

ORIGINAL UNITED STATES
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF:

METROPOLITAN EDISON COMPANY

(Three Mile Island Nuclear
Station, Unit No. 1)

DOCKET NO: 50-289-SP
(Restart Remand on
Management)

LOCATION: BETHESDA, MARYLAND

PAGES: 32091 - 32191

DATE: FRIDAY, DECEMBER 21, 1984

TR-01 o/p

Add 1 copy to ASLBP, E/W-439

ACE-FEDERAL REPORTERS, INC.

Official Reporters
444 North Capitol Street
Washington, D.C. 20001
(202) 347-3700

8412260219 841221
PDR ADOCK 05000289
T PDR

NATIONWIDE COVERAGE

CR21438.0
BRT/sjg

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

-----X
:
In the Matter of: :
:
METROPOLITAN EDISON COMPANY : Docket No. 50-289-SP
:
(Three Mile Island Nuclear : (Restart Remand on
Station, Unit No. 1) : Management)
:
-----X

Nuclear Regulatory Commission
Fifth Floor Hearing Room
4350 East-West Highway
Bethesda, Maryland

Friday, December 21, 1984

The hearing in the above-entitled matter came on for
hearing, pursuant to adjournment, at 9:00 a.m.

BEFORE:

JUDGE IVAN W. SMITH, Chairman
Atomic Safety and Licensing Board

JUDGE SHELDON J. WOLFE, Member
Atomic Safety and Licensing Board

JUDGE GUSTAVE A. LINENBERGER, JR., Member
Atomic Safety and Licensing Board

APPEARANCES:

On behalf of the Licensee:

ERNEST BLAKE, ESQ.
WILBERT WASHINGTON II, ESQ.
DEBORAH B. BAUSER, ESQ.
JOHN NASSIKAS, ESQ.
Shaw, Pittman, Potts & Trowbridge
1800 M Street, N.W.
Washington, D. C. 20036

1 APPEARANCES (Continued):

2 On behalf of Three Mile Island Alert:

3 JOANNE DOROSHOW, ESQ.
4 The Christic Institute
5 1324 North Capitol Street
6 Washington, D. C. 200367 LYNNE BERNABEI, ESQ.
8 Government Accountability Project
9 1555 Connecticut Avenue, N.W.
10 Washington, D. C. 2003611 LOUISE BRADFORD, ESQ.
12 Three Mile Island Alert
13 315 Peffer Street
14 Harrisburg, Pennsylvania15 On behalf of the Nuclear Regulatory
16 Commission Staff:17 MARY E. WAGNER, ESQ.
18 JACK R. GOLDBERG, ESQ.
19 Office of the Executive Legal Director
20 J. J. PERSENSKY
21 Commission Staff
22 Nuclear Regulatory Commission
23 Washington, D. C. 20555

24 On behalf of the Commonwealth of Pennsylvania:

25 THOMAS Y. AU, ESQ.
Bureau of Regulatory Counsel
THOMAS E. POLLOG
Bureau of Radiation Protection
Department of Environmental Resources
101 South Second Street
503 Executive House
Harrisburg, Pennsylvania 17120

On behalf of UCS:

WILLIAM S. JORDAN III, ESQ.
JON SEVRANSKY
Harmon, Weiss & Jordan
2001 S Street, N.W.
Suite 430
Washington, D. C. 20009

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

C O N T E N T S

WITNESSES

DIRECT CROSS REDIRECT RECROSS EXAM

William Kimel					
Robert Uhrig					
Julian Christensen					
Frank Kelly					
Eric Gardner					
by Ms. Bauser			32095		
by Ms. Wagner (Resumed)				32096	
by Judge Linenberger					32101
by Judge Wolfe					32132
by Judge Smith					32137
by Mr. Jordan				32140	
by Judge Smith					32148
by Mr. Jordan				32149	
by Ms. Bradford				32163	
by Mr. Au				32170	
by Mr. Jordan				32173	
by Ms. Wagner				32174	
by Mr. Jordan				32175	
by Mr. Au				32181	

RECESSES:

A.M. - 32177

E X H I B I T S

NUMBER-DESCRIPTION

IDENTIFIED RECEIVED

Exhibit Table A-2		32095
(Description on proceeding page)		

P R O C E E D I N G S

1

2

Whereupon,

3

WILLIAM KIMEL,

4

ROBERT UHRIG,

5

JULIAN CHRISTENSEN,

6

FRANK KELLY,

7

and

8

ERIC GARDNER

9 resumed the stand, having been previously duly sworn, were
10 examined and testified further as follows:

11 JUDGE SMITH: Good morning. Is there any
12 preliminary business?

13 MS. BAUSER: Yes, Judge Smith. I discovered
14 last night that the copy of the testimony of the OARP,
15 with the attached special report, that was introduced into
16 evidence has in it two page 1s, which is actually number --
17 page 85, of the special report, of their table of document
18 references. And then a page 3; and is missing the page,
19 table A2, page 2, or page 86 of the report. I would like
20 to make that correction now, if I could, with the
21 committee.

22 JUDGE SMITH: It's impossible -- you can just
23 correct it for the record, yes.

24 MS. BAUSER: I would like to have it introduced
25 now in the record and I have copies available for the

1 parties and the reporter and what not.

2 REDIRECT EXAMINATION

3 BY MS. BAUSER:

4 Q Dr. Uhrig, I have in front of me a one-page
5 document which has in the right-hand corner "table A-2,"
6 and the number "18," "R.A. Knief memorandum of May 24,
7 1984, INPO self-evaluation reports" is the first entry on
8 the document. On the bottom of the page it says "page 86."
9 Do you recognize this document?

10 A (Uhrig) Yes, ma'am.

11 Q Is this the second page of the list of documents
12 that are part of your special report?

13 A (Uhrig) Yes, ma'am, it is.

14 Q When you identified your special report two days
15 ago, and swore to its accuracy, were you including this
16 page?

17 A (Uhrig) It was my intent to include it.

18 MS. BAUSER: I would ask that this one-page
19 document be introduced into the record at this point,
20 Judge Smith; bound into the record.

21 JUDGE SMITH: There are no objections? The page,
22 table A-2 is received.

23 (Table A-2 received.)

24 (Table A-2 follows:)

25

TABLE A-2

18. R. A. Knief memorandum of May 24, 1984 INPO Self-Evaluation Reports
19. D. A. Ross memorandum of January 23, 1984, DDL Report Summary
20. An Assessment of the GPU Nuclear Corporation Organization and Senior Management and Its Competence to Operate TMI-1, by Admiral H. G. Rickover, USN, November 19, 1983.
21. Follow-Up Report of An Assessment of the GPU Nuclear Corporation Organization and Service Management and Its Competence to Operate TMI-1 by Admiral H. G. Rickover, USN, April 19, 1984.
22. Nuclear Personnel Training after TMI-2: The GPUN Response, by R. L. Long, R. P. Coe, D. P. Gaines, and R. A. Knief, May 1983.
23. Statement of William G. Kuhns, Chairman and Chief Executive Officer of General Public Utilities Corporation before the Subcommittee on Energy Research and Production, Committee on Science and Technology, U.S. House of Representatives, Tuesday, May 22, 1984.
24. Licensee's Comments on ALAB-772 (Management Phase), June 1984.
25. ALAB Decision, May 24, 1984
26. INPO Letter to R. P. Coe, Re: GPUN TSD Review October 5, 1983.
27. "Control of Examinations for Units 1 and 2", October 23, 1982.
28. Memorandum from B. P. Leonard, Operator Training Manager to Operator Training Section, January 27, 1984.
29. "Operator Training Instructor Indoctrination/Qualification Training Program", Rev. 1, April 26, 1983.
30. "GPUN Instructor Development Program" Draft May 15, 1984.
31. "TMI Training Department Instructor Evaluation Procedure", Rev. 1, August 9, 1983.
32. Letter from H. D. Hukill to R. C. DeYoung, March 30, 1984.
33. How GPU Has Responded to TMI-2", Jan.-Feb., 1984 Issue of GPU Nuclear Today.
34. "Looking Beyond the Lessons: A Utility Manager's Perspective", Philip R. Clark, Pres. & CEO, GPUN, Nuclear News, April, 1984.
35. "Behavioral Training Objectives for Plant Simulation at TMI", R. A. Knief, C. A. Irizarry and D. J. Boltz, Trans. American Nuclear Society, 139, 283 (1981).
36. "Training Requirements at TMI: Harbinger for the Nuclear Industry?", R. A. Knief, R. L. Long, S. L. Newton, Vol. 45, 1983 Winter Mtg. Trans. American Nuclear Society, 45, 195 (1983).

1 MS. BAUSER: That's the only preliminary I have.

2 JUDGE SMITH: Ms. Wagner, have you completed
3 your examination?

4 MS. WAGNER: Just a couple of more questions.

5 RE-CROSS-EXAMINATION (Resumed.)

6 BY MS. WAGNER:

7 Q Gentlemen, at the close of my examination we
8 discussed whether you spoke with Mr. Frederick prior to
9 the issuance of your special report. I don't know whether
10 you had an opportunity to think any more about whether you
11 may have spoken with him or not and I would like to find
12 out whether you have any additional thoughts.

13 A (Uhrig) Let me at least offer a plausible
14 explanation. There were, on the first day at Three Mile
15 Island, a number of people who were brought in either by
16 Dr. Long or Dr. Coe, and said: This is so-and-so, and
17 his position is such-and-such. And it's so-and-so that
18 Mr. Frederick was one of those. But I have no
19 recollection of talking to him. In discussing with
20 TMI personnel they indicated that he was at the control
21 center that day. But none of us have any recollection,
22 other than the one reference in the record, of talking to
23 him. And that's probably -- that's all I can say --
24 that's probably why his name was included.

25 Q Can you give me an explanation as to why, if you

1 were preparing an assessment of licensed operator training
2 at TMI-1, why you would not have spoken to Mr. Frederick,
3 who, at that time, was supervisor of licensed operator
4 training?

5 A (Uhrig) Just simply that, in the confusion that
6 first day it -- we had a pile of documents handed to us.
7 We were trying to get a grasp of what the task was
8 involved. I would describe the situation as sort of an
9 information overload at that particular point, and it --
10 that's probably the only explanation I can offer.

11 Q And that would be your explanation for the three
12 days you were up there initially; is that right? You were
13 speaking about the first day?

14 A (Uhrig) The first day. And -- I don't know
15 whether Mr. Edwards -- Mr. Frederick was around the second
16 day or not. And I was not there the third day.

17 Q And I gather no one recalls asking to speak with
18 the supervisor of licensed operator training prior to
19 preparing your special report?

20 A (Uhrig) I don't recall it.

21 A (Christensen) I did not.

22 A (Uhrig) No.

23 Q Was there any thought given as to whether it
24 would be important or not to speak with the supervisor of
25 licensed operator training in the course of your work?

1 A (Uhrig) I don't recall. I guess all I can say
2 is that we did talk to Mr. Maag later, who now holds that
3 position. But we did not speak to Mr. Frederick other
4 than the one reference made yesterday, prior to the
5 preparation of the report.

6 Q Could you tell me --

7 A (Uhrig) Let me just add one more thing.
8 Mr. Frederick at that time was not functioning in that
9 capacity. He was assigned full-time to preparation for
10 the TMI-1 examination.

11 Q Who was functioning in the capacity, then, of
12 supervisor of licensed operator training?

13 A (Uhrig) Basically, I guess, Dr. Coe, or Bruce
14 Leonard -- one of the two. We did talk to Mr. Leonard.
15 We talked to Sam Newton and we talked to Dr. Coe.

16 Q Was the fact that, at the time you were up at
17 Three Mile Island in June, that Mr. Frederick was not
18 operating in that capacity, was that -- do you think --
19 responsible? The reason why you did not speak with him?
20 Is that what you are saying? Or --

21 A (Uhrig) It may have been. I just -- I don't
22 have any real explanation for what happened.

23 Q Could you tell me when it was in time that you
24 spoke with Mr. Maag?

25 A (Uhrig) The October timeframe? October-November,

1 that general timeframe.

2 Q Could you summarize very briefly the general
3 topics of the conversation you had with Mr. Maag, and
4 which committee members spoke with him?

5 A (Uhrig) I spoke to him, and who else?

6 A (Christensen) I did.

7 A (Kelly) I did.

8 A (Christensen) I attended one of his classes and
9 spoke to him at that time.

10 Q Dr. Gardner? You indicated?

11 A (Gardner) I did the same. I attended class and
12 spoke to him.

13 A (Kelly) I did also.

14 Q And would you note Mr. Kimel --

15 A (Kimel) I also attended classes and talked to
16 him.

17 A (Uhrig) I did not attend the class.

18 A (Kimel) I already testified to that fact.

19 Q Did you speak with him as a group?

20 A (Uhrig) No. No. It was an individual
21 conversation.

22 Q I'm not sure whether you answered my question,
23 which was to summarize the general nature of the
24 conversation.

25 A (Uhrig) Oh. All I can give you is a general

1 recollection of what took place, but basically it was a
2 discussion of the position that he was in, what his
3 background was, what his qualifications for the position
4 was; what his overall, general approach to the position
5 was, had he had previous experience in this kind of role --
6 it was that kind of a conversation. It did not get into
7 the specifics of: Are you going to increase the content
8 of this course and change -- decrease the content of that
9 one? Are you going to emphasize anything? It did not get
10 into that. But it was a general conversation of him, his
11 qualifications, and his general approach.

12 Q About how long did this conversation last?

13 A (Uhrig) About 30 minutes.

14 Q And how about the other members of the committee?

15 A (Kelly) Well, I spoke to Mr. Maag in a similar
16 fashion for about 30 minutes. But I also -- since I had
17 just come out of his class, which was a requalification
18 class -- I asked him how he felt that the operators
19 perceived the requalification training at that time --
20 just general perception.

21 Q And this was all in the October timeframe; is
22 that correct?

23 A (Kelly) I spoke to him in August.

24 Q Oh, sorry.

25 A (Christensen) I spoke to him also. But this

1 was -- I attended one of his classes and I spoke to him
2 about the conduct of the class and I sat through the class
3 and observed it. As I recall, we talked a little
4 afterward. That was in August. And, thinking about it, I
5 think the -- probably the reason I didn't speak to
6 Mr. Frederick, I may even have -- I wouldn't swear I
7 didn't, I don't recall it -- was I was concentrating on
8 the simulator program. And so people like Irizarry, and
9 people who were concerned with the B&W program, were my
10 primary interest.

11 MS. WAGNER: Thank you. Those are all the
12 questions I have.

13 JUDGE LINENBERGER: Gentlemen, the board has
14 reviewed all of your documented experience and
15 qualifications accompanying your testimony, and I would
16 say that we are -- we feel you certainly have, all of you
17 have very impressive credentials. I would like to delve
18 into a few areas of ignorance on my part, and see if you
19 can help me a bit.

20 EXAMINATION

21 BY JUDGE LINENBERGER:

22 Q In the first place, let me just get at one minor
23 point here. Your prefiled testimony is dated November 1,
24 but I should like to inquire, first, about what timeframe
25 you first realized that you would be asked to file

1 testimony in this proceeding, and approximately what time
2 period did you devote to preparing this testimony? And
3 I'll ask that of you, for starters, Dr. Uhrig.

4 A (Uhrig) The first time that I had direct
5 knowledge that we would be involved in this proceeding was
6 the middle of August, when we met at Three Mile Island.
7 As indicated earlier in the testimony, the report that was
8 prepared in the May-June timeframe was intended primarily
9 for submission to the Commission in conjunction with the
10 then-pending meeting dealing with restart.

11 The amount of time that we have spent collectively,
12 including the preparation of the report and preparation
13 for this testimony is in the vicinity of, today, 200
14 man-days, of which somewhere between 30 and 40 was devoted
15 to the preparation of the report in the May-June timeframe.
16 So, in that vicinity of 160 to 170 man-days have been
17 devoted to preparation by all the committee members in the
18 August to December timeframe. The number 190 is used in
19 our testimony --

20 Q Yes, sir.

21 A (Uhrig) -- but there have been additional
22 man-days expended since then.

23 Q I believe this was touched on -- I believe this
24 was touched on yesterday, but let me touch on it again for
25 my own clarification. The special report which was

1 concluded in June -- I'm trying to find a page reference
2 here -- I believe it's page 3 -- indicates that the there
3 were certain -- about the middle of the page, the
4 inclusion of the first full paragraph on page 3 --
5 indicates that there were certain in-depth inquiries that,
6 at least time constraints here on the special report
7 didn't permit you to go into, and the question of whether
8 they would be undertaken after this special report was
9 completed, you indicate is a matter for the licensee to
10 decide at a later date.

11 The prefiled testimony and certain areas of examination
12 the last couple of days would indicate that, indeed, a
13 fair amount of in-depth investigation has been conducted
14 since that special report.

15 Was that further work -- well, let me ask the question
16 a different way.

17 What were the circumstances that caused you gentlemen
18 as a group to go further, beyond the efforts discussed in
19 the special report?

20 A (Uhrig) At the meeting on August, I believe it
21 was 13th, where we met with our counsel for the first time,
22 we were told that we would be involved in this hearing
23 process. We were invited to, individually, to spend as
24 much time as possible undertaking the kind of in-depth
25 investigation of the program as each of us could spend

1 consistent with our other responsibilities.

2 The overall intent of this in-depth investigation was
3 to give us in-depth knowledge in the areas that we have
4 testified about, or we expected that we would testify
5 about; and to confirm or refute the observations that we
6 had made in the special report.

7 We recognized that the special report was based
8 exclusively on -- well, not exclusively but certainly to a
9 large extent, on material provided to us by GPU management
10 and by orientation discussions, orientations by and
11 discussions with GPU management.

12 We felt that we had to undertake individual efforts,
13 meeting with operators, meeting with instructors, sitting
14 in on classes -- the kind of things that we have described
15 here, in order to buttress our qualifications to speak
16 with authority at this hearing. And that was the main
17 purpose of the additional effort that was undertaken.

18 Q By the way, gentlemen, although I'm directing my
19 questions at the moment to Dr. Uhrig, I don't in any sense
20 want to discourage any of you from adding comments of your
21 own anywhere along the line. Although I'll get to certain
22 of you individually later.

23 The testimony indeed indicates that a considerable
24 amount of post-special report effort was undertaken, and
25 I'm sure that there are many details of that effort that

1 it would not have been practical to include in this
2 testimony. But I'm curious whether you gentlemen feel
3 that the details of that post-special report effort ought
4 to be presented in some kind of a wrap-up report to the
5 licensee?

6 A (Uhrig) I think our feeling has been, or at
7 least my feeling has been, this is up to the licensee.
8 They have -- we have discussed this issue and the --
9 basically the intent of that review was to support this
10 testimony and if they wanted it we could certainly do it.
11 But they have not asked for it.

12 Q All right, sir. Let me say that as I view what
13 you've done, what I've heard you say about it, what is
14 written in your testimony and the attachments thereto,
15 including the special report, that I could, and I
16 emphasize the word "could," view your efforts as being
17 consistent with those that an applicant for an operating
18 license of his first nuclear plant might want to have
19 undertaken to ensure himself and other parties and the
20 general public that, indeed, he was well prepared to start
21 up and safely operate his first nuclear plant.

22 This is not quite the situation we have here. One of
23 perhaps many reasons we are all here today, has to do with
24 the fact that there is the backdrop to this proceeding of
25 a significant and undesirable incident in a sister plant.

1 I want to stay away from considerations of cheating,
2 considerations of plant redesign, considerations of human
3 factors -- efforts that have gone into the TMI-1 facility;
4 but, instead, focus on the fact that there is that
5 backdrop to this situation that can't be put aside, and I
6 want to ask you -- and here I would encourage all of you
7 to contribute if you feel inclined -- I want to ask you to
8 what extent your investigations were guided by the
9 consideration that nobody wants to see, at TMI, a
10 repetition of what's happened before. And it's not
11 entirely clear to me that I see how your efforts were
12 influenced by that kind of consideration in what I've read
13 and what I've heard so far. Can you gentlemen address
14 that topic, please?

15 A (Uhrig) I can only speak for myself. For the
16 past 11-1/2 years I have worked for a utility that is
17 deeply involved in nuclear power. We now have four
18 operating nuclear plants. I would refer to a statement by
19 our president, now CEO, that if he set out deliberately to
20 bankrupt our company there is no way he could probably do
21 it because of the balances and checks involved. But the
22 operator on that plant could bankrupt this company in two
23 hours' time by an error. And that's the significance that
24 he attaches to the role of the operators in our company.
25 And that is the philosophy that is being promulgated

1 through our company as the importance of the operation of
2 our nuclear plants.

3 That is the background from which I come. And the same
4 philosophy is -- applies here, as far as I'm concerned.

5 The nuclear industry cannot have another TMI-2. And,
6 as far as I'm concerned, one of my objectives is to make
7 sure that this plant, when it goes on line, is adequately
8 manned by competent operators.

9 I would invite the others to say what they want.

10 Q I would so invite Dr. Gardner.

11 A (Gardner) I do not have the kind of background
12 that Dr. Uhrig does. My background is academic, and I
13 come to this situation from the point of view of, in a
14 sense, a representative of the public. And I'm just as
15 concerned about the safe operation of the plant as anybody
16 possibly could be. So, therefore, I'm looking at this
17 endeavor of ours as one that will assist in having a plant
18 operated in such a way that it will be safe and that the
19 public will be spared any kind of experience that it had
20 previously with TMI-2.

21 C Well, sir, let me probe into that consideration
22 just a little bit further with you. I think you might --
23 and I emphasize the word "might" -- have said the same
24 thing again if this were a first nuclear plant of a
25 utility applying for an operating license. But, again,

1 this is not the situation we have here. And so I'm sort
2 of interested in the kinds of things that you think you
3 have done differently in your approach here, because there
4 had been an undesirable prior incident, that you might not
5 have done with a utility applying for the operating
6 license of its first nuclear unit. Do you have any
7 comments on that point?

8 A (Gardner) I think about the only thing I could
9 say, Judge Linenberger, is that if this were a new plant I
10 think that my role, looking at the educational aspects of
11 the training, would be such that I would perform the same
12 kind of tasks as I did here. I think I would be, probably,
13 slightly more concerned here because of the prior history,
14 and perhaps would be more critical of what I had found and
15 would probably have higher standards that I would set up
16 for myself in looking at the training program than I would
17 for an initial program, although that is not a very, I
18 realize, good argument, because one should look for high
19 standards anyhow.

20 Q Dr. Kimel, have you any observations on this
21 point?

22 A (Kimel) I do understand your point. I don't
23 know how to put in perspective my feelings about that, but
24 let me try.

25 To begin with, as I have already testified, we talked

1 about the model we used for our first activity, the
2 accreditation model applicable to accreditation of
3 engineering programs through ECPD, which later became ABET.

4 I served as a site visitor on many programs over the
5 last 2 or 2-1/2 decades, also on that board. I have been
6 involved, not only with this committee -- where I feel
7 like we developed the, you might say, the pilot model for
8 the accreditation process that INPO currently uses today;
9 I have been involved with the INPO task force as their
10 various programs developed, including accreditation; and I
11 have sat in and participated directly on some, but I have
12 sat in on all the accreditation board meetings of INPO.

13 I have attended a plant visitation, incidentally, at
14 Calvert Cliffs, that the INPO visitation team made.

15 In comparison of what we have done here, and I guess
16 that's about the only base I can give you, with those
17 kinds of efforts, I have thought a little bit about the
18 man-hours and man-hours we have spent here are
19 significantly greater than I believe have ever been spent
20 on a program -- accreditation, to the best I can guess in
21 excess of that would be spend on an INPO investigation.

22 By the way, to the best of my estimation, Dr. Uhrig, by
23 now we have invested 30 to 50 hours -- man-days, in this
24 activity. I think we have done an exhaustive study.

25 I have never worked with as broad a disciplinary vision

1 group as this in my life, and I know each and every one of
2 them is highly conscious of the point you make: The
3 importance of this decision. And when we wrote the last
4 statement in our report we were cognizant, we spent a long
5 time talking about it -- I refer you to page 81. The
6 statement reads: "Indeed, the committee feels that GPU
7 Nuclear has one of the strongest procedures extant and
8 operating in any utility in the United States today to
9 ameliorate the concerns expressed by ALAB."

10 That's a strong statement. When you reread it in the
11 light of coming to these hearings, you recall reading all
12 the materials that GPU and our attorney has made available
13 to us and you think: Are you making this kind of decision
14 in a vacuum? I read many of those documents in that light
15 again, because there have been count less studies of
16 various times, NRC inspections, and I see that, as I
17 reread that -- and only last Thursday, let me just top it
18 off -- I copied out of NUREG 0680 sup. number 5, TMI
19 restart. I read this again specifically in the light that
20 I have explained here, Wednesday night.

21 "The Staff concluded that, while the past improper
22 conduct was grave, the remedial actions taken, the
23 subsequent record of performance, and the record of
24 current senior management support a finding that GPUN can
25 and will operate TMI-1 without undue risks to the health

1 and safety of the public."

2 So, what I have tried to do, Judge Linenberger, is to
3 place in perspective the very serious question that you
4 ask. And I guess that's my best shot.

5 Q Let me ask you to engage in a bit of speculation
6 here. I hadn't planned this question but I'll bounce it
7 off anyway. You have spoken, to a considerable extent at
8 various times, about the INPO accreditation program.
9 Would you care to speculate as to whether, in your view,
10 that INPO effort would have come into existence
11 irrespective of whether TMI-2 had experienced the problem
12 it did? Dr. Kimel, I was asking.

13 A (Kimel) It's very clear to me --

14 JUDGE SMITH: In measuring the length of your
15 answer, I might point out to you that we have had
16 testimony on INPO, and Mr. Lee testified to some extent
17 about what they are doing, so we do have information that
18 is already available.

19 WITNESS KIMEL: Thank you. I will then refer to
20 Chauncey Lee's initial guidelines following the
21 recommendations of the Kemeny report, which you, I noticed,
22 are an American Nuclear Society member, so you have access
23 to some of the same literature I do, judge.

24 Chauncey started to come out on some of these
25 guidelines on what INPO ought to be and what it ought to

1 do, very early. It came out immediately after and in
2 response to the Kemeny Commission study. And to me that
3 answers your question.

4 I think it is clearly -- that is the incident -- the
5 thing that triggered the need for an internal, self
6 regulation of nuclear power from the utilities, which I
7 consider INPO to be; and which I consider to be a very
8 effective and the answer to your question is it is a
9 direct result of this accident, the formation of INPO, in
10 my view.

11 BY JUDGE LINENBERGER:

12 Q Thank you, sir. Dr. Kelly, you have been on
13 both sides of the fence. Getting back to my prior
14 question, not involving INPO directly, about the approach
15 of the group in view of the prior history at TMI, do you
16 have any comments to offer?

17 A (Kelly) Yes, I do, sir. And this, again, is
18 speaking for myself.

19 I became involved with the Three Mile Island GPU
20 organization just three weeks after the accident. I was a
21 member of the accident assessm. team. And my charter
22 was to review the training and requalification programs
23 for the purpose of determining what had or hadn't been
24 done to ameliorate the accident.

25 I, at that time, undertook an in-depth study, similar

1 to what was done for the preparation of the special report
2 and the testimony, in that I reviewed the training and
3 requalification program, documentation, the training
4 facilities -- what little there were then -- the staffing
5 of the operations organization and the training
6 organization, and interviewed operators and instructors in
7 the same fashion that I did in these past months.

8 I -- it is just incredible to see the amount of
9 improvement in all aspects of everything I reviewed that
10 five years ago.

11 The training facilities which consisted of about two
12 classrooms and three offices at TMI are now 20,000 square
13 feet, and perhaps will be doubled in the near future.
14 There was no simulator. The training organization for
15 operator licensing consisted, I believe, of only two
16 people. The procedures at that time were in no way
17 addressing the things that they do today, and I'm
18 particularly addressing ATOG, for example, in providing
19 the operators with a tool so that they can give priority
20 to the accident and summarize what it is they need to know.

21 Just in general, I just -- I was very conscious of the
22 fact that this is what it was, and what it is today. And
23 I'm extremely impressed.

24 I would consider it, because I do work with, currently,
25 a dozen utilities that have training programs that are all

1 vastly improved from what they were. Thanks to INPO and
2 the NRC and the industry itself, I would say that this
3 training program that we have been addressing is a model
4 for the industry.

5 Q Drs. Christensen and Gardner, I can't help but
6 be impressed by the fact that -- or by my speculation, I
7 should say -- that in the early hours into the TMI-2 event
8 there must have been a high degree of stress occasioned by
9 a number of things, but nevertheless stress certainly
10 occasioned by a feeling of obligation to do the right
11 thing in a situation, initially at least, probably not
12 very well understood.

13 Now, I can't help but feel that the potential for a
14 stressful situation is not going to go away and, therefore,
15 the importance of preparing people to function effectively
16 in a stressful situation must be something that, I would
17 think, some attention has been given to.

18 I would like to ask each of you -- and your opinion who
19 speaks first -- whether that kind of consideration went
20 into your investigations of this operator preparedness
21 program that we have been discussing?

22 A (Christensen) Why don't I go first, Jerry.

23 It very much was part of my consideration, sir. Having
24 worked for the Air Force in one capacity or another for 33
25 years, over 33 years, we are very accustomed to designing

1 systems in which men have to operate under high stress.
2 So, when I addressed the same problem here I naturally
3 looked to some of the things that we had done to alleviate
4 the effects of stress in high-stress situations.

5 I don't know that I can recall all of them, but I think
6 I can recall enough of them to -- I can certainly recall
7 those that I have tried to look at in this situation.

8 One-- and these are not necessarily in order of
9 priority -- a good, solid training program, so the person
10 really knows the job so when, under high stress -- now, a
11 small amount of stress actually has been found usually to
12 facilitate performance. It doesn't hurt to be under a
13 little stress. But I think you want us to address the
14 really high stress, a very critical situation, that does
15 cause stress and it does cause, usually, deterioration of
16 performance.

17 I say "usually," because we found with our fighter
18 pilots and so on, these strange guys actually performed
19 better under stress. There are certain people who can
20 perform very well under stress; and I wish I could tell
21 you exactly how to forecast exactly who they will be, but
22 I don't think I can. But we found the answer to lie in
23 such things as good, solid training programs. Once they
24 have learned their job that's not enough. You have to
25 provide the means of maintaining that proficiency once it

1 is attained, because all skills deteriorate.

2 I know, even if I go to Europe for 30 days and don't
3 drive a car and come back, the first few miles, it is a
4 little bit of a relearning thing. And we all know how to
5 drive automobiles.

6 So, the program should provide for keeping these skills
7 at an acceptable level once they are achieved. Good,
8 well-written procedures, good manuals, good supporting
9 written materials are very important, we have found.
10 Different approaches to the same types of material that
11 are learned. For example, classroom lectures, on-the-job
12 training, simulation, mock-up boards, all these are really
13 addressing the same thing: Namely, the achievement of
14 skills, knowledge, and abilities that are necessary to run
15 this plant. And I see all of those in this program.

16 The environment itself in which the person works is
17 exceedingly important with respect to stress. They have
18 given attention to this, as you know. I know it's not one
19 of the issues here, but the control room was completely
20 redesigned. I visited one since then. The environment is,
21 I think, excellent for this sort of work. The lighting is
22 good, the noise level is low, they have improved the
23 communications system and numerous other things.

24 There may be others, but certainly of the steps that I
25 am familiar with that we used to try to follow to get

1 stress down to an acceptable level, I think virtually all
2 of them have been followed here to the best of my ability
3 to recognize them.

4 Q You made a comment along the way that interests
5 me. You said you wished you could know how to predict who
6 might perform well under stress. And I'll make perhaps an
7 unwarranted extrapolation from that comment, but are you
8 saying, in effect, that you see little or no value to any
9 kind of psychological profile screening of operator
10 candidates?

11 A No, sir. I certainly am not saying that. I am
12 no longer in that work. I used to be in the selection
13 program, to select pilots, bombardiers, and navigators. I
14 don't know what the latest developments are.

15 I do know that the people who are in it tell me that,
16 indeed, you can, with modest accuracy -- this is not 100
17 percent sure, but, for example, the profile of what makes
18 a good fighter pilot is pretty well established. I forget
19 all the details, but he's such a thing as an oldest child
20 in the family and there are other things that --

21 Q Sure.

22 A No. This can be done and may be done by people
23 in the selection program here, but I don't know anything
24 about that.

25 Q Dr. Gardner, do you have anything to add on this

1 subject?

2 A (Gardner) I would like to comment, first with
3 respect to the issue that Dr. Christensen was just
4 responding to, and that is there is tremendous variability
5 among individuals in terms of the amount of stress that
6 they can stand and still function effectively. There are
7 some people that have low tolerance and will deteriorate
8 with a rather -- what might be considered a moderate
9 amount of stress, on the average.

10 There are others that have a high tolerance for stress,
11 and so the individual differences that exist are ones that
12 can be used to determine a profile, as Dr. Christensen
13 mentioned.

14 I would like to add, however, that it seems to me there
15 are two other elements that are important for controlling
16 the situation of excessive stress, and that is the fact
17 that, in the control room, there is a team. The
18 individual members of that team can support each other in
19 terms of the possibility of an individual reaching his
20 tolerance sooner than some of the others; and, secondly,
21 the effectiveness of the team depends to a large extent on
22 the skill and the knowledge of the leader, which is the
23 shift supervisor. In our interviews we did interview,
24 among us, all of the shift supervisors of the six shifts,
25 and we were satisfied that they were highly competent,

1 that they were respected by the members of their group,
2 and were able -- according to the reports that we received
3 in our interviews, they felt competent to operate the
4 plant when it starts up again with their current shift
5 supervisors.

6 The second aspect I wanted to mention is that stress
7 that may be entertained by the group as a whole, can be
8 alleviated to some extent by access to assistance from
9 outside the control room. That is, if they have a problem
10 that's a difficult one that they are having difficulty
11 solving, that they do have ready access to some person who
12 can assist them. And that situation exists, I understand,
13 although Mr. Kelly would know a lot more about that than I.

14 Q The use and role of simulators has come in for
15 several comments, and Dr. Kimel, yesterday you expressed
16 your appreciation for and -- well, just say that,
17 appreciation for the basic principles training simulator.

18 I would like to ask for your comments about what you
19 see is the role of, and the importance of, the so-called
20 replica simulator that is, I believe, being assembled,
21 produced, whatever, for this facility.

22 A (Kimel) Sir, I could comment on that in some depth,
23 but there's a person on this panel that can answer it
24 better than I. I will make a comment or two, if you would
25 like, but Frank Kelly has spent time there.

1 I can say that this replica simulator will be on line
2 next year. It is built by, I believe, Singer-Link. It
3 has been built to the specifics of GPU that have been
4 developed by their engineers, and I know Dr. Long has had --
5 and his group -- have had great input into that, to be as
6 faithful a simulation as possible with the state of the
7 art. And that does include, as I have already stated for
8 the BPTS, the design of the simulator to include
9 calculations and replications of the performance of
10 various simulations based on actual mathematical models
11 that describe the physical processes involved in
12 thermodynamics, hydrodynamics, the reactor physics of the
13 whole system as it interacts.

14 The same comments are applicable, therefore, for the
15 replica simulator that I made yesterday: This makes it
16 much more flexible than a simulator based just on table
17 hook-up, because in that instance the table hook-up
18 simulator, there are a limited number of tables to input
19 and therefore a limited number of simulations that you can
20 do. If you have the actual mathematical model into the
21 device, it becomes a more faithful and flexible simulator
22 of the actual plant.

23 The replica simulator will, of course, have a control
24 panel that's identical to that at TMI-1. We've talked
25 about that in previous testimony.

1 Frank? May I ask Frank, sir?

2 Q Yes, Mr. Kelly? And I have a specific question
3 that I will -- or an observation that I will make now that
4 might guide you in any remarks you have. I note -- noted
5 at the beginning of this hearing session, the comment by
6 licensee's counsel that the TMI-1 unit will be physically
7 ready for operation, I believe it was stated to be in
8 February of 1985. And I note in the testimony, prefiled
9 testimony of you gentlemen that the replica simulator is
10 not scheduled for delivery until sometime late in 1985.
11 Therefore, I express the wonderment, if you will, that if
12 it's really important to the training readiness of the
13 operational approval of the instructors or whatever, why
14 is it all right to start the plant in early '85, assuming --
15 well, I'm not speaking for any regulatory areas here --
16 but in terms of physical readiness. Why start then if you
17 are not getting an important tool to assist this operation
18 until late 1985? So --

19 JUDGE SMITH: Hold up your answer for a moment.

20 (Discussion off the record.)

21 JUDGE SMITH: The adequacy of the replica
22 simulator was litigated thoroughly and was the subject of
23 a condition, and a settled condition -- settlement in the
24 case. The board found that the use of a replica sometime --
25 even assuming after operation, in the long term, that the

1 use of the replica would not be required until 1985,
2 there's no reason why you gentlemen can't answer Judge
3 Linenberger's question. He wasn't on the case and he
4 can't be expected to know all the background of it. But I
5 want the parties to know that that is no longer an issue.
6 It's not anything that we would consider in this reopened
7 hearing. It's res judicata, if there ever was anything,
8 and would not be a part of our consideration.

9 JUDGE LINENBERGER: Well, my apologies here for
10 having lost sight of that point. But perhaps you still
11 may want to say something about it.

12 BY JUDGE LINENBERGER:

13 Q Dr. Kelly?

14 A (Kelly) When I was chief of the licensing
15 branch in the 1960s, in the then-Atomic Energy Commission,
16 one of our concerns about the use of simulators in
17 training, aside from the examination standpoint, was that
18 the early simulators were analog devices and were -- had a
19 lot of inaccuracies, particularly as related to the
20 reactor portions of it.

21 In 1968 the General Electric Company completed their
22 Dresden 2 simulator, and this was the first Cadillac, if
23 you like, of the training simulators, of the entire
24 simulation of the nuclear power plant. And this changed
25 our viewpoints, because we had -- we participated in the

1 construction and the check-out and acceptance testings of
2 this simulator, and then later in the simulators that came
3 along within the next couple of years after that, a couple
4 of utilities and of Westinghouse and Babcock & Wilcox.

5 The use of a simulator now provides utilities with a
6 tool by which they can perform normal functions, start-ups,
7 shutdowns, operations of power; but they can also perform
8 abnormal and emergency and casualty situations which are
9 not advisable in your operating nuclear power plant.
10 These can be done with a sophistication of the simulators --
11 and I should add that since that time the simulators have
12 become almost an order of magnitude more sophisticated in
13 the things they can do. And, with the fast speed, slow
14 speed, freeze capabilities the instructors can just
15 demonstrate a whole host of valuable things to the
16 operator.

17 The replica simulator, of course, is the actual control
18 panels and operating characteristics of the plant in
19 question and, as you stated, it is not due for delivery
20 until late 1985 at TMI. However, in the meantime they
21 have used the B&W simulator, which they have used for
22 years. And I would ask, perhaps of Dr. Christensen, to
23 add something when I'm finished about the aspects of
24 negative transfer from operating on this B&W simulator
25 versus a replica. But in my opinion the training that

IMAGE EVALUATION
TEST TARGET (MT-3)

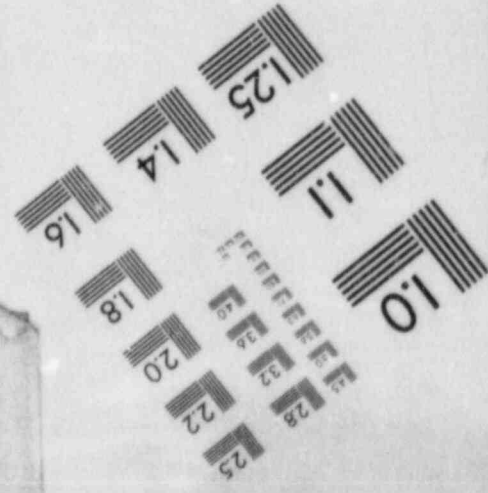
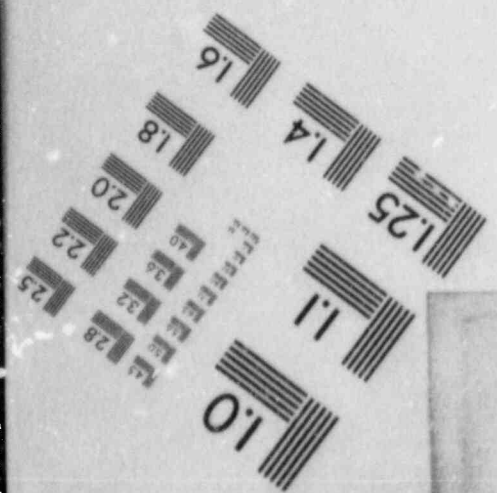
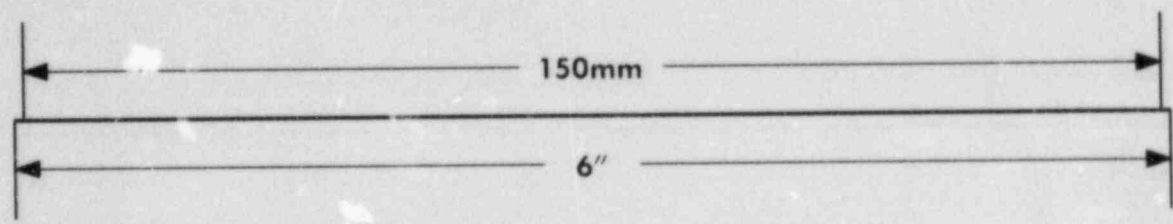
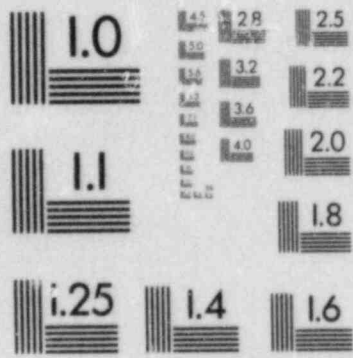
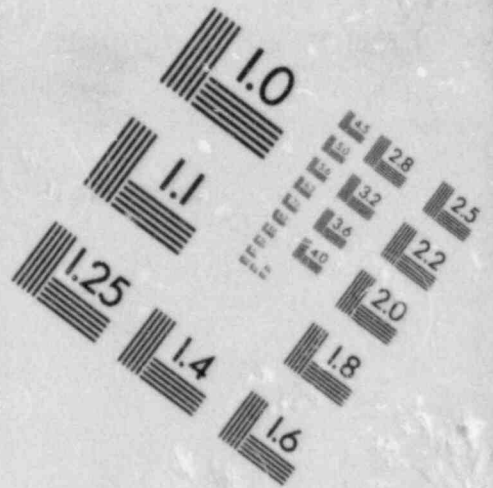
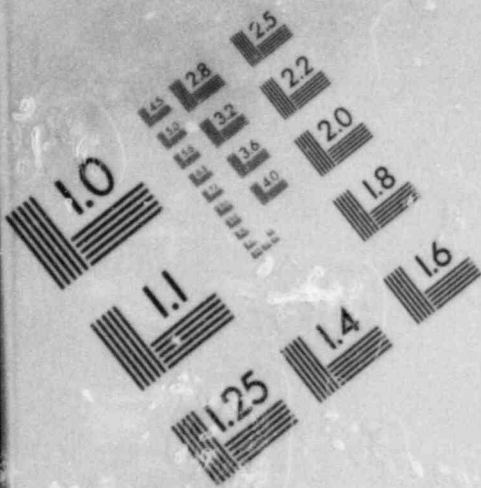
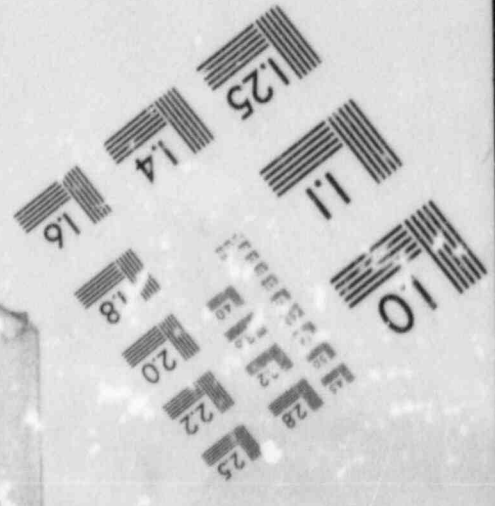
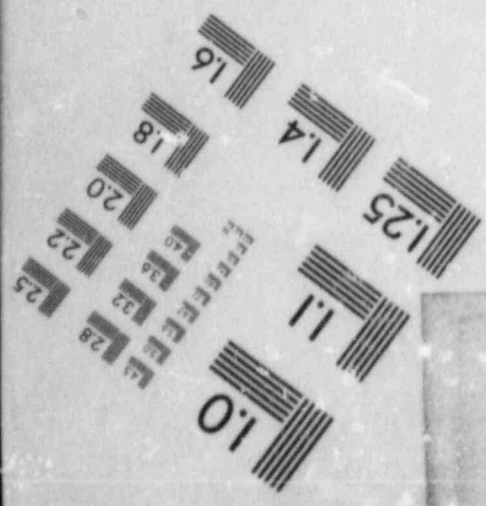
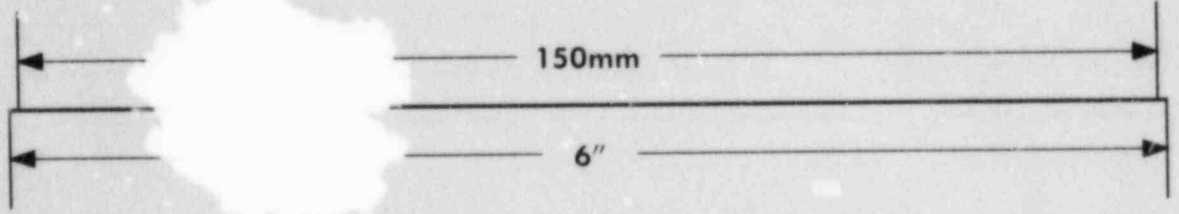
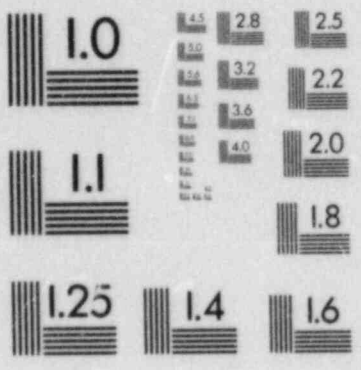
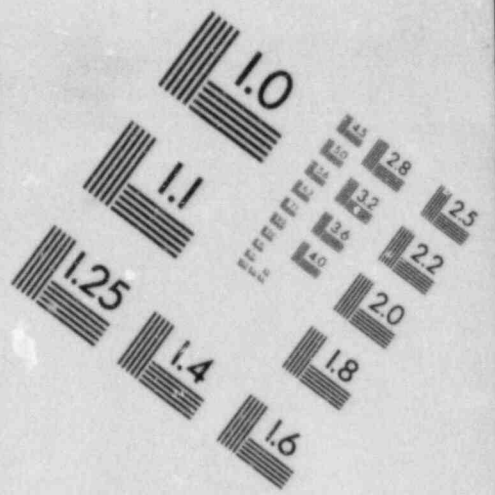
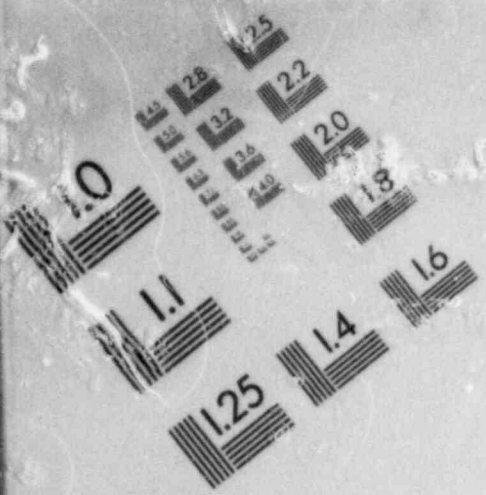


IMAGE EVALUATION
TEST TARGET (MT-3)



1 they have obtained, since the accident on the B&W
2 simulator has been very valuable as a training tool, but
3 also, in my opinion, it has been valuable as a evaluation
4 tool of how these operators have learned to understand
5 their procedures and manipulate the controls of the
6 systems of a pressurized water station of the Babcock &
7 Wilcox area.

8 Q Thank you. Do you have something you would like
9 to add, Dr. Christensen?

10 A (Christensen) Yes, your Honor. Well, it has
11 all the advantages Frank mentioned. You can stop and go
12 back, you can repeat and repeat until you are assured that
13 the operators have learned what they are supposed to.

14 Another advantage of it is you can give immediate
15 feedback. You can tell him immediately how he's doing.
16 You can stop him if you want to as soon as he makes a
17 mistake. This is very important in human learning, that I
18 know as soon as I perform the act, how well I did; rather
19 than tell me a week later that I did something wrong.
20 It's much more effective if I do it immediately.

21 I was concerned about one thing, and that is keeping it
22 current. I have been assured that they already are
23 starting plans for keeping the replica simulator exactly
24 like the control, because, inevitably there will be
25 changes made in the control room that could conceivably

1 lead to the negative transfer he's talking about. I have
2 been assured that they are going to take care of that.
3 It's a very important point.

4 I think another advancement that Mr. Kelly referred to
5 that ought to be emphasized, is the fantastic advancements
6 that have been made in software that supports these things.

7 The Air Force, where I come from originally, figures
8 now that up to 80 percent of the cost of a simulator is in
9 the software. It's only about 20 or 25 percent in the
10 hardware. Parenthetically, I'd say that some day this
11 area will become so advanced in the development of the
12 simulators, they won't have to put everything in them.
13 Right now everything is in them. They are exact replicas,
14 because they don't know what to leave out.

15 We don't do that in the Air Force any more. They got
16 too expensive. So some things aren't necessary for
17 adequate training and proficiency maintenance. You can
18 leave them out. We don't know that here. We can get, as
19 one man said, as phony as possible and still get the job
20 done. They get cheaper that way.

21 I don't want to drag this out, but negative transfer, I
22 think it came up; it's going to come up again, probably.
23 Let me explain what it is. I don't mean to insult the
24 intelligence of the board, but it is a technical term from
25 psychology.

1 Suppose, for example, you obviously learn to drive in a
2 car that has the brake on the right and the clutch on the
3 left. Now, suppose you got an import and the brake were
4 on the left and the clutch were on the right. You then
5 would have to learn that.

6 Negative transfer says that it would take you longer to
7 learn to use the brake on the right than if you had never
8 used a brake and clutch at all. There's a negative effect
9 on acquiring this new skill.

10 The stimulus is the same. A child runs in front of the
11 car and I want to slam on the brake. The stimulus is the
12 same in both cases, but in the second case you are going
13 to push with the left instead of the right.

14 Now, some people are saying we -- if the things are not
15 exactly alike, there is a real danger of what is called
16 habit regression. So if that child ran out in front of
17 you, you might indeed come down in that emergency on the
18 right foot and hit the clutch instead of the brake.
19 That's really what they are talking about.

20 Notice how similar I made those situations. The
21 stimulus was exactly the same in both cases. Only the
22 responses were different.

23 Now, if you have large differences in the situations --
24 and this is my contention that you do -- I'm kind of glad
25 that the B&W simulator is as different as it is with

1 respect to panels and so on. Now, what's behind those
2 panels we haven't mentioned, but it's the same. I checked
3 into this. Probably the only model that isn't quite 100
4 percent fidelity is the HPI, and I understand that's being
5 corrected. And, indeed, they are dealing with different
6 terms. In one case it's a GE and in one case it's a
7 Westinghouse.

8 I would be more worried about habit regression if those
9 two simulators were almost exactly the same and the panels
10 were almost exactly the same, than if they were as
11 different as they are. I checked some of this. For
12 example, what might be a J handle in the control room
13 might be a push button in the B&W simulator for
14 essentially the same function. I personally am not
15 concerned about habit regression developing as a result of
16 training on the B&W simulator.

17 Q Thank you, sir.

18 I think I have just one final line of inquiry, which
19 I'll address first to Dr. Uhrig, and perhaps his answer
20 can cover for all of you gentlemen. I don't want to
21 belabor this point. (/ORPT this is Judge Linenberger).

22 It was brought out in examination yesterday that each of
23 you gentlemen in one way or another has a contractual
24 relationship of some sort with the licensee.

25 There's an old add damage that advises: Don't bite the

1 hand that feeds you. And various people pay various
2 degrees of attention to add damages.

3 But a simple extrapolation on that point would -- might,
4 I'll emphasize the word "might," cause some people to
5 cynically or suspiciously say: Well, here's a fine group
6 of highly qualified people, all currently being --
7 receiving some kind of financial contribution from the
8 licensee. Why wouldn't it be normal to expect that they
9 are not going to find anything seriously wrong. Why
10 should they?

11 I leave my characterization of the situation as that,
12 and ask of you, Dr. Uhrig, what is the basis for assurance
13 that all of us might take from you people that, indeed,
14 this is not the kind of thing that underlies your
15 favorable findings here?

16 A (Uhrig) Perhaps I would start with a reference
17 to our 1980 report. If you go back and read that, you
18 will note that there are extensive comments about the
19 inadequacies in different areas, and recommendations as to
20 what should be done to correct those inadequacies. So, I
21 would point out that we are already on record as being
22 critical of the licensee in a variety of areas.

23 Above and beyond that, I can answer the question only
24 in the philosophical mode. Each of us are professionals in
25 one sense or another, in engineering or psychology or what

1 have you. We are here -- again, let me speak in my own
2 situation. I'm a full-time employee of another utility.
3 I don't need to be here to earn a living. I'm adequately
4 compensated there. I'm doing this on my vacation so that
5 I do not have a conflict of interest. I have been asked
6 to participate in the review and I would simply say that
7 it's a matter of personal integrity, as far as I'm
8 concerned, that we call the shots as we see them. And I
9 would invite my colleagues to respond.

10 Q I'm sure I would appreciate it. I don't want to
11 dwell at length on this but, indeed, the past has shown
12 that these kinds of considerations do come up for question.

13 A (Christensen) Personally I'm delighted to be
14 able to respond to that question, sir. In the first place,
15 of course I am an employee of Universal Energy Systems. I
16 get just my regular salary, whether I'm doing this or
17 whether I'm doing something I'd really like to do.

18 (Laughter.)

19 As for the compensation, I felt an obligation because I
20 had been on the original study I'm to continue with this.
21 My firm is charging even a little bit less for my services
22 than they would if I were out on some other job. I talked
23 them into that because I thought it was important that I,
24 indeed, continue.

25 I had to defer other work to do this. There's another

1 contract, research contract which I -- that's where I
2 really want to be right now. And I had to get permission
3 to defer it about four months in order to work on this.
4 They were kind enough to let me do that, so I don't need
5 this either, to sustain myself.

6 I plan to work two more years full time and then go to
7 part-time. I believe I can say, in over 30 years for the
8 Air Force, I never had my integrity questioned. I served
9 on many, many mock-up boards where decisions were made
10 that involved billions of dollars, and awards of contracts.
11 I have never been questioned as to the propriety of my
12 decisions.

13 Finally, I am a professional psychologist. The
14 American Psychological Association has a very strict board
15 of ethics. And if there was any hint at all that I was
16 doing something unethical, all the people who have to do
17 who think that way is bring me up before the board and
18 have a hearing on it.

19 Q Do any of you other gentlemen wish to comment?

20 A (Gardner) I can't add much to what has already
21 been said.

22 A (Kimel) I can't either, Judge, except to say
23 that in my own case I am quoted in some book, and I
24 believe with all my heart that the reason I'm in education
25 is by choice. I could work in industry and it would come

1 as no surprise to you to know that it might be more
2 lucrative, perhaps. I work in education because I
3 personally believe it's the most important job on this
4 planet. I believe educating for the next generation to be
5 extraordinarily important. My wife and I have no children.
6 It may sound nonrelevant but I did check the other day and
7 I suspect, just during the last 16 years, approximately, 8-
8 to 10,000 students have graduated out of our college. I'm
9 very proud of them and I take an enormous satisfaction out
10 of that.

11 With respect to today, I would have, following the line
12 that's already been brought up, I think it would have been
13 more constructive in some sense if I had gone to INPO. I
14 believe also that nuclear energy, and I have done a great
15 deal of this in my lifetime, is very important to that
16 future generation. I believe that this case is
17 extraordinarily important towards that end.

18 I did not want to serve on this panel. I turned it
19 down when asked, and that's the reason I didn't attend. I
20 had a conflict. But I have many other conflicts and I was
21 convinced by various persuaders that this was very
22 important, and so I served.

23 In the final analysis -- and I suppose this is
24 irrelevant, but I watch these things these days -- there
25 are only three people in this room older than I. And the

1 longer you live the more opportunity you have to be judged.
2 I would invite you, sir, to look at my record of integrity.
3 Anyone can claim he has integrity. I believe I have it.
4 I would invite you to check it. And that's really the
5 only answer to your question -- to your question, is: Do
6 I lack integrity in this matter? My judgment is "no."

7 JUDGE LINENBERGER: Thank you very much,
8 gentlemen. Judge Smith, I think that completes my
9 questions.

10 EXAMINATION

11 BY JUDGE WOLFE:

12 Q Dr. Uhrig, turning to your special report dated
13 June 12, 1984, and which was published or issued on June
14 28th, 1984, there are attached table A-2, which consists
15 of pages 85, 86, and 87; and there is also an attachment 7.

16 A (Uhrig) Yes, sir.

17 Q Probably it is clear from the captions
18 themselves from this table and/or attachment, but table A-2
19 says that the documents listed below have been provided by
20 GPU Nuclear to the committee for their review, and lists
21 some 37 documents.

22 Attachment 7 is captioned "Documents Relied Upon by the
23 Reconstituted OARP Committee."

24 Will you explain the difference, if any, between these
25 two attachments?

1 A (Uhrig) It's simply that in the case of the
2 special report, the documents were provided to us. It was
3 a complete list of the documents that were given to us in
4 the timeframe that we prepared this report. In the case
5 of attachment 7, these are the documents that we relied on
6 in conjunction with our testimony.

7 Q I see. I see.

8 A (Uhrig) The testimony is somewhat more limited
9 than the scope of the original report. We confined the
10 testimony exclusively to the operator training area.

11 Q All right. In response to Judge Linenberger's
12 questions, I don't think that -- I don't recall that at
13 least three members of the panel did respond to the
14 question. I think Judge Linenberger's question was, or at
15 least the thrust of the question, was that -- how was the
16 nature of your analysis or review impacted by the accident
17 at TMI-2?

18 Drs. Uhrig and Gardner, I think, had responded. I
19 would now ask Mr. Kimel to comment. Perhaps you did -- if
20 not, so advise.

21 A (Kimel) Sir, the question isn't quite clear to
22 me. Could you ask it again?

23 Q Yes. Was the nature of your analysis as to the
24 training program at TMI-1 at all impacted by the accident
25 at TMI-2? Namely, did you take your mission more

1 seriously than you otherwise would have, in light of the
2 accident at TMI-2; and why?

3 A (Kimel) Yes. I understand the question. Judge
4 Wolfe, may I suggest that that's a kind of a double-edged
5 question, because I take everything I'm involved with very
6 professionally.

7 Now, this particular accident occurred at a time, sir,
8 when I was president of the American Nuclear Society. I,
9 therefore, received more mail -- everyone found himself or
10 herself in that situation, I suppose -- and more counsel;
11 and I can assure you, sir, that though my attention was
12 drawn to this event for very, very many reasons, because
13 of that it was riveted on this matter. Subsequently I had
14 to travel to the Hamburg conference where I was chairman
15 of the International Nuclear Energy Conference --
16 co-chairman, excuse me. I traveled from there to Belgrade
17 to speak to those people. I traveled from there to --

18 JUDGE SMITH: Excuse me. You are going to have
19 to provide time for cross-examination on these questions.

20 WITNESS KIMEL: I'll finish rapidly -- and from
21 there to South Africa. In every case I had prepared
22 materials on what I was going to talk about. Nobody in
23 any of those places wanted to know a thing about what I
24 had prepared. They only wanted to know about the TMI
25 accident. So my attention was surely riveted very deeply

1 on this matter.

2 Again, I have to come back, I do take my professional
3 assignments very seriously. I have ample reasons, sir, to
4 take this one also very, very, very seriously. Let me put
5 it that way. And we did.

6 BY JUDGE WOLFE:

7 Q Mr. Christensen?

8 A (Christensen) Well, sir, all I can say is I
9 took it extremely seriously. I used to take my
10 assignments with the Air Force seriously. When you are
11 developing systems for the defense of the country, these
12 are pretty serious matters. I consider this a matter
13 that's of prime importance to our country, and the future
14 welfare of our country: an adequate and reasonable supply
15 of energy. I believe that's all I can say, sir.

16 Q And Mr. Kelly?

17 A (Kelly) I also believe it is extremely
18 important that we consider, I consider the impact of the
19 accident. And, as I stated earlier, it was always in my
20 mind when I was doing the present review about the things
21 that had happened and my initial review right after the
22 accident, and I was very sensitive about the changes that
23 had been made.

24 JUDGE SMITH: I have some questions that I want
25 to put to the proper witnesses, the proper panel. And I

1 would not put them to this panel today if others will
2 address it.

3 One is I would like to have some elaboration on what
4 extent the simulators are validators of traditional
5 examinations, and with particular reference to what extent
6 they are defeat proof, or cheat proof validators of
7 written and oral examinations.

8 Also -- so, is this an appropriate panel to put it to?
9 There was already some discussion, slight discussion of,
10 is each phase a validator of an earlier phase or relate to
11 it, but I would like to have a little elaboration on that.

12 MS. BAUSER: I guess I'm answering it a bit
13 blind, Judge Smith, not having talked to the witnesses.
14 But I think that they are competent to talk about it.
15 They do have rebuttal testimony.

16 JUDGE SMITH: Does that come closer to their
17 rebuttal testimony?

18 MS. BAUSER: I think the validation concept does.
19 I think both pieces talk about simulators, but the concept
20 of validation comes closer to the second --

21 JUDGE SMITH: All right. Then I'll continue my
22 question along that line until rebuttal.

23 Also, you did allude, gentlemen, in your prepared
24 testimony and in your report to on-the-job validation.
25 There was a reference to hot functional testing of the

1 plant, given opportunity for additional training.

2 One thing that I noticed in your testimony was that you
3 had not interviewed the chief operators of the plant. You
4 had not interviewed Mr. Ross, who was a manager of plant
5 operations, as far as I can see, and you had not
6 interviewed Mr. Tool, I believe, who is director of
7 operations and maintenance; but particularly Mr. Ross.

8 The question I have is this.

9 EXAMINATION

10 BY JUDGE SMITH:

11 Q You have pretty much an analytical approach to
12 the training program. I would have expected you to search
13 for some empirical evidence of the effectiveness of the
14 program, by talking to operating officials to see how well
15 the training has done.

16 Now, I recognize that there hasn't been too much
17 opportunity for them to demonstrate. The plant is in cold
18 shutdown. They are standing watches. The plant is in
19 functional testing. Of course there have been no
20 emergencies, as far as I know, or any unusual events to
21 actually test those skills. But could you comment upon
22 that?

23 There just seemed to be a void of any effort to
24 empirically look at the efficacy of the training program.

25 A (Uhrig) Let me simply say that we did talk to

1 Mr. Ross extensively.

2 Q Oh, is his name listed there? I'm sorry. I
3 must have missed that.

4 A (Uhrig) Not during the preparation of the
5 initial report, but in August when we were there. We
6 spent considerable time with Mr. Ross and he conducted a
7 tour of TMI-1 for us; personally took us, the five of us
8 through the plant itself. And we talked about the various
9 aspects of training at that time.

10 Q Of course Mr. Ross will be here and I can ask
11 him directly what he feels about the results, the
12 effectiveness of the training program. I notice his
13 direct testimony does not cover that, however, as far as I
14 can see.

15 A (Uhrig) We also talked to Mr. Hukill, who is
16 vice-president of TMI-1, on several occasions.

17 Q Yes.

18 A (Uhrig) And dealt with this specific issue.

19 Q Well what do you feel? What would be your view
20 as to what is the empirical evidence available to you as
21 to the adequacy of the training program?

22 A (Uhrig) Well, the empirical evidence that would
23 be available is their performance on the company-administered
24 examinations. This is one aspect of it. The performance
25 of the individuals, of the individual plant operators, as

1 conveyed to us by Mr. Ross and Mr. Hukill in our
2 discussions with them; that they are very satisfied with
3 the results of the training and the transfer of knowledge
4 to their jobs.

5 Q Mr. Ross is?

6 A (Uhrig) Yes. And Mr. Hukill, both.

7 Q Was that covered in your testimony?

8 A (Uhrig) I don't believe it specifically
9 mentioned that; no. I'm sorry. I don't recall that it
10 was. But we did do that in the August to November
11 timeframe.

12 Q What is your view about the actual opportunity
13 for them to observe actual on-the-job performance under
14 normal operating circumstances?

15 A (Uhrig) Well, of course the plant is shut down
16 now. They have been through extensive modifications and
17 repairs. There has been one or two hot functional tests
18 that have been carried out. There will be another one.

19 There is the program during the start-up, at which
20 there is a series of holds during which each member of the
21 operating Staff will have an opportunity to participate in
22 the operation of the plant at that particular level. It
23 is not a simple moving on up to full power. It's an
24 extended procedure.

25 Q I'll ask Mr. Ross questions, too, about it, when

1 he comes.

2 JUDGE SMITH: There has been rather extensive
3 board questioning. We'll let you follow it any way you
4 want to, Ms. Bauser. Would you like to have your redirect?
5 Or would you like to have recross before your redirect?

6 Will there be recross -- will there be follow-up on
7 board questions?

8 MR. AU: Yes, I have some.

9 JUDGE SMITH: All right. Let's do it that way.
10 Then you can handle it all together, Mr. Jordan.

11 Let's take a five-minute break.

12 (Recess.)

13 JUDGE SMITH: Mr. Jordan, you may examine.

14 MR. JORDAN: Judge Smith, I want to be clear
15 where we are. You referred to cross on the board's
16 questions. I do have some cross based on some of the
17 examination by Staff and Pennsylvania. Do you want me to
18 cover all of that?

19 JUDGE SMITH: No, I think you probably should
20 cover all additional cross that you have to do now.

21 MR. JORDAN: Okay. That's fine.

22 RECROSS EXAMINATION

23 BY MR. JORDAN:

24 Q Actually, as before, I'll direct the question to
25 Dr. Uhrig unless I have some reason to direct it to

1 someone else. This actually was, I believe, a question
2 raised by Chairman Smith in the context of during the
3 cross-examination by the Commonwealth. The issue Judge
4 Smith asked, in effect, whether you determined whether the
5 cheating was a symptom of the management problem and
6 further along that line.

7 What I want to ask now is the cheating -- isn't it true
8 that the cheating could have been related to, in some way,
9 to deficiencies in the teaching or the training program
10 such that the program was not reaching those people who
11 cheated? Isn't that possible? Actually I guess maybe
12 Dr. Christensen is more expert, but whoever has that
13 answer.

14 A (Christensen) I don't mean to be flip, but I
15 really don't know anybody who is expert in cheating. I
16 certainly am not. But I mentioned -- I have been
17 associated with three instances where there was cheating
18 and one was attempted cheating. The other individual
19 wanted me to be involved and I, happily, refused.

20 In the first case it was in the graduate program in
21 Ohio State. The individual cheated and was immediately
22 dismissed from the university.

23 At that time the program in psychology was rated the
24 eighth best in the country. So there was no implication
25 by anyone that the program was inadequate and that had

1 forced him to cheat.

2 In the second case, I know the teaching was good
3 because I was doing it.

4 (Laughter.)

5 Well, I didn't mean that to be funny either because I
6 was -- the second year at Wayne State I was awarded the
7 award as the best teacher in the college of engineering.

8 Why the individual cheated, I don't know. It was a
9 final exam. He was on the borderline between a B and an A.
10 That exam would determine whether he got an A or a B. And
11 yet he cheated. I can't explain it.

12 I'll tell you what I did with him if you want me to,
13 but I don't think it's relevant.

14 And the third instance was when I was in navigation
15 school, which was considered the toughest academic course
16 the Air Force offered in those days. The individual
17 behind me at the big drawing board we each had asked me to
18 step aside so he could look at my work because he was
19 having a little trouble. And I refused. I did not turn
20 him in. Maybe I should have. I didn't. But he flunked
21 out later anyhow so it took care of itself.

22 Our instruction there was extremely good, and yet here
23 is an individual who saw fit to cheat. I can't explain it.

24 Q I appreciate, in the examples which you have
25 given, and the particular three with which you are

1 familiar, that it appeared that deficiencies in training
2 or teaching were not -- did not give rise to the cheating
3 that occurred. But I'm simply raising the question, isn't
4 it -- you seem to be perplexed about what might cause
5 cheating and to believe it's situational; to believe that
6 many, many things might cause cheating. I'm saying that
7 inadequacies in a program and teaching in that program
8 could be a factor that might result in some amount of
9 cheating?

10 A (Christensen) It possibly could, sir. I guess
11 it's kind of a moot question.

12 JUDGE SMITH: No, I think that's the most
13 important question that's being put to this panel. As far
14 as I read the remand, that was the basic thing that the
15 Appeal Board had in their mind when they sent it back.
16 And I would hope that the panel will pay close attention
17 to Mr. Jordan's question on it and see what information
18 you can give.

19 BY MR. JORDAN:

20 Q Which is I have just one more point, Dr. Uhrig.
21 As I understand it, the vast majority of the candidates
22 from GPUN passed the examination, the NRC examination,
23 without cheating. That suggests to me that there was
24 adequate instruction and adequate information there for
25 them to, had they availed themselves of the opportunity,

1 for them to learn enough material to get through the exam.
2 Others did without cheating.

3 If the program was inadequate, why weren't there more
4 people failing? Why weren't there more people cheating?
5 I can't answer that in my own mind.

6 A (Uhrig) I would simply point out that this
7 committee, in its original membership, reviewed the OARP
8 program in 1980, and found it to be a very satisfactory
9 program. The program that was being conducted at the time
10 of the cheating was a follow-on program, very similar in
11 content, very similar in format. And, therefore, my
12 reflection on this is that the program was adequate at
13 that time and it would not be necessary to cheat in order
14 to perform satisfactorily in both the company and other
15 examinations.

16 Q I think it is clear, as Dr. Christensen has
17 suggested, that for some people, and perhaps many people,
18 that it was not necessary to cheat to pass exams after
19 being given the training program. The question,
20 nonetheless, remains: Whether, in light of the methods
21 used to select people and so on, there might have been
22 some deficiency in the training and testing program that
23 had an impact on whether people cheated or not.

24 Cheating is, as I understand it, an aberration anyway.
25 It wouldn't normally happen.

1 So the question is: Given all that you have laid out
2 here, is it not still possible that some aspect of the
3 training program or the teaching in that program might
4 have affected the cheating that occurred?

5 MS. BAUSER: Excuse me, I thought that Dr. Uhrig
6 just answered your question, unless you are now limiting
7 it to whether they think that the program caused O and W
8 to cheat, or something like that. But I think he did
9 respond to the issue of whether he thought that the
10 program in place would cause participants in it to cheat,
11 which I thought was the gist of the question.

12 MR. JORDAN: No. I don't think that's correct
13 and I don't think that really is what he said.

14 I think the testimony of the witnesses thus far has
15 been essentially that the program was adequate, such that
16 cheating was not necessary to pass the exams. But there
17 has been considerable testimony to the effect that
18 cheating is highly situational, it occurs for reasons
19 peculiar to, apparently to the people who cheat, and
20 matters of that sort.

21 Now I'm asking these individuals whether they can, as a
22 matter of their expertise and experience, preclude the
23 possibility that something about the training program
24 itself may have contributed to the fact that the cheating
25 occurred.

1 MS. BAUSER: I think Dr. Christensen answered
2 that question, unless you wanted to direct that question
3 to others.

4 MR. JORDAN: No one has answered the question
5 specifically, whether they can preclude that possibility.

6 JUDGE SMITH: Right. I think that the question
7 should be answered and I would particularly like to hear
8 Dr. Gardner's view on it, too.

9 WITNESS GARDNER: The answer to that specific
10 question is that anything is possible.

11 BY MR. JORDAN:

12 Q Is that in fact the answer to that question? It
13 is true, indeed, that anything is possible. But it seems
14 to me that -- is that the only extent to which you can
15 answer that question?

16 A (Gardner) Would you repeat it again? I'll try
17 to do better.

18 Q The question is whether: Isn't there some
19 possibility -- let me rephrase it.

20 Can you, as a matter of your experience and expertise,
21 preclude the possibility that some -- the training program,
22 in some way, contributed to the fact that the cheating
23 occurred?

24 A (Gardner) If you will allow me to slightly
25 rephrase your question, I think I can answer it.

1 I would like to respond in a generic sense, which is, I
2 think, perhaps what you had in mind. And then the
3 question would be: Can the possibility of cheating be
4 related to a training program? And the answer to that is:
5 Of course it can be.

6 Q And you cannot exclude the possibility of
7 relating the cheating in this case to the training program
8 at Three Mile Island at the time, can you?

9 A (Gardner) No.

10 Q At the time of the --

11 JUDGE SMITH: Are you going to go off on another
12 subject?

13 MR. JORDAN: Well, this is related. I'm not
14 exactly following that train but I still am in the general
15 subject.

16 JUDGE SMITH: Okay.

17 BY MR. JORDAN:

18 Q At the time that the committee reviewed the OARP
19 program, earlier -- several years ago -- no cheating had
20 occurred at Three Mile Island to your knowledge; correct?

21 A (Uhrig) To the best of our knowledge, no.

22 Q You did not determine that program to determine
23 how if, at all, it might relate to any type of cheating;
24 correct?

25 A (Uhrig) No, sir.

1 Q Thus, while you thought the program was an
2 adequate program on the basis of your analysis, you did
3 not make any specific determination that it was adequate
4 for purposes of -- such that cheating was not necessary,
5 or such that cheating should not occur?

6 A (Uhrig) I believe I answered that question.

7 Q And your answer was what, sir?

8 A (Uhrig) That we did not investigate any aspect
9 of cheating in the 1980 timeframe.

10 Q Thank you.

11 MR. JORDAN: Judge Smith, I am through with that
12 subject matter, if you wanted to get in here?

13 EXAMINATION

14 BY JUDGE SMITH:

15 Q In particular, Dr. Gardner, is the literature in
16 the field of education -- does the literature in the field
17 of education discuss the relationship between training,
18 education, and cheating in testing?

19 A (Gardner) I do not know of any such articles.
20 There are such articles, and not a profusion of such, on
21 cheating.

22 The best research work that I know of that has been
23 done on that goes way back to about 1923. It's a volume
24 by Hartshorn and May, on problems and deceit. And that
25 does get at the extent to which people deviate from the

1 morals and values that we know. And the main conclusions
2 of that series of studies was that cheating -- that lying,
3 so on, are highly situational and at that point it was
4 very difficult even to relate those to certain personality
5 variables.

6 There have been some studies since that have attempted
7 to relate cheating to certain types of personality
8 variables and they have not been very successful.

9 Q I would expect that there might be a
10 relationship between a trainee's perception of, for
11 example, the fairness of an examination and the incidence
12 of cheating. Would you agree?

13 A (Gardner) I would agree that was possible. I
14 don't know of any research. That's all that I was
15 mentioning.

16 Q Do you think there might be a relationship
17 between the trainee's perception of the relevance of an
18 examination to its willingness to cheat?

19 A (Gardner) That could be involved. I think it
20 would be more likely that his concern about the relevance
21 would be related to some other variables as well.

22 JUDGE SMITH: Mr. Jordan?

23 RECROSS EXAMINATION

24 BY MR. JORDAN:

25 Q I take it the committee did not examine the

1 examinations on which cheating occurred; is that correct?

2 A (Uhrig) Not to the best of my knowledge. We
3 did not examine any examinations in which cheating
4 occurred.

5 Q Ms. Wagner asked each of the panel members a
6 number of questions about the interviews that you did. I
7 would like to ask each of you, I'll begin with Dr. Uhrig:
8 In your case, Dr. Uhrig, in the interviews that you had,
9 would you say that they were in the nature of general
10 conversation in the areas that you wished to cover? Or,
11 would you say that they were in the nature of a structured
12 survey with formalized questions?

13 A (Uhrig) Are you talking about interviews with
14 operators?

15 Q Yes, sir.

16 A (Uhrig) I went into that interview with a
17 general idea of what areas I wanted to cover. I did not
18 have a checklist. I did not have a written list -- and
19 sort of followed the general path of the discussion as it
20 developed. There was no structure, other than a general
21 concept of the areas that I wanted to cover.

22 Q Dr. Kimel, same question.

23 A (Kimel) Similar to procedures used in
24 accreditation, where I tried to first determine the
25 background of the person, the responsibilities as

1 perceived, details that would relate to job performance
2 that we could talk about, and in my case, certainly always,
3 uppermost in our mind -- my mind was the matter of morale
4 and the matter of fidelity to NRC -- obligations that the
5 company had to NRC, throughout -- up and down the line
6 throughout the company.

7 Q I understand that you covered those areas. I
8 think everybody has testified to that before.

9 A (Kimel) I did not have a checklist, is that
10 what you meant?

11 Q I appreciate that. You did not have a checklist?

12 A (Kimel) No, sir.

13 Q And then my question is, did you -- my
14 impression from your testimony is that you had a number of
15 areas which you wished to cover, which I believe you just
16 described at least in part. Is it accurate to say that
17 you had essentially general conversation with the
18 individuals in each of those areas?

19 A (Kimel) Yes. Certainly. General conversations
20 are part of all interviews I've had all my life.

21 Q But you did not, for example, do anything to
22 assure that you asked exactly the same questions on the
23 various areas in the different interviews you had?

24 A (Kimel) I have already testified I had no
25 checklist.

1 Q I know -- you could have had a checklist in your
2 mind that could have allowed you to ask exactly the same
3 questions. The answer to my question of whether you did
4 something to assure that you asked exactly the same
5 questions in the areas is "no," is it not?

6 A (Kimel) That is correct.

7 Q Let's go down the road to Dr. Christensen.
8 Dr. Christensen, you certainly testified to what seemed to
9 me to be a fairly structured and carefully developed type
10 of an interview. I understand the way that you began,
11 seemed to begin with open-ended questions and then
12 narrowed down to specifics.

13 My question is, again: In the areas as you touched
14 them, were you -- did you have general conversation in
15 each of those areas? Or was your conversation -- I'll ask
16 you that. Go ahead.

17 A (Christensen) Well, I described yesterday what
18 I consider the, if you will, idealized model for
19 interviews, starting out with rather general and getting
20 more and more specific as necessary to make sure all the
21 points are covered. Dr. Gardner and I discussed this
22 ahead of time because we worked most of the time as a team,
23 and it was all familiar to him, so he agreed with this way
24 to proceed.

25 Now, the one thing we did not have a chance to do which

1 I would do in a full-blown study, is to try out our format,
2 if you would, on a sample, make improvements, and then go
3 back with a final. That was not done. Ordinarily I would
4 in a full-blown interview study.

5 There were certain points, though, that if they didn't
6 bring up, why then I, indeed, brought them up. I did not
7 have a written checklist but I had -- we agreed on the
8 points we wanted to cover. We wanted to ask them about
9 JARP, as it's called, the OARP program, O-A-R-P; attitude,
10 morale, and I -- if they didn't mention, I usually asked a
11 question about the control room because I was interested
12 in that.

13 There may have been other --

14 A (Gardner) I would agree. We did ask about
15 training.

16 A (Christensen) He did most of the questioning
17 and I did most of the recording but we both asked some
18 questions.

19 Q And when you say you had various points that you
20 covered --

21 A (Christensen) That we covered.

22 Q -- that the two of you covered and that in fact
23 you assured that you covered if it didn't otherwise come
24 up --

25 A (Christensen) Yes.

1 Q -- you mean these are subject areas that you
2 determined that you would cover?

3 A (Gardner) Right.

4 Q And then you'd have a conversation with the
5 individual in that subject area?

6 A (Christensen) If he said nothing about OARP
7 then I would bring it up; yes.

8 Q Okay. Thank you.

9 Mr. Kelly, same question with respect to the interviews
10 that you did, of operators.

11 A (Kelly) Yes. I also had no formal checklist
12 but I do this sort of interviewing of operators so often
13 that I do have an informal structure in my mind and
14 generally the same questions are asked of the -- of each
15 operator for that purpose.

16 Q You are referring to -- you say you do this sort
17 of interviewing so often you must be referring to some
18 work you do at other -- have done at other utilities and
19 so on?

20 A (Kelly) That's correct. For similar purposes.
21 And my interviews are also of a general conversation
22 nature because it just develops that way. But I do ask
23 the kind of questions I want to of each of the people I'm
24 interviewing.

25 Q I wasn't sure when we got to you, Dr. Gardner,

1 whether we covered you or not but if you have something to
2 add, please do.

3 A (Gardner) You covered me because all of the
4 interviews I did were jointly with either Dr. Christensen
5 or Mr. Kelly.

6 The only point I would add was that there were two of
7 us, that we had determined the areas we wanted to cover so
8 that we could do that with all the reactor operators that
9 we interviewed so that we could get consistent data across
10 these. And that, I thought it was very helpful and useful
11 that there were two of us there. I thought we were able
12 to probe more effectively and also to be more assured that
13 we were getting straight answers; that we didn't have an
14 expert liar, as nearly as we could do it.

15 Q Dr. Christensen, I want to be clear on a point.
16 This is still talking about interviews, I believe, though
17 you were getting into it with Ms. Wagner on questions of
18 interviews with instructors and you mentioned that you did
19 four instructor interviews.

20 I wanted to be sure I understood this in connection
21 with the previous testimony you had given on the point.

22 As I understand it, at least two of those interviews
23 were really much more in the nature of general
24 conversation and not structured in the way that you have
25 defined -- have described it here?

1 A (Christensen) That's right, sir. Yes.

2 Q Dr. Gardner, you testified in response to a
3 question from Ms. Wagner on the subject of personnel
4 evaluation forms. You testified that you had, I believe,
5 reviewed personnel evaluation forms that had been filled
6 out by members of the staff -- I'm sorry. These are for
7 instructors.

8 A (Gardner) That's correct.

9 Q Do you recall that testimony?

10 A (Gardner) Yes, I do.

11 Q I wanted to be clear. When you said "staff" you
12 meant members of the GPU Nuclear training staff; is that
13 correct?

14 A (Gardner) Yes. I was just trying to recall
15 whether there were other people.

16 There is a document that specifies the people that are
17 going to sign those various -- well, now I'd better back
18 up for a moment.

19 We are talking about the annual evaluations; is that
20 correct? Of the instructors?

21 Q Yes. I believe so.

22 A (Gardner) There is a document that specifies
23 who the people are that have to sign off on that. And I
24 believe I'm correct that they were training staff only.

25 Q Okay. In any event they were certainly GPU

1 staff as opposed to NRC staff or some other staffs?

2 A (Gardner) No. No. They were all GPU.

3 Q When was it that you saw those annual instructor
4 evaluation?

5 A (Gardner) It was sometime during the November
6 visit. I don't recall the exact day.

7 Q This is a November visit to TMI?

8 A (Gardner) Right.

9 Q I think you testified you had seen some classes
10 there or something?

11 A (Gardner) Yes. I attended classes. I also
12 attended the program that they had for instructors.

13 Q Mr. Kelly, you testified concerning the basic
14 principals training simulator. You said that you were
15 fascinated by it and so on. And you got a specific
16 demonstration of it.

17 When did that occur?

18 A (Kelly) I had two specific demonstrations
19 during that first week in November. I do believe it was
20 November 6th and 7th.

21 Q Do you recall, was that the same time that
22 Dr. Gardner was there?

23 A (Gardner) Yes.

24 Q So the dates would be the 6th and 7th? That's
25 election day, if it helps you.

1 A (Gardner) No, I was there --

2 A (Kimel) It was the 8th.

3 A (Gardner) I was there, I voted. then I came to
4 TMI the same day, election day. And then I was there the
5 following three days.

6 A (Kelly) I saw my demonstrations on the 6th and
7 7th, but it was after hours because they were performing
8 training classes on the PBTS on the 4:00 shift, so it was
9 after 6:00.

10 Q Dr. Gardner, you testified, I believe it was to
11 a question by the board, to the use of training aids.

12 Could you identify those training aids that you saw any
13 licensed operator instructors using during their classes?

14 A (Gardner) One of the aids was a mock-up of the
15 control room. It was, I guess, mock-up is a good word to
16 use for that.

17 The second one --

18 Q I'm sorry, was this a big cardboard
19 representation, a photograph?

20 A (Gardner) Yes. Yes.

21 Q Go ahead.

22 A (Gardner) Second were handouts. Third were
23 transparencies for an overhead projector.

24 Q I want to be -- I don't want to cut you off but --

25 A (Gardner) No.

1 Q -- I believe you testified you had seen Dr. Coe
2 use some training aids also?

3 A (Gardner) Yes.

4 Q I want to be clear that we are not including
5 Dr. Coe in what you are describing now.

6 A (Gardner) No. I'm not including Dr. Coe here.

7 Q Thank you. Anything else? In case I cut you
8 off. You said mock-up, handouts, transparencies with an
9 overhead projector?

10 A (Gardner) Those were ones I saw.

11 JUDGE SMITH: Did you see a cathode ray tube
12 partial task simulator demonstrating temperature and
13 pressure? Anybody?

14 WITNESS CHRISTENSEN: I had seen it on a
15 previous occasion. I did not on the period we are talking
16 about.

17 WITNESS KIMEL: Well, the BPTS carries that kind
18 of information.

19 JUDGE SMITH: That superseded the CRT simulator.
20 That was my statement --

21 WITNESS KIMEL: Yes.

22 JUDGE SMITH: That was my statement and you
23 agreed with that? Yes?

24 WITNESS KIMEL: Yes.

25 WITNESS GARDNER: Chairman Smith, I also

1 attended a class that was given on that simulator, that is
2 the BPT. And I think I testified before that I am not an
3 expert in that area at all. And if the cathode ray that
4 you are talking about was included there, I did see it.

5 JUDGE SMITH: I had a moment of confusion here.
6 They were to use a cathode ray tube partial task simulator,
7 which displays temperature and pressure. And then to get
8 an exact replica simulator. And then the -- I've got the
9 sequence out of order, here. I think that the -- I'll
10 just have to read the conditions again and come back to it
11 if I still think it's a problem.

12 BY MR. JORDAN:

13 Q I'll admit to ignorance on what this cathode ray
14 tube thing is. I want to be clear, those of you who saw
15 it saw it in the context of the BPTU simulator; is that
16 correct?

17 A (Gardner) Yes.

18 A (Uhrig) There was, prior to the simulation of
19 the BPTS, a partial task simulator that has been described
20 by Judge Smith and that was used in conjunction with the
21 training prior to the installation of the BPTS. It dealt
22 specifically with pressure/temperature relationships that
23 were part of the training.

24 Q And you mean prior -- you mean prior to --

25 A (Uhrig) The installation of the --

1 Q -- the spring when the BPTS was installed is
2 when this was used?

3 A (Uhrig) It was prior to our being -- arriving
4 at TMI. I have not seen it. I understand it exists, it
5 had been used for some time previously, and was -- it's
6 use was discontinued when the BPTS was installed.

7 Now, you may want to check with GPUN in personnel to
8 confirm that.

9 JUDGE SMITH: That's correct, the scheme was to
10 be the cathode ray partial task simulator to be followed
11 by the basic principals simulator, all of which were to be
12 followed, then, by the exact replica, later on.

13 I commend, for the balance of the hearing, that everyone
14 reread our August 1981 decision, particularly that part on
15 training. I think it's necessary for you to do that
16 before you can be fully informed.

17 BY MR. JORDAN:

18 Q Gentlemen, there was testimony -- Dr. Uhrig,
19 I'll ask you -- concerning the replacement of
20 Mr. Frederick with Mr. Maag. When did the members of the
21 committee first become aware that Mr. Frederick was no
22 longer to be supervisor of licensed operator training?

23 A (Uhrig) Speaking for myself, it was during my
24 deposition when Ms. Weiss showed me some documents which
25 indicated this.

1 Q Did anyone else learn of it before then?

2 A (Christensen) Not I.

3 Q The committee indicates in the negative.

4 Dr. Uhrig, in your discussions with Judge Linenberger
5 on the subject of, in essence, what was the impact of the
6 accident on your analysis here, you discussed your own
7 background and I believe you quoted the president, or
8 chairman of your utility -- to the effect of the
9 significance of the operator to the health of the company.

10 To whom did you speak at Three Mile Island specifically
11 about that point during the course of this effort?

12 A (Uhrig) Well, this issue of the importance of
13 the operator training was the basic theme throughout our
14 whole discussion. I also had some specific discussions
15 with Mr. Clark during our dinner meeting in Washington on
16 August 15th -- 14th. And also the topic came up to a
17 certain extent during our subsequent meeting in -- at
18 Three Mile Island.

19 Q Did you discuss with Mr. Clark, or anyone else,
20 the specific point that, essentially, the operator will
21 determine the health of the company and could bankrupt the
22 company in a couple of hours?

23 A (Uhrig) I did not use that specific quotation
24 in talking to him; no, sir. It was primarily with
25 reference to the priorities assigned to the training

1 program by the GPU as evidenced by the commitment of
2 resources. This is the nature of that discussion with
3 Mr. Clark; and listed his views on this particular topic
4 regarding allocation of resources.

5 Q Thus, as you said, and it is certainly the case,
6 your discussions with them were in the nature of what your
7 discussions have been throughout this particular
8 proceeding, which is the importance of operator training
9 to a safe facility?

10 A (Uhrig) Yes. That's right.

11 Q Dr. Christensen, you said you have been given
12 assurances concerning the fact that the replica simulator,
13 once it is obtained, will be kept up to date?

14 A (Christensen) Yes.

15 Q Who gave you those assurances?

16 A (Christensen) I believe it was Dr. Coe. It was
17 either Dr. Coe or Dr. Long.

18 MR. JORDAN: That's all I have on this recross,
19 your Honor.

20 JUDGE SMITH: Ms. Bradford?

21 RE CROSS EXAMINATION

22 BY MS. BRADFORD:

23 Q Gentlemen, I have a few questions for you on
24 some of the questions asked of you by the Staff.

25 In response to Staff questions, you said that, I

1 believe, that although you may have seen Mr. Frederick on
2 the first day that you came to TMI, you do not recall
3 speaking to him -- and I don't believe any of the panel
4 recalled that?

5 A (Uhrig) No.

6 Q My question, then, is of the other persons
7 listed in table A-1, which is attached to your report, is
8 there anyone else that could be in a similar circumstance?

9 A (Uhrig) We went over that list last night at
10 the end -- near the end of -- yesterday afternoon near the
11 end of the session, and indicated that the discussions
12 with one person was minimal and probably didn't warrant
13 their listing here and that was Karen B. Reist, the
14 secretary. There was no substantial information regarding
15 the program elicited from her and that name should
16 probably also be deleted.

17 Q Thank you.

18 I want to go now to some questions put to you by
19 Mr. Jordan, concerning the program, the training program
20 itself as an indicator of the possibility of cheating. My
21 question to you is somewhat different.

22 If the information were available to management back in
23 the 1980 timeframe, '80-'81 timeframe, that operators were
24 displaying a poor attitude toward training, would that be
25 an indicator that there were -- that there was a

1 possibility of cheating?

2 A (Uhrig) Anybody want to tackle that?

3 A (Kelly) Would you repeat the question, please?

4 Q If, in the -- prior to the cheating incident,
5 there was an indication that the operator attitudes
6 towards the training program were not positive, in fact
7 that they had -- were displaying poor attitudes -- would
8 that be an indication that cheating might occur?

9 A (Kelly) I don't believe that the answer to that
10 question is a yes or a no. Certainly I think, as
11 Dr. Gardner has said, and also Dr. Christensen, there are
12 many, many reasons for people cheating. And I would
13 assume that poor attitudes may be one of them. That's how
14 I would answer that question.

15 Q Dr. Christensen, would you answer the same
16 question?

17 A (Christensen) Well, I'm sorry but I can't do
18 much better than he has. I do not feel expert in this
19 area. They are highly situational things. There probably
20 should be an investigation of each individual case. I
21 would suspect the causes for each of the cheaters may be
22 somewhat different. I don't know that, though. I'm sorry
23 I can't do better than that.

24 Q Let me put it to you this way: Dr. Uhrig has
25 said that the operators are as -- are a valuable resource

1 to the utility; as important as any piece of equipment, a
2 steam generator, core -- they are a very valuable resource.

3 If there were indications that there were attitudinal
4 problems, a breakdown somewhere in the reception of
5 training, in your opinion should management have taken
6 some steps to resolving those problems?

7 A (Christensen) Are you asking me or Dr. Uhrig?

8 Q I'm asking you, Dr. Christensen.

9 A (Christensen) Well, irrespective of
10 implications for cheating whatever they might be, if
11 management was aware of poor attitude on any part of the
12 workforce: Yes. I hope I'm being responsive to your
13 question. Yes, I think management should always be
14 concerned about the morale and attitude of its personnel.

15 Q Now, in retrospect, having, with hindsight --
16 would you say that that poor attitude might be an
17 indicator of cheating? Is that one of the things, given
18 this experience, that you would look to?

19 A (Christensen) Would you repeat that? I'm sorry.

20 Q Having -- with hindsight, if you were in a
21 situation again and you were looking at weaknesses in a
22 training program and you saw a poor attitude displayed by
23 some operators, would that be an indicator to you that
24 there was a possibility of cheating?

25 A (Christensen) It would now. It wouldn't have

1 been then. I confess when we were there the first time
2 the possibility of cheating never even entered my mind.
3 Perhaps it should have, but it did not.

4 Q Do any of the other panel members -- are any of
5 the other panel members able to answer that question?

6 A (Gardner) Yes, I would agree that that might be
7 a possibility. My difficulty is that during the time we
8 were at Three Mile Island for OARP, I detected no poor
9 attitude. The attitude that I found was that, yes, there
10 was some resentment at having to be relicensed but that
11 the operators and the instructors that I talked to at that
12 point were all interested in trying to be as efficient as
13 possible and learn as much as possible so that they would
14 be in a position to operate the plant again safely.

15 So, at that point all I can say is there was no such
16 cheating going on, the attitude was good in my judgment.
17 So if the question you are asking is a purely hypothetical
18 one, then I can answer that, but I don't want to confuse
19 these two. Is it a hypothetical question?

20 Q The last one was a hypothetical question.

21 A (Gardner) All right. The hypothetical question
22 I think I answered in my testimony, that if the
23 circumstances had occurred, cheating was taking place or
24 about to, I would definitely have considered that an
25 important element. I would have investigated in detail

1 the situation to find out what were the elements behind
2 that and would have considered that very important in the
3 decision as to whether or not this was a good training
4 program. So that's my answer to the hypothetical one:
5 Yes, of course I would.

6 Q Did the committee, in the 1980 timeframe,
7 examine attitudes of operators -- was that part of your
8 program in looking at the OARP?

9 A (Gardner) I spent considerable time
10 interviewing operators at that time that were in that
11 training program, in terms of their morale, in terms of
12 how they viewed the whole situation; in terms of how
13 important they thought it was to have adequate training so
14 that they could be relicensed. At that point they all had
15 had their licenses taken away.

16 Q But it wasn't a structured -- and you had not --
17 that was not a formal part of the committee's function?

18 A (Gardner) Yes. That was actually one of the
19 issues that we decided was important: That we should look
20 at the morale and attitude of the people. That was my
21 responsibility, as a matter of fact. I was delegated that
22 responsibility to check on that.

23 Q I would like you to examine some documents that
24 I have here. I have only one copy but there are several
25 of them. These are instructor evaluations of trainees. I

1 believe they are dated, many of them, 1980 -- the 1980
2 timeframe.

3 I'm just going to ask you to review these documents.
4 Unfortunately they are -- the documents that we received
5 from licensee are very poorly copied.

6 MS. BRADFORD: Judge Smith, I don't know how to
7 accomplish this. I want the committee to review these
8 documents so that I can ask you some questions.

9 JUDGE SMITH: I see a sheaf of approximately 10
10 to 20 documents there which you tell us are largely
11 illegible and I don't know if you can accomplish what you --

12 MS. BRADFORD: No, no, a lot of them are
13 perfectly legible but some of them are -- only sections of
14 them are legible. But all of these documents go --
15 express inspectors' opinions of operator attitudes in the
16 1980 timeframe.

17 JUDGE SMITH: Maybe a hypothetical can be put to
18 the panel without them themselves reading the documents,
19 that you can agree on with Ms. Bauser, that instructors
20 had made some attitudinal comments, and how it would
21 affect their opinions. Would that be possible?

22 MR. JORDAN: Your Honor, could we confer for a
23 moment? Maybe I can help out.

24 JUDGE SMITH: Sure. Please do.

25 (Discussion off the record.)

1 MS. BAUSER: Judge Smith, while they are talking,
2 I think it's necessary for me to raise a point of
3 scheduling here. Mr. Kelly must leave here by noon at the
4 very latest to make his plane or he will not get home for
5 Christmas and I would not like to be responsible for that.
6 And I would like to give him perhaps five minutes before
7 then, or something, so he's not racing out.

8 JUDGE SMITH: I think Mr. Kelly's role on the
9 committee is a rather discrete one and his expertise is,
10 you know, sharply discrete from the others. I think that
11 we can ask the parties right now to put any questions to
12 Mr. Kelly that you think it is necessary for him to answer
13 and let him get going.

14 MR. AU: Yes. I have a couple of questions of
15 Mr. Kelly.

16 JUDGE SMITH: That would affect Mr. Kelly. In
17 the meantime you give Ms. Bauser those documents and see
18 what you can work out.

19 RE CROSS EXAMINATION

20 BY MR. AU:

21 Q Mr. Kelly, in your interviewing of licensed
22 operators and trainees at TMI, did you notice any attitude
23 differences compared to your interviews with licensed
24 operators and trainees at other facilities?

25 A (Kelly) The only one marked difference, I

1 believe, that I noticed between the attitudes of the TMI
2 operators and many of the other operators at other
3 facilities, was about the requalification program. There
4 is a general resentment by operators in the industry that
5 they have to take requalification examinations every
6 single year, where other disciplines do not.

7 At TMI, the attitude is much more positive, even though
8 there is some resentment, that this has to take place.
9 And I believe the reason for that is that the
10 communication between training and operations, and the
11 operators themselves, is very good in the sense that, if
12 operators have needs for additional training or training
13 in the areas that they feel that they may be weak, from
14 one time to another, they can communicate this need and
15 the training programs are beefed up, essentially, to meet
16 these needs.

17 So I would say that there is less resentment in general
18 here than in the industry.

19 Q Did you find any resentment due to any delay in
20 a restart decision at TMI?

21 A (Kelly) I would say it's not resentment; it's
22 disappointment. These people are ready to start up that
23 plant. It is more disappointment.

24 Q And that does not seem to affect their other
25 attitudes?

1 A (Kelly) No, it does not.

2 Q Particularly toward training?

3 A (Kelly) Particularly towards training.

4 Q Let me ask you a question in regard to
5 instructors. Did you find any differences between
6 instructors at TMI and instructors at other utilities, in
7 terms of attitudes?

8 A (Kelly) No. I would say that all of the
9 instructors who are in the positions as qualified and
10 certified ROs, and SROs, and I'm speaking of those people
11 that are certified or licensed, they have a very
12 professional attitude and certainly TMI is no exception.

13 Q So you would find the same level of
14 professionalism exhibited in the operator instructors?

15 A (Kelly) At TMI?

16 Q Yes.

17 A (Kelly) Absolutely.

18 Q This is a question I'm not sure you can answer
19 or the other people on the panel. Did you look at the
20 failure rate in the company's in-house testing program?

21 A (Kelly) No, I did not. If you say "in-house
22 testing," I looked at the requalification failure rate on
23 the 1982-1983 requalification cycle examinations. The
24 purpose was to see if there was anyone who had failed the
25 examinations, were they requalified and retested.

1 Q This is the NRC exam?

2 A (Kelly) No, this is the in-house
3 requalification examinations. Those are the only in-house
4 requalification examinations I reviewed.

5 Q Did you compare that failure rate with the
6 failure rate at other facilities?

7 A (Kelly) I had thought about it as I reviewed it.
8 The failure rate is considerably lower at TMI for those
9 two cycles, 1982 and 1983, than some of the other
10 facilities.

11 Q You didn't have 1984 data available?

12 A (Kelly) No, I did not.

13 MR. AU: I think that's all I have for Mr. Kelly.

14 JUDGE SMITH: Do you have questions of Mr. Kelly?

15 MR. JORDAN: I just wanted to follow up that
16 last line.

17 RE CROSS EXAMINATION

18 BY MR. JORDAN:

19 Q Can you follow up the other facilities that had
20 higher failure rates?

21 A (Kelly) I would -- I would rather not.

22 Q Did you undertake any specific study to do a
23 failure rate comparison or is that simply your general
24 impression?

25 A (Kelly) That's my general impression.

1 MS. WAGNER: Staff has one question to Mr. Kelly.

2 RECROSS EXAMINATION

3 BY MS. WAGNER:

4 Q To what would you attribute the lower failure
5 rate? Did you draw any conclusions from that fact?

6 MR. JORDAN: I have to object. There's no basis,
7 no indication that he made any attempt to determine what
8 the reasons for the differences in failure rate might have
9 been.

10 JUDGE SMITH: Well, ask your preliminary
11 question then.

12 BY MS. WAGNER:

13 Q Do you have an opinion as to the basis for the
14 lower failure rate at TMI?

15 A (Kelly) I guess the basis that I would have to
16 use would be that the training -- the requalification
17 training program here at TMI has been so well established
18 and the organization that implements it is so qualified,
19 and the operators motivated, I feel, to do well on the
20 examinations, that I would say that is one of the major
21 reasons why the failure rate is lower here than at some
22 other facilities.

23 Q Are there any other major reasons that you --

24 A (Kelly) None that I can think of at the moment.

25 RECROSS EXAMINATION

1 BY MR. JORDAN:

2 Q You have not done a study at the other
3 facilities that you are referring to that is comparable to
4 your study at Three Mile Island; is that correct?

5 A (Kelly) No, I have not.

6 Q And, again, you did nothing specific to
7 determine what the reasons for the failure rate are at
8 Three Mile Island and what the reasons for the failure
9 rates are at the other facilities you are talking about;
10 correct?

11 A (Kelly) Well, let me answer that, Mr. Jordan,
12 by saying that the other facilities where I do actually
13 perform some requalification examinations as an outside
14 objective examiner -- I do evaluations of the failure
15 rates for individual utilities.

16 Q Do you determine the reasons for the failure
17 rates or --

18 A (Kelly) The reason is usually, as I told
19 Ms. Wagner, that the training programs here at TMI are
20 implemented in a more effective fashion, or the training
21 material and the scope and content is somewhat better.

22 MR. JORDAN: Okay. Thank you.

23 JUDGE SMITH: Any further questions of Mr. Kelly?
24 You'd better leave, Mr. Kelly.

25 MS. BAUSER: Judge Smith, I assume we are saving

1 my redirect for when this panel comes back?

2 JUDGE SMITH: Oh, I hadn't expected that. Is
3 that your preference?

4 MS. BAUSER: Yes, sir. I can't imagine even
5 getting to my redirect before noon, which is when I
6 understood we were going to be all leaving. And I do --

7 JUDGE SMITH: No. That wasn't the deadline.
8 The deadline was, inasmuch as -- well, you need Mr. Kelly?

9 MS. BAUSER: Yes. Yes, sir.

10 JUDGE SMITH: Does anybody -- is there any
11 reason why any party would object if her redirect was
12 continued to the beginning of rebuttal? Is that what you
13 had in mind?

14 MS. BAUSER: Yes, sir. I have -- I hate to use
15 this time, but two, at least two of the committee members
16 cannot be here the week of -- that first week that we are
17 coming back in Harrisburg, so we couldn't continue them
18 when we next convene, which would be the other alternative.
19 I don't think we'll get to the rebuttal until the
20 following week, when they would be coming back. And I
21 would propose that we start out with this: if someone has
22 recross on my redirect they have that opportunity at that
23 point.

24 JUDGE SMITH: Mr. Jordan?

25 MR. JORDAN: I have no objection to that.

1 MR. AU: Does your redirect concern Mr. Kelly in
2 particular?

3 MS. BAUSER: I'm afraid it does. It concerns
4 Mr. Kelly and Dr. Gardner, in particular, in fact.

5 JUDGE SMITH: Well, if no one is objecting, I
6 see no problem if you conclude your redirect when they
7 reappear.

8 We will -- so what's our plan now?

9 MR. JORDAN: Continue with TMI.

10 MS. BAUSER: I think that the next -- I don't
11 think that the committee now is a bar to continuing past
12 noon, if I understand it. Correct me if I'm wrong,
13 gentlemen. If we want to go a little past that, I don't
14 have any problem with that, Judge Smith.

15 JUDGE SMITH: I would like to know because I
16 have to either keep or break an appointment. I want to
17 know what the pleasure of the parties is.

18 MS. BAUSER: I would like to finish up cross if
19 we could so I have some normal breaking point.

20 MR. AU: I have just five minutes of cross.

21 JUDGE SMITH: Give me about a two-minute break.

22 (Recess.)

23 MS. BRADFORD: Judge Smith, I have shown the
24 documents to the licensee and Ms. Bauser has agreed to
25 make these documents available to this panel and to allow

1 me to question on this issue.

2 Are you shaking your head?

3 MR. JORDAN: To be accurate, I would not say the
4 licensee has agreed to allow her to question on the issue.
5 The agreement is to take the issue of the documents from
6 here and move it to the beginning of the next session
7 where the committee appears. So by that time they will
8 have had time to read it and we won't take up that kind of
9 time in the hearing process. In other words, that line of
10 questions of TMIA's cross-examination on the point will
11 simply be moved from here to just prior to Ms. Bauser's
12 redirect.

13 MS. BAUSER: As will any argument on the
14 propriety of such questions?

15 MR. JORDAN: That's right.

16 JUDGE SMITH: I would have preferred to have
17 seen a stipulation as to what the documents might say, and
18 then just put it to them and get their opinion.

19 MS. BAUSER: That's possible, Judge, but I have
20 not seen these before.

21 JUDGE SMITH: Work toward that. I don't think
22 they should sit there and go through those documents and
23 take all that time.

24 We had interrupted Ms. Bradford for Mr. Kelly, I
25 believe. So we'll now go back to Ms. Bradford.

1 (Mr. Kelly was excused.)

2 MS. BRADFORD: I have no further questions.

3 JUDGE SMITH: During the recess, Dr. Gardner
4 approached the bench and expressed concern that the record
5 was not complete as to what his testimony might be with
6 respect to the different causes of cheating. And he seems
7 to feel somewhat unsettled, that it's not a complete point
8 that's made, and I recommended that we make it on the
9 record again, and in effect what he said is he could
10 speculate on many, many causes of cheating and has
11 wrestled with the problem and has not solved it. Would
12 you elaborate on that? That's what he told me and I ask
13 him to put it on the record.

14 WITNESS GARDNER: Yes.

15 JUDGE SMITH: I guess I have captured it fairly
16 well.

17 MS. BAUSER: The Chairman is asking you to
18 confirm that that was the substance of your conversation,
19 Mr. Gardner.

20 WITNESS GARDNER: Yes. It was. I think that
21 expresses it very adequately.

22 JUDGE SMITH: I also told him that it was not
23 his responsibility to discover all of the causes of
24 cheating in the world either. So that's where we ended it.

25 MR. JORDAN: Your Honor, I appreciate the fact

1 that a nonlawyer may see fit to approach the board in that
2 manner, but I would appreciate the board's emphasizing the
3 point that if anyone has that type of problem they should
4 go to counsel and not to the board.

5 JUDGE SMITH: Yes. That's exactly correct, and
6 I did.

7 MR. JORDAN: I assumed you had informed
8 Dr. Gardner about that. I was concerned about the rest of
9 the people.

10 JUDGE SMITH: The point is I did not make any
11 admonition to Dr. Gardner, except that what he says should
12 be on the record. I don't want to make a general
13 admonition that no witness at any time may address the
14 board without first consulting with counsel. I think that
15 that's a prudent thing to do. However, witnesses also
16 have, sometimes, an independent right to have their
17 testimony fully understood, particularly in a public
18 hearing of this nature, as compared to a private
19 litigation. So I would not -- I would recommend it
20 generally, if you are in doubt, seek counsel. But I can't
21 make that an iron-clad admonition in all instances.

22 WITNESS GARDNER: Judge Smith, that was probably
23 poor judgment on my part. I won't do it again.

24 JUDGE SMITH: It was very harmless, very natural.
25 I happened to be sitting there. It's of no moment.

1 MR. AU: I guess we'll continue with me then, is
2 that correct, since Ms. Bradford is finished?

3 JUDGE SMITH: All right. Then you are next; yes.

4 RE CROSS EXAMINATION

5 BY MR. AU:

6 Q Dr. Uhrig, Judge Linenberger asked you when the
7 prefiled testimony of November 1st was prepared. Did the
8 committee sit down as a whole to prepare that testimony?

9 A (Uhrig) Yes.

10 Q On what date was that?

11 A (Uhrig) A day or two before. There had been a
12 preliminary draft circulated earlier and then we met in
13 Washington, at counsel's office, and -- now, wait a minute.
14 The other four members of the committee met and reviewed
15 it and then I came in the following day, as I recall, and
16 reviewed it. And then it was submitted.

17 So it was the end of October, the 29th, 30th, 31st,
18 somewhere in there. I probably could reestablish it if it
19 was critical. But we did all have a chance to review it
20 in the preliminary draft form and in the final draft form.

21 Q Okay. Let's start with the final draft. How
22 long did you spend preparing the final draft as a
23 committee as a whole?

24 A (Uhrig) Starting with the preliminary draft, it
25 was an all-day session, as I recall, for the four other

1 members. I was not available on that particular day so I
2 came in the following day and spent much of the -- I
3 arrived at about 11:00 and spent -- well, I was there
4 until after 5:00, as I recall.

5 Q And when was the first draft testimony
6 circulated?

7 A (Uhrig) About a week earlier, as I recall. And
8 this, basically, was the compilation. The first draft was
9 simply a summary of the items that were in the report, or
10 special report that dealt specifically -- it was a
11 rehashing of the items in the special report that dealt
12 with the operator -- licensed operator training.

13 Q And did the committee sit down as a whole to
14 prepare the first draft?

15 A (Uhrig) No. It did not.

16 Q Who prepared the first draft?

17 A (Uhrig) Basically this was done under my
18 direction and it was basically done by legal counsel at my
19 direction, that they extract those portions of the report
20 that dealt with licensed operator training. There was
21 nothing in the first draft that was not in this report.
22 Anything that pertained to the drafts beyond the report
23 were taken up at the meeting that I alluded to a few
24 minutes ago.

25 Q You say it was done by legal counsel at your

1 direction?

2 A (Uhrig) Yes.

3 Q By "legal counsel" who do you refer to?

4 A (Uhrig) To the office of Ms. Bauser.

5 Q And --

6 A (Uhrig) And we discussed it on the phone.

7 Q Back on August 13th, I believe you testified
8 yesterday you were aware that you were preparing -- you
9 were planning to testify in this area?

10 A (Uhrig) This was the first that we were
11 notified that we would be expected to testify at this
12 hearing.

13 Q And who notified you?

14 A (Uhrig) Ms. Bauser, I presume acting on the
15 part of the licensee.

16 Q I believe Ms. Bradford mentioned that in
17 response to an interrogatory that TMIA had filed, licensee
18 informed TMIA that the committee was not expected to
19 testify. Are you aware of that?

20 MS. BAUSER: Could you repeat the question,
21 please, Mr. Au?

22 MR. AU: I think that Ms. Bradford mentioned
23 yesterday in response -- in answer to an interrogatory by
24 TMIA that the licensee stated that this committee was not
25 expected to testify.

1 MS. BAUSER: I have no recollection of that.

2 MS. BRADFORD: Yes.

3 MS. BAUSER: I think the testimony went to the
4 production of a second report, not to their not testifying
5 in this proceeding.

6 WITNESS UHRIG: I'm not aware of any such
7 testimony that the committee would not testify here.

8 BY MR. AU:

9 Q I'm just wondering whether you were aware of
10 that?

11 A (Uhrig) No.

12 MS. BAUSER: Excuse me, I would just like the
13 record to reflect that there should not be -- Mr. Au's
14 question suggested at some point that there was some
15 intention that this panel not testify. And the question
16 that was answered was "I am not aware of that." I am not
17 aware of any such point, never mind the awareness of the
18 OARP to that effect. I would just like the record to
19 reflect that.

20 JUDGE SMITH: I have trouble understanding your
21 point, Ms. Bauser, because I didn't understand Mr. Au's
22 point. One builds upon the other, so that's fine with me
23 if you want the record to reflect that.

24 JUDGE WOLFE: It would be helpful, Mr. Au, if
25 you would tell us whether your microphone is working. I

1 don't hear you too well.

2 MR. AU: Maybe I should tilt it.

3 BY MR. AU:

4 Q On page 35 of the special report, I guess the
5 original OARP Review Committee made the recommendation
6 which is listed as Recommendation J.

7 Could you tell me the basis for that recommendation?

8 MS. BAUSER: I have an objection. At least I
9 would like to hear Mr. Au link this up to the follow-on
10 to the cross-examination of the other parties, because I
11 don't recognize it.

12 MS. WAGNER: Staff has the same objection.

13 MR. AU: I understand this might be slightly off,
14 but Judge Linenberger asked a question to which Mr. Uhrig
15 responded that one of the things he wanted to do was
16 ensure that the plant was adequately manned by competent
17 operators. Now -- then Mr. Uhrig also responded to
18 another question by Judge Linenberger concerning the
19 management's response to the criticisms listed in the
20 original OARP report. And I took notice that the report
21 mentions that the management responded to every one of the
22 recommendations except for one and that is the
23 Recommendation J on page 35.

24 MS. BAUSER: Does the board have this
25 recommendation in front of it, because I could read it if

1 you do not.

2 JUDGE SMITH: Recommendation J?

3 MS. BAUSER: Yes.

4 JUDGE SMITH: I don't know.

5 MS. BAUSER: On page 35 of the special reports
6 Recommendation I, the practice of changing an operator's
7 work schedule every week should be modified so that
8 changes are made every four to six weeks.

9 This recommendation was studied by GPU Nuclear and they
10 decided not to implement such a change.

11 MR. AU: I take that to be relevant to whether
12 the training -- the operators -- the Staff is adequately
13 manned.

14 JUDGE SMITH: This is another problem that has
15 pervaded this hearing. The operators' crew schedule was
16 the subject of very long litigation. We heard every
17 argument one way or the other on it that I can imagine
18 could be made, and here we are, as if it had never been
19 discussed. I don't want to hear much about it.

20 MR. AU: Could I just ask -- it's a very simple
21 question.

22 JUDGE SMITH: But I want a commitment from all
23 participating counsel that when this hearing reopens that
24 they will have thoroughly read the August 1981 -- well,
25 excuse me. You don't have to read all of that. But on

1 shift manning, on training, and those aspects that have
2 relevance to this hearing, that you will be thoroughly
3 familiar with that. And also I assume that everyone is
4 familiar with the June 1982 decision on cheating.

5 But in the meantime go ahead with your question.

6 BY MR. AU:

7 Q On the briefings that you had by GPU management,
8 did they brief you on their response to that?

9 A (Uhrig) Only that they had reviewed it and they
10 had elected not to do it for a variety of practical
11 problems related to union contracts, to some concern
12 expressed by the operators that they would prefer not to
13 do that, and that on balance, they preferred not to. So
14 therefore the management elected to leave the scheduling
15 as it was.

16 MR. AU: No other questions.

17 JUDGE SMITH: Ms. Wagner?

18 MS. WAGNER: Staff has no recross.

19 JUDGE SMITH: Nothing further of this panel?

20 JUDGE WOLFE: Ms. Bauser, this panel you say
21 will not be available at the next session on January 2?
22 Is that what you said?

23 MS. BAUSER: Yes, sir. Let me tell you the
24 extent of my knowledge. I know that two of the panel
25 members are unavailable that week. I believe it's the 3rd

1 and the 4th, and I'm not positive about the 2nd, but I
2 don't think they can come back then. So I would suggest
3 that, since they will come back for rebuttal, that we take
4 this up just prior to the rebuttal, prefiled testimony.

5 JUDGE WOLFE: Proceeding with your redirect
6 prior to taking their rebuttal testimony; is that my
7 understanding?

8 MS. BAUSER: Yes, sir.

9 JUDGE SMITH: All right. If there's nothing
10 further, gentlemen, then you are excused for now until we
11 see you again.

12 WITNESS GARDNER: Merry Christmas.

13 WITNESS CHRISTENSEN: Merry Christmas.

14 JUDGE SMITH: Could you give us your order of
15 presentation for next week?

16 MS. BAUSER: Yes, sir. Dr. Long and Dr. Coe
17 will be the next panel of witnesses and then that will be
18 followed by Mr. Leonard, Newton, and Ross.

19 JUDGE SMITH: You mean this will begin the 2nd.
20 Do we expect them to take the whole week, apparently? And
21 then we'll begin with this panel the following week?

22 MS. BAUSER: As you know, Judge Smith, that's
23 not my call to make, but my guess would be that they would
24 take all week.

25 JUDGE SMITH: That hasn't been discussed,

1 apparently, with the parties?

2 MS. BAUSER: Judge Smith, there are some other
3 witnesses, also. There's the Staff witnesses and UCS
4 witnesses. So when you add all that up, clearly this
5 panel would not be required.

6 JUDGE SMITH: Oh, I had overlooked the fact that
7 this panel was returning as a rebuttal panel rather than
8 continuation of your case. So we'll just take it as it
9 comes.

10 All right, then, after we have the second panel then
11 we'll go with Intervenors' witness and the Staff's panel.

12 MR. JORDAN: Your Honor, the only thing I would
13 say -- I believe we discussed this on the telephone
14 conference call -- I know that Dr. Reagan can be available
15 the week -- I believe it begins the 7th, Monday the 7th.
16 We wouldn't be able to have him during that week of 2, 3,
17 4. I'd be very surprised if we got to him, in any event.

18 JUDGE SMITH: It wouldn't seem likely. And it
19 would not be -- no. We'll just take it as it comes.

20 MR. GOLDBERG: Judge Smith, I noticed in my
21 mailbox this morning that UCS has filed surrebuttal
22 testimony. I'm wondering -- of Dr. Reagan. I'm wondering
23 whether they plan on handling that when Dr. Reagan offers
24 his direct or whether they are going to call him back
25 after the licensees' rebuttal testimony.

1 MR. JORDAN: That's an issue that has just been
2 beginning to congeal, so to speak, in my mind. I don't
3 like having to think about it.

4 (Laughter.)

5 I had originally been thinking -- and raised the point
6 with Ms. Bauser -- the board, I'm sure, is aware that the
7 Commission has recommended that rebuttal witnesses -- at
8 some times rebuttal and surrebuttal go on together. I had
9 thought about that as a possibility. I don't know how it
10 fits into the scheduling. It wouldn't surprise me that we
11 would probably want to do Dr. Reagan all at once. In
12 other words, I don't want to have him come from San Diego
13 to Washington more than once. That's probably my
14 overriding goal.

15 JUDGE SMITH: I think that that recommendation
16 of the Commission is adversary rebuttals and surrebuttals
17 go on at the same time.

18 MR. JORDAN: Right.

19 JUDGE SMITH: All right, is there anything
20 further?

21 We'll adjourn to January 2nd. Our contract for that
22 hearing room runs out and we'll have to attend to that,
23 but I -- I think it's going to be available. I think we
24 should be able to continue up there.

25 MS. BAUSER: Judge Smith, we begin at 10:00?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25

JUDGE SMITH: 10:00 a.m.

(Whereupon, at 12:25 p.m., the hearing was
adjourned, to reconvene at 10:00 a.m., January 2, 1985.)

CERTIFICATE OF OFFICIAL REPORTER

This is to certify that the attached proceedings before the UNITED STATES NUCLEAR REGULATORY COMMISSION in the matter of:

NAME OF PROCEEDING: METROPOLITAN EDISON COMPANY

(Three Mile Island Nuclear
Station, Unit No. 1)

DOCKET NO.: 50-289-SP (Restart Remand on Management)

PLACE: BETHESDA, MARYLAND

DATE: FRIDAY, DECEMBER 21, 1984

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission.

(sig)
(TYPED)

Joel Breitner
JOEL BREITNER
Official Reporter
ACE-FEDERAL REPORTERS, INC.
Reporter's Affiliation