Three Mile Island-2,  
24 would you be aware of union problems that the constructors were  
25 having?

1 A Yes.

2 Q Do you know if there were any problems in attract-  
3 ing and holding the necessary amount of craft labor in building  
4 Unit Number 2?

5 A There was a point in time when the local crafts could  
6 not supply enough pipe fitter welders and we had to request them  
7 to go outside their local and bring welders in from Baltimore  
8 and New York and other places like that and you run into that  
9 with a small labor pool and it does happen and you have to make  
10 other arrangements.

11 Q Who took the responsibility for recruiting those  
12 additional people?

13 A The crafts did that. They did that when UE & C went to  
14 them and said we are short by this much. You've not been able  
15 to supply them. I require you to have other means to supply  
16 these people. They did. They go to other locals and get the  
17 people.

18 Q Once that additional recruiting has been done,  
19 there was satisfactory staffing?

20 A Yes.

21 Q Let me ask just a few questions about what we  
22 previously discussed, the April 23rd, 1978 transient. Were you  
23 involved in the discussion following that transient to replace  
24 the Lonergan valves?

25 A Yes.



1 Q Who would you say made that decision?

2 A My recollection is that between recommendations made by  
3 Ron Williams and by me that Bob Arnold made that decision.

4 Q Can you describe for me the contacts that you  
5 had, if any, with the Lonergan Company itself following the  
6 transient.

7 A Shortly after the transient, a week or two later, I con-  
8 ducted a meeting with the president of Lonergan Company, their  
9 chief engineer and others to ask them what their opinion was of  
10 the failure.

11 Subsequent to that, there were numerous phone calls. I  
12 believe I participated in one or two meetings where their repre-  
13 sentatives came here to talk to us and subsequently participated  
14 in a meeting regarding a litigation with Lonergan.

15 Q Following the transient, it's my understanding  
16 that a number of valves were removed and sent to the Lonergan  
17 Company; is that correct?

18 A That's correct.

19 Q Do you recall approximately what time period this  
20 was

21 A May.

22 Q Was the Lonergan Company told that it had a cer-  
23 tain period of time in which to complete its analysis of the  
24 valves to your knowledge?

25 A Typically, to my knowledge -- I'm really guessing be-

1 cause typically we assess a problem like that and we would tell  
2 them, Look, here is a problem that we want you to look at and  
3 we would like to have an answer in so many days, so many weeks,  
4 and I am quite sure we did that, but if the question is did they  
5 have a drop dead date to have the things fixed, the answer is  
6 no, because there's no way you can give them that.

7 Q Did the company have a drop dead date for Loner-  
8 gan?

9 A Did we have a drop dead date for Lonergan?

10 Q A date at which it would no longer consider the  
11 ability of Lonergan valves to fulfill their function.

12 MR. LIBERMAN: Can I interrupt just a  
13 second. Unless it's absolutely indispensable  
14 to your interrogation, your deposition, I'm  
15 troubled because we have pending litigation with  
16 the Lonergan Company. I don't want to foreclose  
17 any avenue but I have trouble because these are  
18 areas that I think Mr. Heward has not been in-  
19 volved.

20 MR. EVANS: Well, Mr. Heward, I will in-  
21 struct you, too, only to answer questions which  
22 you have personal knowledge of and I don't want  
23 to push you beyond what you were involved in  
24 personally, but I am interested to know if there  
25 was a date to your knowledge after which you

1 would not consider, the company would not con-  
2 sider the Lonergan valves.

3 Now, let me state on the record, if you  
4 would rather that Mr. Heward would not answer  
5 that question, I can accept that.

6 MR. LIBERMAN: I want to cooperate in  
7 every way that I can. I can tell you that there  
8 is correspondence in which I participated in the  
9 preparation of which Mr. Heward was not involved  
10 that did exercise contractual remedies against  
11 Lonergan Company.

12 MR. EVANS: Let me withdraw the question.  
13 Off the record for a minute.

14 (A discussion was had off the record.)

15 BY MR. EVANS:

16 Q Mr. Heward, you've testified earlier today that  
17 you didn't have any knowledge of rate base matters or tax mat-  
18 ters or other general financial considerations which affected  
19 completing Unit Number 2 by the end of 1973. Is that a correct  
20 statement of what you've told us?

21 A Other than the fact that I was aware that while the plant  
22 was under construction that AFDC was collected and it ceased to  
23 be later on, I think that's a fair statement, yes.

24 Q Let me follow that up for a minute. How do you  
25 perceive AFDC? Is it a problem for you as either the project

1 manager or manager of projects?

2 A No.

3 Q Let me ask if during the time period, that is  
4 the last six months of 1978, you attended any meetings of GPUS  
5 Board of Directors and officers?

6 A No. I did have meetings with Bob Arnold who is an of-  
7 ficer. Possibly others from time to time but not on that sub-  
8 ject.

9 Q Did you have any meetings during the time period  
10 with Mr. Holcombe?

11 A No.

12 Q Did you have any meetings during the time period  
13 with Mr. Graham on this topic?

14 A No.

15 BY MR. VANDENBERG:

16 Q Mr. Heward, the original estimated date for com-  
17 pleting TMI-2, I think, was quite early 1975 or so.

18 A I don't remember. It was a lot earlier than 1973, that's  
19 for sure.

20 Q In the Touche Ross report the in-service dates  
21 are often nearly always given in terms of May of a given year  
22 and this is information that I presume Touche Ross received from  
23 GPU. Why was that that in-service date was always expressed as  
24 May or May 31 of a given year?

25 A I could only speculate.

1 MR. LIBERMAN: Can I call to your atten-  
2 tion the fact that there was discussion of that  
3 matter in the cross-examination of Touche Ross  
4 and rebuttal testimony in the Pennsylvania pro-  
5 ceeding which I furnished you which you may want  
6 to look at. At least I believe I furnished it  
7 to you.

8 BY MR. EVANS:

9 Q Mr. Heward, following the replacement of the  
10 Loneragan valves, what I understand to be Dresser valves, did you  
11 notice a change in the attitude either at the site or here at  
12 corporate headquarters regarding Unit Number 2?

13 A I don't think so.

14 Q Was there more of a desire to complete it in  
15 1978 than before?

16 A During 1978 there was always a desire to complete it in  
17 1978. Originally in 1978 the in-service date was May or June.

18 Q Let me ask it this way. Were people extremely  
19 disappointed by the failure of the Loneragan valves?

20 A Certainly. Of course. That's a terrible disappointment.

21 Q I would like to clarify one thing. We were  
22 talking earlier today about the test program and the tests which  
23 were listed in one form or another and I am going to attempt to  
24 distinguish between the various lists of tests to be performed.  
25 It's my understanding there was a list of tests which GPIS had



1 itself established to be run; is that correct?

2 A Yes.

3 Q There was another list, maybe even an identical --  
4 excuse me.

5 A There was no other list. There was a single list.

6 Q Are you aware of commitments which were made to  
7 the Pennsylvania Public Utilities Commission to complete certain  
8 tests?

9 A I don't think so.

10 Q Are you aware of any regulatory impact other  
11 than in dealings with the NRC to complete the test program at  
12 Unit 2?

13 A I have a vague recollection of discussion -- no. I don't  
14 have any recall on that, no.

15 Q Are you aware that there were tests specified  
16 in the final safety analysis report which is presented to the  
17 NRC?

18 A Yes.

19 Q Is that of tests identical to the list of tests  
20 which are listed in the internal GPUS procedures?

21 A No, I don't think so. I think the test program itself  
22 very likely had more tests in it than were listed in the final  
23 safety analysis report. The commission is interested in seeing  
24 that you committed to certain tests and those tests must be  
25 addressed to the safety analysis report. The test program over-

1 all is established by us and a decision to do so many trips  
2 from certain power levels is ours, so long as you meet the var-  
3 ious regulatory requirements, so we produce the test program  
4 to suit ourself.

5 Q So to clarify this on the record, if you will  
6 agree with me that the FSAR contains one list of tests and Met-  
7 Ed's internal procedures may be another list of tests, those  
8 may not be an identical list.

9 A That's probably right, yes.

10 Q Were you present for the full power generator  
11 trip test at TMI-2?

12 A No.

13 Q Do you know when it was performed?

14 A From the appearance on the chronology, I would have to  
15 say it was done in either November or December but I do not  
16 know when.

17 Q Let me attempt to refresh your recollection.  
18 Would December 28, 1978, be a realistic date for that test?

19 A It may very well be, yes. It appears that we were at  
20 full power up to the 28th, so that may be, yes.

21 Q Can you tell me where the full power generator  
22 trip test fits into the FSAR lists of test to be performed?

23 A No.

24 Q Can you tell me where it fits into the GPUS  
25 internal list of tests to be performed?

1 A Well, it certainly doesn't fit in prior to going to 100  
2 percent power. The power escalation program is one that occurs  
3 in steps up to full power so it would certainly be in the latter  
4 stages of the test program, only after achieving the 100 percent  
5 power.

6 Q In your opinion is it normally necessary to  
7 successfully complete the full power generator trip test in  
8 order to declare a unit in commercial operation?

9 MR. LIBERMAN: Can I object to the ques-  
10 tion for clarification there. Commercial opera-  
11 tion in terms of GPU corporate procedure or --  
12 is that what your reference is or some other  
13 connotation?

14 MR. EVANS: Yes. My reference is the  
15 report of the Commercial Operation Review Board  
16 criteria.

17 A For nuclear power plant, you want to do that test in  
18 your test program to verify that it's an acceptable transient  
19 to the plant, and I would say that it's normally programmed to  
20 be done during the test program and therefore prior to commercial  
21 operation, yes.

22 Q If I understand what you've said, it's your opinion  
23 that the entire test program and, again, tying this to the  
24 GPUS internal list of tests, the internal test program, did that  
25 entire test program should be completed prior to the commercial

1 operation. Is that accurate?

2 A Only to the extent that you consider the test to be a  
3 mandatory test. Prior to making the plant available commercially  
4 I think that you might consider putting a plant into commercial  
5 operation at a power level less than 100 percent and take an  
6 outage later on and complete the higher level testing. I think  
7 that's a possibility. It's not something we did but I think  
8 it's something you could do.

9 For example, I don't see why you couldn't go up to 50 or  
10 75 percent power range testing and if the power were needed, run  
11 the plant at that level first or a reduced level for a period of  
12 time in commercial operation and then take an outage and complete  
13 your higher power tests. I think that's possible. I don't know  
14 what makes it impossible.

15 (A discussion was had off the record.)

16 BY MR. EVANS:

17 Q Just one last question with respect to the full  
18 power generator trip test. Were you involved in any discussions  
19 as to the postponement of that test beyond 1978?

20 A I don't remember that.

21 BY MR. VANDENBERG:

22 Q Dick, did anybody at any time express to you  
23 concern that the test program was being pursued at too quick a  
24 pace or was being rushed or that the tests were just being sched-  
25 uled in too short a time?



1 A Well, let me tell you that when you schedule a thing  
2 like this, the right way to do it is aggressively. You should  
3 bring the plant along as fast as you can.

4 When I say that, I mean within the context of it being  
5 safe to do so and ready to do so. Now, there is a full spectrum  
6 of what people think is necessary to be ready to do so. You are  
7 always going to get a diversification of opinion as to whether  
8 you are going too slow or too fast, I believe.

9 I've seen that for many years and particularly when you  
10 have people that have a lot of procedures to get ready, it's  
11 more comfortable to give them more time to get the procedures  
12 ready. But if you proceed and review the things as you go along  
13 and make sure that what they have is adequate to proceed rather  
14 than what makes everybody real comfortable, I think that's the  
15 way to proceed with completion of the plant.

16 Q Are you sort of saying that schedules are made  
17 to be broken?

18 A No, I don't mean that, but what I think you should do  
19 is schedule the program in a way that you think you can meet it  
20 without having serious things go wrong. My recollection of how  
21 the Unit 2 program was scheduled is it fit the actual conditions  
22 on Unit 1 and I think if you go look at the schedules that we  
23 made on Unit 2, the durations were taken from what we achieved  
24 on Unit 1. We had a very smooth test program on Unit 1, com-  
25 paratively speaking.



1           So I'm sure you can find a lot of people who think the  
2 thing was pushed too fast, but we had the history of doing it in  
3 that time period on Unit 1.

4           Q           You think, then, that the differences between  
5 Unit 1 and Unit 2 weren't/<sup>of</sup>any significant, wouldn't in any sig-  
6 nificant way affect test time periods or schedules?

7 A           Well, we had perturbations in starting up Unit 1 but we  
8 didn't have any real big items such as the safety valve problem  
9 affecting Unit 1.

10          Q           And also with regard to NRC, did you know of any  
11 employees or workers at the site who expressed a concern to say  
12 something to an I & E inspector but then declined for one reason  
13 or another?

14 A           I only know of one case with it. I guess the case I know  
15 of the guy did talk to or write a letter to the I & E inspector  
16 and we posted the notices on the site conspicuously to tell people  
17 that that was their right. I know of no case where a guy wanted  
18 to and was afraid to and didn't do it.

19          Q           Which case are you referring to where it hap-  
20 pened?

21 A           We had a report from an employee that had been there some  
22 years ago who said that he had drilled a hole inside the contain-  
23 ment and had hit reinforcing steel or something like that and he  
24 didn't feel the anchor range was quite right. I don't remember  
25 all the details.

1 Q This is the one that was subsequently investi-  
2 gated by I & E in March of 1978?

3 A I don't know when but it might have been March of 1978.  
4 It was investigated and I believe we did find that we had a  
5 faulty anchor and fixed it.

6 MR. VANDENBERG: I have no further ques-  
7 tions.

8 MR. EVANS: Mr. Liberman, do you have  
9 any questions or remarks you would like to make  
10 on the record?

11 MR. LIBERMAN: I want to be sure you  
12 were furnished with a copy of the document called  
13 Three Mile Island Determination of Technical and  
14 Organizational Readiness for Placing Three Mile  
15 Island Unit 2 into Commercial Operation dated  
16 October 26, 1978.

17 MR. EVANS: I believe we have been fur-  
18 nished a copy of that. Would you like me to put  
19 it into the record?

20 MR. LIBERMAN: No, I just wanted to be  
21 sure that you knew the document existed because  
22 you hadn't mentioned it and you did refer to an  
23 appendix which was in a sense a follow-up on  
24 this document.

25 MR. EVANS: Off the record.

(A discussion was had off the record.)

MR. EVANS: I've asked Mr. Liberman if he had anything to add.

MR. LIBERMAN: I guess I would like to add one other thing. I think the term "commercial service" has been used in such a variety of ways that I would like to clarify that this is now one of four contexts in which it has been used.

The document Mr. Heward identified previously, which I believe is document 1109, referred to commercial service in the sense it was used by the GPU Service Company Internal Commercial Operation Review Board. It is a document which has no governmental connotation as such.

The term commercial operation has been used also as a shorthand for the time when a unit will be transferred from construction work in progress to utility plant in service for FERC accounting purposes and there was an earlier reference to that and to the Electric Plant Instruction 9D.

The term commercial service is used also on a different context in terms of certain tax treatment for depreciation and investment tax

1 credit purposes. In that context is is a collo-  
2 quialism. It is not a term which is used in the  
3 regulations under the Internal Revenue Service.

4 Finally it is used in terms of again a  
5 shorthand for the status for interconnection  
6 dispatching purposes by the PJM.

7 I would like to clarify that my under-  
8 standing is that all of Mr. Heward's testimony  
9 has been directed to the first of these senses  
10 and not to any others; is that correct?

11 THE WITNESS: Yes, that's correct.

12 MR. EVANS: At this time, Mr. Heward,  
13 I would like to thank you for being present here  
14 today. We are going to recess this deposition  
15 rather than terminate it on the possibility that  
16 we might want to ask you additional questions  
17 at a later time. I would say we will make every  
18 attempt not to need to ask additional questions,  
19 but should that become necessary, we would like  
20 to have you available to us.

21 Thank you very much.

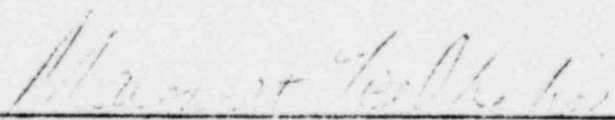
22 (The deposition is recessed at 5:30 p.m.)

23 \* \* \* \* \*

CERTIFICATE

I, MARGARET TEILHABER A Notary Public and Certified Shorthand Reporter of the State of New Jersey, do hereby certify that the foregoing is a true and accurate transcript of the proceedings in the above-entitled matter as reported by me stenographically on the date and at the time and place hereinbefore set forth.

I DO FURTHER CERTIFY that I am neither of counsel nor attorney for any party in this action and that I am not interested in the event nor outcome of this litigation.

  
A Notary Public of New Jersey