

160-1138

-----x
PRESIDENT'S COMMISSION ON THE
ACCIDENT AT THREE MILE ISLAND
-----x

DEPOSITION of BABCOCK & WILCOX by
GEORGE KINKAID WANDLING, held at the offices of
Babcock & Wilcox, Old Forest Road, Lynchburg,
Virginia 24505, on the 2nd day of July, 1979,
commencing at 6:50 p.m., before Robert Zerkin,
Notary Public of the State of New York.

BENJAMIN REPORTING SERVICE
CERTIFIED SHORTHAND REPORTERS
FIVE BEEKMAN STREET
NEW YORK, NEW YORK 10038

[212] 374-1138

8001280 635

T

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

FOR BABCOCK & WILCOX:

MORGAN, LEWIS & BOCKIUS, ESQS.
Attorneys for Babcock & Wilcox
1800 M Street, N.W.
Washington, D.C. 20038

BY: GEORGE L. EDGAR, ESQ.
KEVIN GALLEN, ESQ.
of Counsel

-and-

JOHN G. MULLIN, ESQ.
House Counsel

FOR THE COMMISSION:

WINTHROP A. ROCKWELL, ESQ.
Associate Chief Counsel

ALSO PRESENT:

RONALD M. EYTCHISON

CLAUDIA A. VELLETRI

ooo

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

G E O R G E K I N K A I D W A N D L I N G ,
having been first duly sworn by Winthrop A.
Rockwell, Esq., took the stand and testified
as follows:

MR. ROCKWELL: Please mark this as
Wandling Deposition Exhibit 51.

(Resume of George Kinkaid Wandling,
herein marked Wandling Deposition Exhibit 51
for identification, this date.)

DIRECT EXAMINATION

BY MR. ROCKWELL:

Q Please state your full name.

A George Kinkaid Wandling.

Q What is your current business address?

A Business address is Old Forest Road, Lynchburg,
Virginia.

Q Who is your current employer?

A Babcock & Wilcox.

Q What is your current position with Babcock
& Wilcox?

A My position is plant startup and test planning
task engineer.

Q Have you brought with you today a resume
reflecting your education and employment history?

A I have.

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

Wandling

4

Q Showing you what we have marked as Wandling Deposition Exhibit 51, is that the resume which you brought with you?

A Yes.

Q Did you prepare it yourself?

A I did.

Q It is complete and up-to-date as of today?

A Yes.

MR. ROCKWELL: Please mark this as Wandling Exhibit 52.

(Document described below herein marked Wandling Deposition Exhibit 52 for identification, this date.)

Q Mr. Wandling, showing you what has been marked as Wandling Deposition Exhibit 52, can you identify it for me.

A Yes, I can.

Q What is it?

A These are a transcript of the notes, a copy of the notes I took during the course of events that occurred on March 28, 1979 with regard to the TMI 2 transient.

Q Where were you at the time you took these notes?

A I was here at B&W's facilities, Old Forest Road.

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

Q Were you in any particular place in the facilities?

A Several different offices, and the project control center.

Q Who gave you the assignment of taking these notes?

A In the early afternoon I was given the assignment by Jim Deddens, I believe.

Q Please tell me what the assignment was. What did he ask you to do?

A His assignment was for me to take notes of information received with regard to the transient, the information that was being received by phone communications with the site, and any other information that happened to come in from whatever source.

Q So his instructions to you were to record incoming information to B&W?

A His instructions, to the best of my recollection, were to take notes on the course of events during the day.

Q Did that also include discussions here at B&W as well as information that was incoming from the outside world?

A His instructions were no more explicit than that.

Q How would you characterize these notes in

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

terms of the kind of information they include?

A They include information that was received from whatever source mentioned in here, and they include recommendations made at which time I was present when they were formulated and also transmitted to the site.

Q Where you have notes of a telephone conversation, were you able to hear both ends of the telephone conversation?

A Yes, sir.

Q Is that because you were on a speakerphone?

A Squawk box, speakerphone, yes.

Q Is all of the information that you have recorded in these notes, information you received firsthand?

A No, sir.

Q Let me restate it to make sure I am clear on your answer.

Is all of the information included on Deposition Exhibit S2, information you heard with your own ears from the person speaking it?

A Yes.

Q In other words, it was a telephone conversation in which you were listening to parties on both ends and took notes?

A Yes.

1

2

Wandling

7

3

Q And if it was a conversation that is indicated here, it was because you heard that conversation and made a note of it?

4

5

A Yes, that is correct.

6

7

Q Did anyone else supply you with information indirectly which made their way into the notes here?

8

9

A I believe the page you have in front of you, yes, from J. D. Phinney.

10

11

Q At what time did you start taking these notes?

12

A Approximately 7:45.

13

Q In the evening?

14

A In the morning.

15

Q You said you got the assignment in the early afternoon.

16

A That's right.

17

18

Q How could you have taken the notes in the morning if you did not get the assignment until early afternoon?

19

20

A As part of my job as plant startup and test planning and task engineer, I generally take notes.

21

22

Q You had been performing the function of note taking throughout the day?

23

24

A For my own edification, I had been doing that.

25

Q You have put in certain times in the notes,

1

2

Wandling

8

3

or references to time of day that some events occurred,

4

or that you received certain information which went

5

into your notes. How did you ascertain those times?

6

A . . . by my watch.

7

Q They were not reconstructed later?

8

A The times?

9

Q Yes.

10

A No, sir.

11

Q So when you put down, for instance on

12

Page 3, "Basics of 0745 telephone conversation," it is

13

because you looked at your watch at the time of the

14

telephone conversation, and saw it was 0745?

15

A I may have at times like, for instance, the 0745

16

phone call, I knew that I came to work at approximately

17

7:45, automatically started taking notes when I heard

18

about the conversation going on, and then sometime

19

during the conversation at a break may have gone back

20

and said, approximately 7:45.

21

Where the time was not exact per my watch, I

22

think I almost always put an approximation mark in

23

front of the time.

24

Q Were you in the simulator at all on the

25

28th?

26

A No, sir, not in the simulator.

27

Q Have you had a chance to review these notes

28

1

2

Wandling

9

3 since you created them on the 28th?

4 A Yes, sir.

5 Q In making that review, have you been satis-
6 fied that the notes are accurate to the best of your
7 ability to record them at the time on the date of the
8 28th?

9 A I am satisfied that the notes that are there are
10 an accurate picture of the way that I received the
11 information.

#2

12 Q Have you made any corrections in the notes
13 upon reviewing them at any later date than the 28th?

14 A No, not later than the 28th.

15 Q Would you review the Exhibits you have in
16 front of you and tell me if it is complete?

17 A It is complete.

18 Q Who wrote the attachments?

19 A Attachment 1, I believe, was drafted by Bill
20 Spangler and Don Hallman at the same time.

21 Q When?

22 A The morning of March 28th.

23 Q What time?

24 A It was after the 0745 telephone conversation, but
25 prior to the 9:00 o'clock task force meeting.

Q And Attachment 2?

A Attachment 2 was drafted by Bill Spangler and

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

myself immediately -- well, during the task force meeting.

Q When?

A The 9:00 o'clock task force meeting.

Q Do all of the pages of notes reflect just your handwriting? Is there anyone else's handwriting here?

A There is nobody else's handwriting here.

Q Were you in one place most of the time during the day when you were taking these notes?

A After approximately -- well, after the time when we went to the project control center, which was in early afternoon, I recall approximately 1300, I was in one place the rest of the day.

Q By the rest of the day, you mean until when?

A Until about 9:00 o'clock that evening.

Q Does that take us through the end of your notes?

A It does.

Q Before that, would you trace where you were in the building during the day starting when you came in?

A When I came in, there was a telephone conversation in progress which was the 0745 telephone conversation from the site; that telephone conversation lasted I am

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

not sure how long. It was a few minutes after 8:00. Thereafter, I can't really tell you where I was other than to say I was in or immediately around my unit manager, Bill Spangler's office, and mine is right next to his, and the next place I remember being was at the training room or classroom for the task force meeting at 9:00 o'clock.

After the task force meeting, again we went back up to Spangler's office where there was further discussions about the information received, and although I know I was not at that one place around Spangler's office, I don't recall any particular place I was at up until we went to the project control center after lunch. It was mainly around Spangler's office and my office.

Q Has anyone else reviewed Deposition Exhibit 52 for accuracy other than yourself?

A I cannot say.

Q Well, to your knowledge.

A It has been reviewed, yes.

Q By others?

A By others.

Q But you don't know who?

A I could not tell you everyone who has seen it. I don't know that it has gone through a detailed review

#ihb

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

for accuracy.

Q But do you know of anyone who has reviewed it to see if what you took down in your notes comports with their recollection?

A Yes.

Q Who?

A I can go on with a big list. I know of people who have seen this and have at least looked at portions of it.

Q Let me go at it a different way.

Do you know of anyone who has looked at it who disagreed with the substance of your notes?

A No.

Q Have you made any other statements or are there any other notes that you made on the 28th or the days after the 28th other than what we have before us as Wandling Deposition Exhibit 52?

A Yes, I have.

Q Would you tell me about it?

A The notes I took on March 28th are on stationery pad. These notes as you can see are on larger paper. What I did was, the night following the transient, I transcribed the notes from the note pad to this paper.

Q Was that a verbatim transcription or were you interpolating and expanding?

1

2

Wandling

13

3 A I was interpolating and expanding; in other words,
4 I used many abbreviations during the actual writing of
5 the notes, and also I would recall something that may
6 have happened. I remembered who was there. I filled
7 all that in to the best of my recollection, and I did
8 that on the evening of the 28th.

8

Q Do you still have the original notes?

9

A No, I do not.

10

Q Have they been thrown away?

11

A I don't think so, no.

12

Q Who has them?

13

A I think they are in this building, I think.

14

Q Do you know who has them?

15

A I think I know, but it is not a person, it is
16 a place where they are located.

16

Q Where are they?

17

A I guess you would call it the New Project Control
18 Area for the TMI 2 support project.

19

Q I would ask that you retrieve those notes,
20 make a copy for us, and transmit them to us through
21 your counsel, Mr. Edgar, okay?

22

A Yes.

23

Q Other than the original of your notes from
24 which this document, Exhibit 52 was created on the
25 night of March 28th, do you have any other notes

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

we will contact counsel for B&W and they will get in touch with you.

A Fine.

MR. ROCKWELL: Thank you for staying.

(Whereupon, at 7:15 p.m., the deposition was adjourned.)

GEORGE KINKAID WANDLING

Subscribed and sworn to
before me this _____
day of _____
1979

Notary Public

o0o

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

relating to the events surrounding the TMI 2 accident?

A I have some notes of the following days.

Q Were you performing the same kind of function in the following days that you performed on the 28th?

A I was.

MR. ROCKWELL: Could we have a complete set of those notes?

MR. EDGAR: Yes.

Q Have you, other than your note taking, have you made any statement about your knowledge of events surrounding the TMI accident?

MR. EDGAR: Would you explain "statement" for him?

Q Statement would mean a written narrative, an interview, say, with the NRC.

A No, sir.

Q Or interview with anyone else?

A No, sir.

Q Mr. Wandling, I am going to recess your deposition at this time, leaving you subject to recall for additional testimony should it be required. We don't have any present plans to call you back for additional testimony, but it is possible that we will need to do so on a future date, and if that occurs,

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

I-N-D-E-X

<u>Witnesses</u>	<u>Direct</u>
George Kinkaid Wandling	3

E-X-H-I-B-I-T-S

Wandling Deposition for <u>Identification</u>		<u>Page</u>
51	Resume of George Kinkaid Wandling	3
52	13-page document, notes taken by Mr. Wandling on transient of March 28, 1979	4

ooo

1
2
3 STATE OF NEW YORK)
4 COUNTY OF NEW YORK) ss:

5 We, ROBERT ZERKIN, Notary Public of the
6 State of New York and IRWIN H. BENJAMIN, Certified
7 Shorthand Reporter and Notary Public of the State of
8 New York, do hereby certify that the foregoing
9 deposition of GEORGE KINKAID WANDLING was taken before
10 us on hte 2nd day of July, 1979.

11 The said witness was duly sworn before
12 the commencement of his testimony; that the said
13 testimony was taken stenographically by ourselves and
14 then transcribed.

15 The within transcript is a true record of
16 the said deposition.

17 We are not related by blood or marriage
18 to any of the said parties, nor interested directly
19 or indirectly in the matter in controversy, nor are we
20 in the employ of any of the counsel.

21 IN WITNESS WHEREOF, we have hereunto set
22 our hands this-----day of-----, 1979.

23 -----
24 ROBERT ZERKIN
25 -----
IRWIN H. BENJAMIN, CSR

WANDLING EXH

51-
52

RESUME OF

GEORGE KINKAID WANDLING

WANDLING DEP EXHIBIT 51
FOR IDENTIFICATION
7/2/79 R. BERKIN

PRESENT ADDRESS: 518 Atlanta Avenue
Lynchburg, VA 24502

EDUCATION:

1978 A. S. - Business Administration
Central Virginia Community College

1967 A. S. - Mechanical Engineering Technology
West Virginia Institute of Technology

1964 High School Diploma
Buffalo High School
Buffalo, WV

EMPLOYMENT HISTORY:

1978 - 1979 Babcock & Wilcox Company - Nuclear Service Department
B&W Plant Startup Services, Test Planning and Plant Startup
Task Engineer

Test Planning: Coordination and supervision of preparation of 205 FA plant Site Support Documents (total B&W scope) including development of test plans and schedules for startup activities, definition of test programs, and response to customer comments/questions. Preparation and review of PSAR and FSAR Chapter 14. NRC Regulatory Guide review and comment.

Plant Startup: Technical and administrative support of B&W plants during startup testing. Liaison between B&W site office team and home office Engineering organizations. Coordinate and expedite resolution of critical path problems. Manage expedited task programs effecting change to B&W equipment. Review of test data packages generated by the B&W site office team.

1977 B&W Plant Equipment Services. Test Planning Task Engineer. Coordination of preparation of 205 FA Plant Site Support Documents including development of plans and schedules for startup activities and definition of test programs. Preparation and review of FSAR Chapter 14, Regulatory Guide review and comment. Specific contract site support document preparation and revision.

1976 - 1977 B&W Plant Equipment Services. Mechanical Equipment & Fluid Systems Group Leader. Preparation, review, and revision of site support documents for Mechanical Equipment & Fluid Systems.

EMPLOYMENT HISTORY: (Continued)

75 - 1976 B&W Plant Equipment Services. Technical Support Group Leader. Administrative resolution of site problem reports and issue of site instructions (Technical Information). General technical and administrative support of B&W plants in construction, startup, and operation.

1974 - 1975 Technical Support Group. Nuclear Service Support Engineer. Coordination of resolution of site problem reports via other B&W (NPGD) departments. General technical and administrative support of B&W plants from construction through operation.

1971 - 1974 U. S. Navy (Nuclear)
USS Ulysses S. Grant SSBN 631 (B) (Nuclear Sub)

1968 - 1971 Mechanical Operator and Engineering Laboratory Technician
Naval Nuclear Power Training Unit
Schenectady, New York
1968 - 1969: Student
1969 - 1971: Instructor

1968 Naval Nuclear Power School
Bainbridge, Maryland
Student

1967 - 1968 USS John King DDG-3 (Guided Missile Destroyer)
Norfolk, Virginia
Mechanical Operator

1967 Machinest Mate "A" School
Naval Training Center
Great Lakes, Illinois
Student

CK & WILCOX COMPANY
GENERATION GROUP

Wandling ~~REP~~ EXHIBIT 52
FOR IDENTIFICATION
7/2/79 R. BERLIN

Distribution	
G. K. Wandling, Plant Startup Services	SDS 663.5
Cust. JCP&L (TMI-2)	File No. or Ref.
Subj. Information from Transient of March 28, 1979	Date March 29, 1979

This letter is cover and customer and not subject only.

The following information is presented in it's as received form concerning the transient which occurred at TMI-2 on March 28, 1979 (0745 - 2000). This is presented for information only and should be used with the caution that some information was incorrect as reported, sometimes contradictory with other reports, and possibly incorrect as recorded.

GKW/fch
Attachment

0210499

(1)

INFORMATION

745 TELECOM: L.C. ROGERS (SOM TMI-2) TO W.H. SPANGLER, JR.:
FIRST REPORT OF INCIDENT AT TMI-2 (REDACTED):

~0400 - 98% POWER CONDENSER
LOSS OF FEEDWATER - CAUSED BY POLISHED ISOLATION
VALVE MISFUNCTION
HIGH PRESSURE TURBINE EXCITED
TURBINE TRIPPED
REACTOR TRIPPED (BY HIGH PRESSURE)
PRESSURIZER WENT SOLID
RCS PRESSURE WENT TO ~2500 PSI
DRAIN TANK RUPTURE DISC BLEW
INDICATION OF FUEL FAILURE
800 P.S.I. IN DOME OF REACTOR BUILDING
LAST RCS FLOW INDICATION
TRIPPED RCP'S
INDICATION OF PRIMARY TO SECONDARY LEAK

~0800 RCS: 300°F - 1500 PSI

SITE IN STATE OF EMERGENCY CONDITIONS - ONLY
LEE ROGERS & G. MILLER (SOM SUPERINTENDING)
ALLOWED ON SITE THIS MORNING. ROGERS TO
CALL BACK AS SOON AS MORE DETAILED INFORMATION

810 TELECOM: W.H. SPANGLER TO D.H. RAY (SOM) IS AVAILABLE

MADE ARRANGEMENTS TO SET UP A TASK FORCE
(B. KANDLICH TO LEAD) ~~INFORMATION~~ PRELIMINARY
TASK FORCE ~~MEETING~~ / INFORMATION TRIMINUTAL
MEETING SET UP TO OCCUR AT 0900 IN
CLASSROOM "B"

100 TASK FORCE / INFORMATION TRIMINUTAL MEETING - CLASSROOM B

BASED ON 0745 TELECOM WITH L.C. ROGERS RECEIVED
BY W.H. SPANGLER TO REACTOR (SEE A-000000-1)
NO - [REDACTED] WERE AS FOLLOWS:

POOR ORIGINAL

COCK & WILCOX

INFORMATION

1. IMMEDIATE TREATMENT: FISSILE CASE REMAINS COVERED AND IS BEING COOLED ADEQUATELY

2. THREE B²W PERSONNEL DESIGNATED TO GO TO TMT-2 IMMEDIATELY TO ASSIST AS REQUIRED:

R. W. WINNE - PLANT DESIGN / PLANT ADMINISTRATION

J. J. KELLY - PLANT DESIGN

R. C. TWILLEY - CONTRACTOR SERVICE / PLANT OPERATIONS

3. MORE INFORMATION NEEDED FROM TMT-2 BEFORE ANY OTHER RECOMMENDATIONS COULD BE MADE. ATTACHMENT 2 LISTED THE INFORMATION NEEDED ON A PRIORITY BASIS. THIS WAS PLACED IN TELECOPY, BUT COULD NOT BE TRANSMITTED - NO ONE AT THE SITE TO RECEIVE IT. THE INFORMATION WAS OBTAINED VIA VARIOUS TELECONS THROUGH THE REST OF THE DAY.

1030

J. D. PHINNEY REPORTED THE FOLLOWING INFORMATION WHICH RESULTED FROM A TELECON BETWEEN J. FLOYD (MET ID OPERATIONS SUPERVISOR AT OPR ^{AT THE} SIMULATOR TRAINING) AND THE TIME SITE.

BASIS OF Q745 TELECON WITH L. C. ROBERTS CONFIRMED WITH EXCEPTING OF THE FOLLOWING:

PRIMARY TO STOPWORKS LEAK IN "B" Q756
60,000 R/HR IN DOME OF REACTOR BUILDING (DOUBTFUL)
10⁴ COUNTS CM IRRADIATION DOSE RATE (# 742) - 200 IS
BACKGROUND

100 MB/HR AT PERSONNEL WATCH OUTSIDE OF
REACTOR BUILDING

TOILETS HIGH OFF-SCALE

PLANT IN NORMAL CIRCULATION SHUTDOWN

INDICATED TEMPERATURE 450°F (CONVERTER OUTPUT)

T₂ 250°F

ON * OFF-SITE AREA RADIATION MEASURABLE

WATCH IN THE CONTROL ROOM FOR ANY CHANGES

POOR ORIGINAL

INITIATION

POLISHED ISOLATION VALVES CAUSED VALVES TO
TRIP AND CAUSED LOSS OF FEEDWATER

FSEAS ACTIVATION

MU PUMPS STOPPED, LETDOWN ESTABLISHED (DURING
RCS HIGH PRESSURE CONDITION)

RK-42 SHUT AFTER OLIVER TRIP SUPPLY DISC BLEW
AUX FW INITIATION BUT NO FLOW TO OTSG'S
UNTIL ~12 MINUTES AFTER TRIP.

OTSG'S DID NOT GO DRY

RCS PRESSURE WENT AS LOW AS 1200 PSI -

SITUATION CONDITIONS POSSIBLY RESOLVED

RCS FLOW RECOVERED BY 1/3 - RCP'S WERE TRIPPED

TALCONI F.G. SANDOZ (FRENCH RESIDENT) TO W. R. SPANGLER,
SANDOZ HAD JUST FINISHED SPENDING TO REPORT AT THE SITE.

SOME INFORMATION CONCERNING TRANSIENT

RCP'S TRIPPED -

TRIP TO CS SAID - INDICATION OF STEAM BUBBLE
IN RCS LOOP (B?)

LOW LEVEL RADIATION IN ATMOSPHERE REPORTED

MERED MADE PUBLIC ANNOUNCEMENT TO NEWS MEDIA

RADIATION TEAM PERFORMED SURVEYS ON CORE SITE

NRC WITH SENT TO INVESTIGATION

PRIMARY TO SECONDARY LOOP IN "B" OTSG CONFIRMED
BY TEMPERATURE ANALYSIS

"B" OTSG ISOLATED

COOLING DOWN ON "A" OTSG (FEEDING OTSG'S
USING NATURAL CIRCULATION)

HPT FROM THE RWST

PRESSURIZER HEATERS STARTED APT

USING ^{DISSOLVED} ISOLATION VALVES TO CONTROL
PRESSURE

RCS - T = 300°F 2100 PSI

PLANS TO COOLDOWN & DEPRESSURIZE

SPECULATION OF ENCL. LEAKAGE, BUT NO FURTHER TRIP
ON RADIATION LEVELS

SOME LEAK INCREASE IN REACTOR BUILDING DRAIN

CCW & SOME TRACER HAS BEEN MAINTAINED

HIGH RADIATION LEVEL IN REACTOR BUILDING

POOR ORIGINAL

INFORMATION

ROGERS TO CALL SPANGLER 34 ~ 1315

NEE ED REQUESTED RADIOCHEMISTRY EXPERTISE SUPPORT:

E. D. YOCHEM - TECH. STAFF

D. WILM - LFC

DESIGNATED TO GO TO SITE - IMMEDIATELY

KARLSON/TASK FORCE TO DETERMINE ^{RECOMMENDED} COURSE OF ACTION FOR CASES WITH AND WITHOUT RCP'S.

R. K. KENNEDY TO DETERMINE PREREQUISITES TO STARTING A RCP

COMMUNICATIONS ESTABLISHED IN PROJECT CONTROL CENTRAL TO ACCOMMODATE TASK FORCE

TELECOM: E. G. SCHAEDEL TO TASK FORCE

RCS 495 PSI ON CFT FLOW
700°F TH (BY VOLTAGE/GRIDGE)

PRESSURIZER FULL

CONTROLLING PRESSURE WITH ELECTRICAL POLICE ISOLATING VALVE

HPI FROM BUST - IN PROCESS OF SWITCHING TO RC BLEED HOLDUP TANKS

"B" OTSG ISOLATED - ~ 40% ON OPERATE LEVEL
MINIMUM COOLDOWN FROM "A" OTSG

ATMOSPHERIC DUMP VALVE USED AS HEAT SINK
GLAND LEAK MUST AT TURBINE - CONDENSER INCOH
BROKEN

EMERGENCY FEEDWATER TO "A" OTSG THROUGH THE MAIN FEEDWATER NOZZLES

NO FURTHER INFORMATION ON RADIATION LEVELS

RADIATION REPORTED IN THE FEEDWATER SYSTEM
(EXACT < 1 MR/HR AT SITE SECURITY FENCE (ERDA
EARLY MORNING REPORT)

AIRBORNE ACTIVITY IN THE AUX. BLDG. AND CONTROL AREA
(RB SAMPLES BEING PLACED TO AUX. RADG SUMP BEFORE IT WAS DISCONNECTED AND ISOLATED)

TRIED TO START RCP'S (ONE IN EACH LOOP) BUT SHOW ONLY ~ 100 PSI'S (NO LOAD CURRENT) RCP'S

POOR ORIGINAL

INFORMATION

NOT SURE WHY RCP'S WERE ORIGINALLY STOPPED
WIKET, KELLEY, TWILLEY AT SCHMIDT'S RESIDENCE AND
ARE TO GO TO SITE OBSERVATION CENTER
ROGERS INFORMED SCHMIDT HE WOULD CALL HIM ~1500
AND WOULD INFORM HIM OF ANY ADDITIONAL SUPPORT
WHICH MAY BE NEEDED

J. H. FLINT REPORTING ON SITE
PLAN TO GO ON DECON HAZARD REMOVAL SYSTEM AS SOON
AS POSSIBLE

RECOMMENDED TO SCHMIDT / ROGERS:

1. OBTAIN COOLDOWN DATA
2. FUTURE MEASURE RCS TEMPERATURE BEFORE GOING
ONTO DHR'S OPERATION
3. CONFIRM CORE OUTLET TEMPERATURE ~~AND~~ BY
PRESSURIZED TEMPERATURE SINCE THIS IS ^{THE} FLOW FROM
BLAST LEVEL LAST KNOWN @ ~37'

10:1600 J. C. DEBDENE REQUESTED METER ED / GPU (KAINPARK)
ESTABLISH COMMUNICATIONS LINK BETWEEN B-1
(SPRINKLER) AND TMI-2 SITE

A. WATKINS RECOMMENDED 500 GPM (AT LEAST 400)
BORATED WATER VIA HPT BE ESTABLISHED IMMEDIATELY.
THIS MESSAGE WAS TRANSMITTED VIA J. FLOYD TELEPHONE
TO TMI-1 CONTROL ROOM TO PASS TO TMI-2. IT WAS
ALSO ~~TRANSMITTED~~ TRANSMITTED TO TMI-2 VIA D. ROY TO METER ED/
GPU.

ADDITIONAL

J. FLOYD PROVIDED THE FOLLOWING INFORMATION BASED
ON HIS TALKING WITH THE SITE:

ELECTRICITY RELIEF VALVE STUCK OPEN (RESULTING IN
QUENCH TANK PURTURE DISC BLOWING)

DECON IN AIR (EMER) FLOWMETER BEHIND OF THERMOC
INDICATION (PUMPS RUNNING - VALVES INDICATED OPEN
BUT WERE NOT)

RCP'S STOPPED BECAUSE OF INDICATION OF CAVITATION &
POTENTIAL DANGER (INDICATED DRAIN IN RCS FLOW)

CONDITION OFF THE HAZARD FIRST INDICATED LINK IN
CIRCUIT

POOR ORIGINAL

INFORMATION

60,000 P/M PG DUNE BENDING AND BEHAVIOR OF
MOISTURE (PEGGED HIGH)

~ 100 R/HR BEST ESTIMATE OF PG RADIATION
LEVEL BASED UPON 100 MR/HR AT THE
PERSONNEL WATCH

RB PRESSURE WENT TO ~ 2 1/2 PSI INITIALLY AND
RAGN TO ~ 4 PSI ABOUT 6 HRS AFTER START
OF TRANSIENT

KENNEDY/DAIRNEY REPORTS THE FOLLOWING:

1. CONCERNED ABOUT MOISTURE BEING A PROBLEM IN
STARTING RCP'S (MOTORS) - CAN AIR FROM DESIGN
CHECK BUT CAN SP/TEMPERALLY BE CHECKED VIA
CEW LEAK PLUMB (MOISTURE DETECTOR)
2. CAN ALLOW UP TO ~ 30 MILS VIBRATION TEMPERATURE
TO AFFECT A RCP (SPRAY LINE LOOP RCP'S
IF POSSIBLE)
3. THERE IS A POSSIBILITY THAT RCP'S ARE NOT
TRULY CONNECTED (WARRANTY DRIVE PIN) BECAUSE
NO LOAD AMPERAGE SHOULD BE ~ 100 WHICH
IS THE INDICATION RECEIVED ON PREVIOUS
ATTEMPTS TO RESTART. IF CONNECTED RCP
STARTING CURRENT SHOULD BE > 100 AMP.

20 TELECON: F.G. SCHAEFER (RESIDENCE) TO TALK TALK
SCHAEFER HAS JUST FINISHED OPERA. TO RAGNET AT THE SITE

DIFFICULT TO ESTABLISH DIRECT COMMUNICATIONS WITH SITE
COLLAPSED BUBBLE IN "A" LOOP - GOOD INDICATION ENIA
TEMPERATURE & PRESSURE

NORMAL LETDOWN + PRESSURIZER ^{ELECTRICAL} ISOLATION ^{PRESSURE} CONTROL
TRYING TO COLLAPSE BUBBLE IN "B" LOOP

PRESSURIZER: 190" 460°F 560 PSI

PLAYERS GET AN DIPS VIA TUNCTION FROM BUBBLE

REQUESTED ENIA BFW: WITH THE CONSIDERATIONS
FOR RUNNING RCP'S (AT LEAST ONE) IN THE "B"
LOOP (DIP DRUM LINE SIDE)

STILL FLOATING ON CRT'S ~ 400 - 500 PSI 540°F

2A RCP HAS INDICATION OF LEAKAGE BUT UNUSUAL
CONDITION DATA AVAILABLE FROM REACTION ONE TOWER

POOR ORIGINAL

INFORMATION

"A" OTSG AT 80% OPERATE LEVEL

"B" OTSG AT 50% OPERATE LEVEL

400 -> 500 GPM HPI FLOW RECOMMENDED TO
SCHEDULE TO PASS TO SITE. THIS WAS BASED
ON 100 GPM + 8 HRS SINCE SHUTDOWN +
CONSERVATION

MINIMUM RECOMMENDED FOR RCP START:

30 MILS VIBRATION LIMIT

HPI > SATURATED CONDITIONS FOR LOOP

GOOD AMPERAGE READING

CCW

NORMAL POC REQUISITE FOR START

NO STEAM FLASHING AT SEVIS

10 RCS CONDITIONS ^{REQUIRED} FROM TRIT-2 CONTROL ROOM
T₁ 550°F T₂ 450 PSI (SUPERHEATED CONDITIONS)

5 TELECOM: EIG SCHNEIDER (AT RESIDENCE) TO TASK FORCE

LATEST INFORMATION FROM SITE:

DRAWING VACUUM NOW

100 GPM HPI

RCS 560 -> 670 PSI

OFF CRT FLOAT

BUBBLE IN PRESSURIZER

SUSPECTED BUBBLE IN "A" LOOP

T₁ 520°F T₂ 530°F (OUT FLOW 500 -> 900 PSI)

"A" OTSG 180 PSI @ 80% OPERATE RANGE LEVEL

HPI FROM BWST

RECOMMENDED TO SCHNEIDER THAT HPI BE IMMEDIATELY
INCREASED, STOP LETDOWN, AND GO TO SUPERHEATED
CONDITIONS TO RCS.

10 MR. ED/SPI (PHONE) INFORMED 3:10 THAT SINCE 1625
HPI HAD BEEN AT 100 GPM AND MAINTAINED

POOR ORIGINAL

INFORMATION

35-2000 TELETYPE: L.C. ROGERS (AT TMI-2 CONTROL ROOM) TO TMI-2 OFFICE

CORLING VIA "A" OTSG - DUMP VALVE TO CONDENSER

"A" LOOP:

T_c 300°F

T_h 540 TO 550°F (PSM 962 @ 540)

GOING SOLID

PRESSURIZER LEVEL STABLE AT ~ 500°F

PRESSURIZER HENTERS LIMITED BECAUSE OF TEMPS

BUBBLE INDICATIONS IN THE "B" LOOP:

T_c 200°F

T_h CRF SCALE MAX (> 650)

RCS PRESSURE 1800 PSE (INCREASING)

HPT @ 400 GPM

"A" OTSG @ 50 PSE (CONSISTENT WITH "A" T_c 200°F)

T_c "A" SIDE DECREASING WITH TIME

T_h "A" SIDE CONSISTENT PRESSURIZER PRESSURE

INCRD T/C READINGS - 2 @ 500°F OTHERS ARE

REMAINING - 7-7-7

SEAL INJECTION MAINTAINED SINCE AT LEAST 0100

AND SINCE BEFORE TRANSIENT

RCP'S HAVE GOOD BEARING TEMPERATURES AND

SEAL PRESSURES

NO INDICATION THAT F5 FITE ISOLATED SEAL INJECTION

TO RCP'S

100 R/H IN AUX. BLDG. (RR SUMP AUTOMATICALLY

PUMPED TO AUX. BLDG. SUMP - SECURED AT 10)

100 MB/HR IN PLANT

70 MB/HR OUTSIDE GATE

> 1 MB/HR ON GATE ROUTE NEAR SITE

MOISTURE AND HIGH RADIATION LEVELS LIMITING USE

OF SOME EQUIPMENT

INDICATION IS PRIMARY - SECONDARY LEAK FROM "B"

OTSG BY SPINNS - NO KNOWN MAINTENANCE AT 1000

"B" OTSG ISOLATED BECAUSE IN OT20

PUSH LIST FOR OIL LIFT PUMPS NEEDED FOR RCP'S SINCE

1910

T_h 560°F

NO AN LIST OTHER THAN ABOVE

POOR ORIGINAL

INFORMATION

Dempsey provided the following requirements for starting a RCP:

- SEAL INJECTION MAINTAINED (12 GPM)
- SEAL RETURN FLOW 1.9 GPM MAX.
- NUCLEON SERVICE WATER (CCW)
- SEAL LEAKAGE 1.9 GPM MAX.
- MOISTURE DETECTOR (CCW LEAK ALARM) - NO ALARM
- STARTING CURRENT > 600 AMP
- VIBRATION LIMIT 20 MILS (PEAK TO PEAK)
- GREEN MOTOR PERMISSIVE START INTERLOCKS
- SEAL INJECTION TEMPERATURE < 150 °F
- SEAL RETURN TEMPERATURE < 185 °F

2A & 2B RCP'S WERE PUMPS USED EARLIER TODAY IN ATTEMPTED RE-STARTS
 "A" OTSG 50 PSI - 80% LEVEL STOPPING DOWN
 "B" OTSG 70% LEVEL

RECOMMENDED TO ROGERS THAT THE 1A RCP BE GIVEN A "BUMP" 5 SECOND START THEN STOP AND LET RCS PARAMETERS STABILIZE

1930 THE 1A RCP WAS GIVEN A 10 SECOND "BUMP" START/STOP BY OPERATIONS PERSONNEL
 OTSG: AT 200 PSI
 "A" OTSG STOPPING RATE INCREASED
 RTD: ALL INDICATE CONSISTENT WITH CONDITIONS

1940 "A" LOOP $T_h = 520^\circ F$ $T_c = 320^\circ F$
 OTSG 60 PSI $325^\circ F$
 "B" LOOP $T_h = 620^\circ F$ $T_c = 225^\circ F$
 OTSG 160 PSI $290^\circ F$
 RCS PRESSURE 1850 PSI (DIPPED TO ~1400 PSI)
 CENTRAL FLOW WENT TO 40%
 RCP STARTING CURRENT WAS 1200 AMPS (NORMAL)

POOR ORIGINAL

F.

INFORMATION

TASK FORCE SIMULATED CONDITIONS FOR A SECOND "BUMP" OF THE RCP OR FOR A START WITH CONTINUED RUNNING OF THE RCP RECOMMENDATION GIVEN TO START AND RUN THE 1A RCP. HOWEVER, THE SITE SUPERINTENDENT HAD ALREADY ORDERED THAT THIS BE DONE.

1950 1A RCP STARTED AND RUNNING.

1955 PLANT DATA:

1A RCP VIBRATION 18 MILS

BATH LOOPS:

$T_H < 520^\circ F$

$T_C 340^\circ F$

OTSG: 100 PSZ $\sim 310^\circ F$

PLANT STABLE

RCS PRESSURE 1800 PSZ

RCP CURRENT 620 \rightarrow 570 AMPS

RCS FLOW 40%

PRESSURIZER TEMPERATURE $500^\circ F$

INSURE T/C's $\sim 400^\circ F$

PLANS ARE TO STOP ON ONE RCP AND COOLDOWN TO GET INTO DHR'S OPERATION WHICH IS EXPECTED WITHIN A FEW HOURS.

ROGERS TO CALL SPANGLER WHEN DHR'S IS IN OPERATION AND IF THERE ARE ANY OTHER PROBLEMS OR ASSISTANCE NEEDED.

ROGERS STATED NO FURTHER ASSISTANCE NEEDED AT THIS TIME.

TASK FORCE ADJOURNED.

ATTACHMENT 1

March 28, 1979

At approximately 4:00 a.m. TMI-2:

1. Loss of feedwater while unit operating 98%
2. Turbine tripped - followed by reactor trip in HP
3. EPI activated
4. System possibly went solid
5. Quench tank rupture disk broke
6. 800 R/hr indicated in dome during event
6. At 8:00 a.m.:
 - a. Apparent PRI/SEC leak
 - b. 1500# 300°
 - c. Fuel leak real possibility

ATTACHMENT 2

Quantity Information Needed

- 1 1. Pressurizer Level
- 1 2. Steam Generator Level? Controllable?
- 2 3. Reactor Coolant Pump Conditions
- 2 4. Auxiliary Feedwater Actuators?
- 1 5. Secondary Side Temperature/Pressure
- 1 6. RCS Temperature/Pressure
- 1 7. Core AT
- 2 8. Sump Level (Reactor Building)
- 5 9. Diesels Running
- 1 10. BWS Level/Inventory
- 4 11. Primary/Secondary Radiochemistry
- 4 12. Chronology Sequence of Events - Pump Trip When/Why
- 1 13. EPI Running - How many - Flowrate
- 3 14. Source/Path of Primary/Secondary Leak

re MGM 1 agent for the Commission's day-to-day operational and
2 administrative activities, you would say, yes, he does as to
3 the administrative activities, but not as to the day-to-day
4 operational activities?

5 A It depends upon what ^{is described} ~~describes~~ as operational.

6 Q You appear to be distinguishing the two.

7 A I guess I put them together. He does not as to
8 the technical side of our business.

9 Q For example, the operations of the Division of
10 Systems Safety is technical analysis, isn't it?

11 A The operation?

12 Q Of the Division of Systems Safety, for example?

13 A If one describes ^{it as} that, he does not do that. If one
14 describes operations that way, he does not do that, in my
15 judgment, nor indeed should he, in my judgment.

16 (Discussion off the record.)

17 THE WITNESS: Anyway, operations, I have not
18 considered operations in the sense of the technical work.

19 BY MR. KANE:

20 Q Who directs the technical work?

21 A The Commission and the office directors.

22 Q Do you, as an NRC commissioner, direct the
23 technical work of the Division of Systems Safety?

24 A We direct the format that is the general
25 conception within which it is done.

20 MCM 1 Q Do you know on a day-to-day basis what technical
2 work the Division of Systems Safety is doing?

3 A On a day-to-day basis, no.

4 Q Do you know on a week-to-week basis what the
5 Division of Systems Safety is doing in the way of technical
6 evaluations?

7 A No.

8 Q But you do set the overall policy?

9 A Yes.

10 Q So, to that extent, if we talk about the
11 operation, the NRC commissioners are in a policy-setting
12 role?

13 A That's correct.

14 Q I wanted to talk to you somewhat, Mr. Kennedy,
15 about the question of resumption of licensing of nuclear
16 power plants. As I am sure you can recall, that was a
17 subject of some conversation with the Presidential
18 Commission during the past Presidential hearings and you
19 testified at that time.

20 A I had the great pleasure of being there.

21 Q Had Harold Denton conferred with you concerning
22 his decision to resume the licensing activities prior to the
23 time that he had prepared that memo of August 1979?

24 A Not to my recollection.

25 Q Are you aware of any pressure or any prodding that

re MGM 1 was brought to bear on Mr. Denton to resume the licensing
2 process?

3 A Not to my knowledge.

4 Q Was there any input from the nuclear industry to
5 Mr. Denton, that you are aware of, as to the resumption of
6 the licensing process?

7 A Not that I am aware of.

8 Q Was there any such input from the nuclear industry
9 to you as to the resumption of such licensing process?

10 A Not other than the kinds of contacts to which I
11 referred during my appearance before the Commission. That
12 is, that there was a meeting at which the owners of the
13 Salem plants, and I don't recall the name of the utility,
14 came before us to outline where they stood with respect to I
15 think it is Salem 2, which was, in their judgment, at about
16 99.5 percent completion and the need for power for their
17 region. And urged that were we able to do so, that
18 hopefully we could go on with consideration of other plants
19 at a ~~reasonable~~^{reasonably} early date.

20 Now, it is my recollection that that was the sense of
21 that meeting. I do not believe they were trying to
22 pressure. I believe they were reasonably putting before us ^{to}
23 ~~reasonable~~ consideration ~~from~~ their perspective as a public
24 utility with a good deal of investment in a substantially
25 completed facility.

rc MGM 1 By the same token, when I was — as I indicated to the
2 Commission — when I was in New Orleans, a similar
3 conversation was held by people from, I think it is Middle
4 South Utilities, with me.

5 . It was the same kind of conversation simply indicating
6 that the plant which they had which was fairly well along,
7 moving along, they hoped that at the appropriate time that
8 we would recall that they did have a substantial investment
9 and hoped that they could go forward.

10 Now, this was not taken by me ^{as pressuring,} certainly, in either of
11 these cases — the first one was a public meeting with the
12 Commission; ~~the~~ ^{the} second was a meeting which was arranged, I
13 was there at the conference discussing with the
14 representatives of state governments the need for better
15 emergency planning, and these people happened to be there
16 and asked for an opportunity to express some thought to me.

17 They did, and that was it. In neither case did I take
18 this to be pressure.

19 Q You stated that the Salem 2 plant is 99.5 percent
20 complete or something like that?

21 A Yes.

22 Q What was the state of completion of the Salem 2
23 plant at the time of the Three Mile Island accident?

24 A It was nearly there.

25 Q Nearly there already?

1 A Oh, yes, sure.

2 Q Is it true that although licensing has been
3 suspended since TMI-2, licensing activities, that actual
4 construction of nuclear power plants pursuant to previously
5 issued construction permits has not been suspended?

6 A As far as I know, that is correct.

7 Q Why has not actual construction pursuant to these
8 construction permits been suspended during this hiatus
9 period since this accident?

10 A Because construction is going ahead against a
11 reviewed plant, one that was approved.

12 As I indicated to the President's Commission, the
13 licensees know from the day they turn the first spade of
14 earth, that any safety related decision may affect that
15 plant as it is being built and if it does, we will require
16 that the feature be incorporated in the plant or that
17 revision of the construction be accomplished. ^{We}~~They~~ do it
18 often. I can tell you that the industry thinks far too
19 often.

20 Q Suppose the necessary technical fix that the NRC
21 concludes needs to be done on the particular plant is not to
22 operate the plants at all. It finds a basic problem in the
23 entire design, the whole thing has to be shut down.

24 Under those circumstances, from what you have said, I
25 take it, the NRC commissioners would simply suspend its

rc AGM 1 license, take it away?

2 A We would shut it down.

3 Q Has that ever occurred, permanently?

4 A Not that I am aware of. However, let me say
5 that — can I go off the record here? —

6 (Discussion off the record.)

7 THE WITNESS: I wanted to confirm I was able to
8 speak about a particular situation, Indian Point 1 is a
9 plant in which NRC required certain fixes. The company, I
10 gather, concluded that they did not feel that those fixes
11 would be economically feasible. The plant is down and it
12 will stay down. That is the basic philosophy I think one
13 has to understand.

14 BY MR. KANE:

15 Q We discussed this morning the fact that TMI-2, in
16 the position of the NRC staff with relation to one
17 proceeding, at least, has been classified as a class 9
18 accident and what that position will mean with connection
19 with the possibility that single failure analysis may no
20 longer be an appropriate way to proceed with designing and
21 licensing plants.

22 At least a theoretical matter then, doesn't that suggest
23 the possibility for major changes in design review
24 presumptions such as single failure presumptions.

25 A I think that is a theoretical possibility.

1 Q Weren't those previously issued on the basis of
2 those design review assumptions that were previously made?

3 A Yes, but also the design review assumptions
4 ~~involved~~ ^{involved} the whole range of Defense in Depth concepts. So
5 it's not to be assumed, I don't think, that just because one
6 goes to a broader application of multiple failure analysis
7 that that is going to necessarily result in gross changes
8 either in design or environment.

9 Q But it may?

10 A It could, I suppose.

11 Q For example, the Defense in Depth approach was
12 taken with Three Mile Island yet that was not sufficient to
13 stop the accident which happened there which was a multiple
14 failure accident. So presumably it could occur that Defense
15 in Depth was not sufficient. It demonstrates that?

16 A On the other hand, it also demonstrates that the
17 Defense in Depth concept worked to the extent that the ulti-
18 mate catastrophic accident didn't occur.

19 Q We don't want to get that close again, do we?

20 A We certainly do not.

21 Q As to these construction permits previously
22 issued pursuant to which construction has been proceeding,
23 given the Three Mile Island scenario, the Defense in Depth
24 concept as it worked there may very well work no better in
25 these other plants under these types of circumstances?

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

A All of the lessons learned out of the Three Mile Island accident thus far are being incorporated into those designs.

Q Is there a lesson learned based on the recognition that TMI-2 is a class 9 accident?

A Not to this point.

Q So in the meantime this construction is proceeding?

A That's correct.

Q The question is, isn't the NRC rendering it a lot more difficult for the application of those possible changes, that may be very drastic in the future by not now, at least for some interim period, suspending construction until, for example, the Presidential Commission recommendations are released and implemented?

A I don't think that is so.

Q If I understand it, the licensees are out there pouring concrete, they're investing millions upon millions of dollars in constructing these plants pursuant to the construction permits they already have. Now, if in a few months it's determined that TMI-2 definitely was a class 9 accident, that single failure analysis is improper and multi-million dollar changes have to be made in the way the plant is designed in order to accommodate new analysis, aren't those utilities going to be very unhappy about being told that having invested the millions they have invested, they

3

1 have to negate that investment or invest so many millions of
2 dollars more in order to accommodate these new changes?

3 A They're going to be unhappy.

4 Q Aren't they going to be resistant to any such order?

5 A They may well resist, but if they do -- they'll
6 have a choice. Either they'll follow the order or ^{they} ~~she~~ won't
7 run the plant.

8 Q Wouldn't they be much more willing to accept that
9 kind of situation if at this time the NRC took it upon itself
10 to suspend the construction until such time as it's clear
11 what those changes are going to be?

12 A One does not suspend construction without the
13 very costs you're talking about. Hundreds of millions of
14 dollars.

15 Q In terms of increased construction costs?

16 A Yes. And money, the cost of money.

17 Q So we're balancing --

18 A No, I'm not balancing. You're telling me what
19 the utility would say, and I said yes, he may well. I'm saying
20 the utility may well also say that if he's forced to stop
21 construction, that he's going to be forced to bear an unusual
22 large cost, and that ~~happened~~ ^{happens} to be true.

23 Q Okay. Isn't it likely that under those circum-
24 stances, the industry is going to bring whatever pressure it
25 can bring to bear to prevent the NRC from taking that kind of

1 step or at least mitigating the consequences of that step?

2 A Where are they going to bring this pressure?

3 Q Wherever the industry is capable of doing so.

4 I'm not familiar with the nuclear industry, I don't know how
5 they operate.

6 A They're going to have to bring it directly on
7 us or on the Congress because we're an independent agency.

8 Q I understand that.

9 A Unlike those, I might add, which may be in some
10 views more efficiently operated by single administrators but
11 which give up for that efficiency that independence because
12 those agencies are executive agencies responsible to the
13 President. We're not.

14 Q There was another comment I was interested in.
15 Are you familiar with the publication Inside NRC, a new
16 publication put out?

17 A Yes. I would like to make a parenthetical comment.
18 I told one of their correspondents that I did not greet its
19 inception with -- as an unqualified blessing. It added four or
20 eight more pages of material that I had to look at each week,
21 and I really didn't think I needed that.

22 Q I appreciate your problem.

23 A He confided in me that since he's a member of the
24 company which produces those sheets at a fantastic rate, just
25 a furious rate, there was only one in 1973. That was

1 Nucleonics Week. Now, there are six, I think. He has
2 difficulty reading them. There are so many.

3 Q We have been receiving inside NRC for the last
4 week or so now, and the issue of August 31, 1979, states that
5 the project staff work on the Salem-2 operating license cases
6 is proceeding but that only non TMI-issues are being reviewed
7 Is that your understanding?

8 A That is my understanding.

9 Q How does the staff distinguish between what are
10 non-TMI issues and what are TMI issues?

11 A That is, I think, a term of art. We're talking
12 about those issues identified by the lessons learned ~~by the~~
13 task force, and bulletins task force that we established in
14 NRC to deal with the TMI matter. I think that is what we're
15 talking about. If one looks at that term of art that way, I
16 think it's a fairly clear distinction.

17 Q So, for example, the conversation we had before
18 about TMI-2 being a class 9 accident, assuming that's the
19 case and assuming that poses the problems that it apparently
20 does for single failure analysis, that makes single analysis
21 itself a TMI issue, doesn't it?

22 A Well, yes, in that syllogism, yes.

23 Q That is not being addressed in the bulletin nor
24 this task force?

25 A No, it's not. At least I don't think it is.

Q Aside from that term of art and using the words
in a common sense way, do you think it's possible to say what
is a TMI and is not a TMI issue without a technical analysis
of the TMI accident?

A Well, that's a function of time, isn't it?

Q Yes.

A You know, and the answer in the broadestmost
theoretical sense has to be no, of course not. But then
engineering history evolves. Designs evolve. We're doing
many of the things today with respect to licensing that
people ~~might have been~~ ^{were not} doing 15 years ago. We're building
plants a little differently. We're constantly improving them
I like to think back to a simple example that I can relate to
you directly.

When I first started flying ⁱⁿ airplanes, a DC-3 was a real
great vehicle. I don't suppose there are too many people in
this room who ever saw one, but there are a lot of them.
They're still certified and they're still safe airplanes
but nobody would think of building a DC-3 from scratch today
because you could build a lot better airplane. That does
not make the DC-3 airplane not a good airplane. It simply
says that the 747 is a better airplane, it has more sophis-
ticated gear in it. It's designed for greater levels of
performance and so on. But the DC-3 designed for a job is
still one of the safest airplanes and best airplanes ever

1 built. But as I say, you'd never build another one. You
2 wouldn't start from scratch and build a DC-3.

3 Now to come back to the plans, I think that's where we
4 are. I think we'll be that way in this technology and almost
5 any other. We'll be in a constantly evolving, improving
6 situation.

7 Q I'm curious about that process. What's the NRC
8 seeking? Is it seeking the best available technology from
9 a safety point of view? Is that the goal?

10 A It's seeking technology which provides adequate
11 protection to public health and safety.

12 Q Undue risk, no undue risk?

13 A That's right.

14 Q Let's assume it's there, and I think you're
15 suggesting it's on the older plants and, of course, on the
16 newer plants. There are differences. The NRC is requiring
17 more. That indicates to me that the NRC is requiring more
18 than just no undue risk.

19 A Yes.

20
21
22
23
24
25

1 Q What is the NRC seeking? What is its goal? You are
2 moving on —

3 A You are right. We have gone somewhere beyond no
4 undue risk and we will probably continue to go beyond.
5 Obviously if you could build a better machine, it is not
6 sensible to continue building one — the DC-3 design. Why
7 keep building them when you can build ^{a better} ~~another~~ one?

8 Q That is for the industry however.

9 Should the NRC now build a regulatory agency on top of it?

10 Should the regulatory agencies involved in aircraft design
11 and licenses be requiring something better than the DC-3 even
12 though it is safe?

13 A Sure.

14 Q Why?

15 A Because you can always improve it. If you add more
16 safety, within — you know, there are obviously limits.

17 Q What are the limits? That is what I wanted to get
18 to? Where do you draw the line?

19 A You have to use some kind of a cost-benefit
20 analysis, I suppose. Provided that your cost-benefit analysis
21 doesn't apply until you have reached the level where you can
22 assure yourself there is no undue risk to the public safety.

23 Now, if you have gotten there, and you feel you can get an
24 improvement, then the investment is worth it and you ought to
25 do it. Now the industry ought to do that — that brings us

n 1 back to something I was saying much earlier. May I?

M 2 Q Sure.

3 A That is where I think the industry ~~I think~~ ought to
4 be. Years ago, years ago, people sold products in this
5 country because theirs was better. Not just as good as, or
6 a little cheaper than, better.

7 Q But better how? Better safety-wise or better
8 economy-wise?

9 A It depended on what it was, what the object was. If
10 you are talking about automobiles, it was two things. It was
11 economy and safety. This is a better machine. This is going
12 to do your job better. Now I think that is where the industry
13 ought to be.

14 Q Is it there?

15 A I am not sure that it is, and I am not sure that
16 it is all that easy for it to get there. I don't know whether
17 the utilities could do it. And that is a problem of
18 investment. Can the utility — and I don't know the answer to
19 this, but I'm going to try to find out.

20 Q Okay.

21 A Can the utility spend whatever it thinks to be
22 desirable in the way of safety if for example the NRC isn't
23 laying it on as an absolute requirement? Will the public
24 utilities commission allow it to spend that in recoverable
25 ways? I don't know.

1 Q That relates to what we were discussing before about
2 who pays in the problem, or at least an aspect of the problem?

3 Well, I am curious as to what you say, because you are
4 addressing the position of the industry and what their
5 orientation should be: to make it better, to make it as safe
6 as reasonable and constantly try to improve on safety?

7 What should be the position of the NRC in that regard?

8 Let's assume, as you say, we have passed beyond the line of
9 no undue risk, and that is the bottom line. We are beyond
10 that now. So we are into a choice between various kinds of
11 design, all of which will serve the goal of no undue risk.

12 One is a little more safe than the other. What is the role
13 of the NRC under those circumstances?

14 A Making sure which one it is is going to meet that
15 bottom line.

16 Q Let's assume all of them do.

17 A All of them do.

18 Q Does the NRC have any role there?

19 A I don't see how we can. We can certainly —

20 Q I am curious about that.

21 A I think we can probably encourage, we can encourage
22 movement toward that safer one. We can do it by laying on
23 requirements and say, you know, we believe that is going to
24 be necessary to be sure in the future that there won't be any
25 undue risk.

1 Q In fact that is what the NRC has been doing.

2 A We have been doing a lot of that.

3 Q I think you just pointed out, the older plants still
4 pose no undue risk. But the newer plants are much safer, they
5 have more safety features. So in other words it seems that
6 what the NRC is doing, is ratcheting it up beyond no undue
7 risk.

8 A Some, that is right.

9 Q It has to be, because the older ones have fewer
10 safety features and they pose no undue risk. The newer ones
11 have more and they pose no undue risk.

12 A As to the older ones, there is a systematic
13 evaluation effort underway in which all those older plants
14 are now being looked at systematically against all the new
15 requirements to find out if those new requirements that are on
16 new plants will contribute so significantly to the safety of
17 the old plants. Even though we consider those old plants to
18 meet the undue risk criteria, they ought to be ratcheted up
19 too.

20 Q Which further emphasizes the point that the NRC is
21 in the business of making plants safer than just no undue
22 risk?

23 A That is right.

24 Q And is in fact doing it?

25 A That is right.

1 Q And again what I come to is from the NRC point of
2 view, what is the outer limit on that?

3 Do you make it as safe as possible?

4 Is it the best achievable technology from a safety point
5 of view?

6 Is that the goal that the NRC should have and in fact does
7 have?

8 Is that what we are talking about here?

9 A I don't think that is what we are talking about, but
10 I guess at some point that is what I would like to see all of
11 us talking about. The best available technology. But now
12 remember, the best available technology next year is going to
13 be better than the best available technology this year.

14 Q I understand that. It constantly gets better, which
15 means you constantly are ratcheting the industry?

16 A Let me point out, if I am right, if the technology
17 is going to get better next year, it is because in all
18 probability the industry has found a way to design it better
19 next year. It is the industry that did it.

20 Q But it is the NRC that will pick it up and say okay,
21 for those other plants we will ratchet those up too.

22 A It is where we were when we first spoke. If the
23 industry performs in that way, then the industry is doing
24 what I think is necessary to ensure the kind of safety we are
25 talking about. If we sit in our own laos and start designing

1 things and tell the industry you have got to build it that
2 way, they are going to sit and wait for us. I hope it is
3 not going to go that way.

4 Q Clearly when the NRC is presented with a situation
5 where it can see that a particular design being presented by
6 a vendor is not as safe as another available design —

7 A Not as safe —

8 Q Yes. There is an increment of safety; both of them
9 pose no undue risk. You have two designs. One is safer than
10 the other. One is safer. Under those circumstances the NRC
11 position as opposed to the industries should be to go for the
12 safer design, shouldn't it?

13 A Theoretically. If that is the choice. Remember
14 you already said it isn't because as a matter of fact neither
15 of them poses an undue risk. If you have all other things
16 being equal.

17 Q Yes. In other words, both designs pose no undue
18 risk?

19 A Right.

20 Q One is however safer than the other?

21 A That is correct.

22 Q And certainly the position of the NRC, since safety
23 is the first goal for the NRC, and presumably the only goal,
24 would be to choose a safety design. The reason I ask all
25 these questions is that it does relate to some things that

1 come up from TMI-2. Specifically, for one thing, the once-
2 through steam generator design. We deposed Denny Ross — I
3 forget his position at the present time, but he is a highly
4 technically qualified person. We specifically asked him about
5 the B&W once-through steam generator design in this position.

6 He testified as follows: "There is a direct correlation
7 between the time to do nothing, and when you should be doing
8 something or to undo something you should have done. The
9 Westinghouse system is more forgiving. You can have a sense
10 of nonfeasance or malfeasance and recover. The B&W would be
11 less forgiving.

12 "Q. Where misleading information is provided to the
13 operator as to core coolant level and he terminates HPI based
14 on the determination, the Westinghouse would allow him a
15 greater amount of time to correct that error?"

16 Mr. Ross's answer was, "Yes, but it is more than that. The
17 Westinghouse design being more sluggish would not have reacted
18 that way, or at least not that quickly, so there would be a
19 double benefit."

20 I read that language to Roger Mattson when he testified
21 before the Presidential Commission and also in his deposition
22 prior to that period. His response was that he agreed with
23 that technical evaluation, but that he felt that what I was
24 talking about was a sort of best achievable or best available
25 technology, and the words of the statute after all say no

n
W

1 undue risk. I confess I did not pursue Mr. Mattson to
 2 elaborate further on that response, but my impression from
 3 his response, my understanding was that what he meant was that
 4 the NRC is directed to ensure no undue risk.

5 It is not directed to choose between two or three different
 6 types of systems, some of which are safer than others, or more
 7 forgiving than others, all of which satisfy the criteria of no
 8 undue risk.

9 Everything we have just talked about in the last 15 minutes
 10 suggest to me you would not agree with that response by
 11 Mr. Mattson.

12 A I didn't say that.

13 Q I know you didn't say it; I was asking it.

14

15

E13

16

17

18

19

20

21

22

23

24

25

JerMGM

1 A I did imply that I disagreed with Mattson. What I
2 think Mattson is saying — and he has to speak for himself,
3 of course, is that we do have statutory requirements. And
4 that is the basis on which we proceed and that is the basis
5 on which the regulations are written, the basis on which the
6 — from which the standard review plan proceeds. But I do
7 not believe that the staff typically would ignore a better
8 technology. It would seek ways of finding ^{it and} ~~to~~ introducing it,
9 ~~and to introduce,~~

10 By the same token, if a company produces a machine which
11 will meet the "no undue risk" requirements, that does not, I
12 don't think, cause a basis for refusing the license. Now
13 that is what Mattson was saying. At least that is the way I
14 understood it.

15 Q To use your analogy from before. If a vendor
16 produces a DC-3 and presents it to the regulatory agency and
17 the question is "no undue risk," you have got to license
18 it. You have got to permit it?

19 A I think as a matter of fact — I don't know this,
20 but as I told you, the DC-3s are still certified. If
21 someone goes out and gets a machine and refurbishes it and
22 brings it before them, I am sure they will license it.

23 When somebody gets technology and sees the way to improve
24 it, typically he will go ahead and improve it. That is the
25 ethic I am -- that is what I am trying to say.

1 I think that is the ethic we ought to have.

2 Q The reality we are currently confronted with, at
3 least in light of the many technical analysis I have already
4 discussed with many of the technical people in the NRC, is
5 that we have a once-through steam generator which is
6 significantly less forgiving in the overall designing than
7 the Westinghouse system?

8 A But not unsafe.

9 Q Significantly less forgiving is all I am saying.
10 Let's assume both of those pose no undue risk. In light of
11 what you have said before, I would assume that the NRC would
12 take the position that its responsibility is to license
13 the design which is more forgiving rather than the one less
14 forgiving, even though neither poses an undue risk?

15 A I didn't say "license." I said all things being
16 equal, I guess if all other things were being equal — I
17 don't know whether they would be — I would look — if I
18 were buying the machine, I would look at the machine and say
19 this one is going to be harder to manage than that would.

20 Q Supposing you were approving the design of the
21 machine from a safety point of view?

22 A If the design of the machine is safe, it's safe.

23 Q Okay. We are back to that question. I take it
24 that what you mean now is that it poses no undue risk?

25 A That's right.

erMGM

1 Q That is the language from the statute. As long as
2 that threshold, no undue risk is met in terms of the
3 analysis of the design of the proposed machine, the NRC must
4 go ahead and license it, as you understand it?

5 A I see no grounds for not licensing it.

6 Q We did talk before about the historical fact the
7 NRC is not just doing that. It is requiring safer and safer
8 designs beyond undue risks?

9 A Look, let's not talk about this particular
10 device. A, I don't know what B&W is doing as it looks at
11 its own design. B, I am not sure at this point what the
12 Staff is doing vis-a-vis these particular aspects of the
13 design. I do know that the lesson is learned, the task
14 force understands that problem, and has found ways to
15 mitigate its effects.

16 Q We have discussed that. Five minutes as opposed
17 to two minutes.

18 A Okay. That is two one-half times.

19 Q Yes, it is. It's significantly less than the
20 recirculation steam generator boilouts on the Westinghouse
21 system?

22 A Yes.

23 Q So there is a significant margin of difference?

24 A Yes. I understand that. But still it's a
25 substantial improvement.

4 14 04

JerMGM 1 Q Yes, it is. Again, I come back to the point,
2 though, it's been brought out in testimony several times,
3 from Mr. Mattson among others, that prior to TMI-2 that
4 there were these differences between the once-through steam
5 generator and the recirculation steam generator. The
6 question arises as to why the NRC would permit a design
7 which is significantly less forgiving in its performance to
8 be licensed to be constructed, and let me just say this, if
9 I understand what you just said, I presume the answer would
10 be — it's the answer I received from Mr. Mattson, too, that
11 it did not pose any undue risk. That is what the statute
12 says the NRC should look to.

13 In looking to that, it licensed that. I am still
14 having trouble — and I understand that — reconciling that
15 fact and that approach with what you also described as the
16 approach of the NRC to exceed the standards of no undue risk
17 and to seek additional margins of safety?

18 A And leading the industry in that direction.

19 Q Through the licensing process?

20 A Yes.

21 Q Why wasn't B&W led in that direction through the
22 licensing process to forego the once-through steam generator
23 and obtain a more forgiving design?

24 A Because — I can only conclude, Staff felt that in
25 this matter, the safety problem was not so great as to

JerKGM 1 require a move in that direction.

2 Q Let me ask you this, Mr. Kennedy: In the course
3 of the Presidential Commission public hearing on August 23,
4 ~~Mr. Kennedy~~ ^{Dr. Kemeny} recalled Dr. Roger Mattson's testimony of the
5 previous day that the Lessons Learned Group fully realizes
6 that the complete engineering understanding of the accident
7 is not yet available. That was posed to Mr. Denton in
8 connection with his determination at that time that the
9 licensing activity itself was going to be resumed and he was
10 asked how he could do that. Mr. Denton responded as
11 follows: "I guess we would have a complete engineering
12 understanding for many, many years down the road when the
13 containment is opened, the core is taken out and analyzed.
14 I, at the same time, think that is no basis for not acting
15 today on the basis of what we do know and Salem 2 is not
16 that different from Salem 1."

17 Do you agree that the fact that we do not have that
18 complete engineering understanding is no basis to forestall
19 resuming licensing activities at that time?

20 A We started to discuss this: We are always going
21 to learn something new. Whenever you have an event of this
22 kind, an accident, the lesson to be learned from it will be
23 learned over a very long time indeed.

24 Let me just point out that we know a great deal more
25 about that event today than we knew three months ago or four

JerMGM 1 months ago. People were going around saying a lot of things
2 about what happened in that situation in May. In April
3 even. Many of those things were not quite accurate. We
4 have learned a great deal since then. We still don't know
5 what happened to that core, what its situation is. We still
6 don't know about all of the devices, all of the measuring
7 systems and devices, how well they have survived in this
8 very strange atmosphere that's been created in that
9 containment. We don't know.

10 What we do know — what we do know about the performance,
11 I think, has given us the confidence that with certain
12 changes we can in fact go ahead without undue risks for
13 public health and safety. We are going to learn more
14 things. We are going to learn more things about fuel
15 composition and design.

16 Q I hate to keep coming back to it, but it does
17 involve what I understand to be a pervasive element
18 throughout the licensing regulatory assumptions. That is
19 again this business of TWI-2 now being recognized as a
20 Class 9 accident. Shouldn't the NRC know whether or not
21 single failure analysis is a proper way to license a plant
22 before it resumes licensing activities? Shouldn't it be
23 certain of that?

24 A I don't think that that is necessary.

25 Q We can have serious doubts about single failure

Jer:GM 1 analysis and still go ahead and license plants on that
2 basis?

3 A Recognizing — now wait. First of all, we are not
4 licensing anything right now.

5 Q That is what was being discussed last week, was
6 resuming licensing activities?

7 A I know that. But we are not licensing anything
8 right now.

9 Q But it is going to be up to a Commission vote or
10 discussion very soon?

11 A Tomorrow.

12 Q So again my question is, shouldn't the NRC be
13 certain about the validity of single failure analysis before
14 it resumes licensing plants on the basis of single failure
15 analysis? :

16 A As I said several times, I don't think single
17 failure analysis all by itself is the basis on which the
18 plants are licensed.

19 Q I didn't say tthat.

20 A Okay. I also tried to indicate that in my view, a
21 number of the other considerations go into the basic safety
22 composition of the plants, ^{which} mitigates the effects of the
23 other kinds of events that would be encompassed within the
24 single failure analysis. Therefore, it seems to me, that if
25 we can see from this event a variety of circumstances which

jerMGM

1 can be protected against or separated out so that they can't
2 have a synergistic effect, (and we think that we have done
3 much of that in the orders — bulletins and orders that have
4 already been issued as to these plants, and to the extent
5 that these lessons have applied to other plants ~~and~~ ^{we have} also
6 advised other licensees), ~~if~~ ^{if} we can see that, then it seems
7 to me that we could go ahead with the full understanding
8 that as we developed new information, as we develop new
9 review processes, to the extent that any change occurs that
10 needs to be made in any other plant, those plants will be
11 required to make those changes.

12 Q Even though in the meantime we are going to
13 license more plants, have more of them go into operation and
14 have more of them pose the possibility that some defect in
15 the single-failure analysis utilized in licensing them will
16 result in another severe accident?

17 A What I am suggesting —

18 Q Are we prepared to accept that risk?

19 A I am suggesting that the presumption is that that
20 risk is very low indeed.

21 Q Even though the TMI-2 accident is now being
22 classified as a Class 9 accident, you are prepared to say
23 that presumption is very low indeed?

24 A Yes.

25 Q Okay. Let's talk about some other things that

1 need fixing before or presumably at some point, regardless
2 of whether or not plants are being licensed. The
3 Presidential Commission has already heard extensive
4 testimony on the NRC's roles in operator training. There is
5 no examination of the design of the equipment for which the
6 operator is licensed, only eight fulltime examiners for the
7 entire country, and 22 part-time examiners with virtually no
8 commercial reactor experience, no periodic evaluation of
9 training program offered to utilities by vendors such as
10 B&W, utility training programs which teach the test given by
11 the NRC, no requirement that significant transients are to
12 be incorporated into either classroom or simulate training,
13 no requirements for instructor or training supervisor
14 qualifications, no auditing of simulated training and no
15 evaluation of simulated performance in the utilities
16 requalification programs, permitting an operator who flunks
17 a written requalification examination to continue work as a
18 licensed operator while he takes accelerated training, et
19 cetera.

20 Now don't you think that these matters must be changed —
21 by that I don't mean just changing the procedure, running
22 the operators through again and relicensing everybody under
23 the changes before resuming licensing of plants to operate
24 with individuals that have been trained under those
25 circumstances. Don't you think all that has to be done?

JerMGM

1 A Let me just say all of those things have to be
2 corrected. Every one of those things has to be corrected.
3 We are in the process of doing that. May I also say that
4 it's my understanding that the industry group is doing the
5 same thing.

6 One of the things that needs to be done in this regard is
7 a major increase. We are already increasing. I think we
8 already added 50 percent more, I think we need to do more
9 than that, in the number of qualification testers, trainers,
10 inspectors. We will do a lot more of that. We need to have
11 every operator, in my judgment, every operator needs to run
12 through a simulated course at least once a year, and
13 probably every quarter that operator ought to be put on a
14 simulator for a sort of pop quiz. Something that he has not
15 confronted before, and see how he responds and reacts to it
16 and hopefully learns from it. That is sort of some of the
17 things that I think ought to be done.

18 Now do I think you can't operate plants until all that is
19 done? I think you can. I think the operators — that
20 operator training is being upgraded. You don't have to stop
21 the entire industry to do it. I think you can accomplish a
22 great deal of that in training, while people are continuing
23 to work.

24

25

sonMGM

1 Q Let me see if I can nail down a few facts. We
2 know we have got approximately 70 operating nuclear power
3 plants now in the United States at which the operators were
4 trained under these circumstances that I just described; is
5 that correct?

6 A Yes. Not all of them. Not all of them trained
7 under the combination of all of those circumstances.

8 Q A very substantial percentage of them have been
9 trained under these circumstances, haven't they?

10 A All of them have been trained, exposed to one or
11 more of those circumstances. I think relatively few have
12 been trained in circumstances which involve all of those
13 circumstances.

14 Q All right. But by and large, the characteristics
15 I have described are characteristics of the current state of
16 the NRC's involvement in the training and licensing of
17 nuclear power plant operators; is that right?

18 A Generally speaking.

19 Q Fine. I understand there have been changes in the
20 system over the years. Whether or not those changes have
21 been for the better, I don't want to get into.

22 A It is a generalization that I am cautioning
23 about. It is one thing to say that an operator has been
24 trained under all those — and effected by all of those sets
25 of circumstances. That entire range of circumstances.

sonMGM 1 It is quite another thing to say that all operators work the
2 same way.

3 Q We can go back through them, "No examination of
4 the equipment for which the operator is licensed." It is my
5 understanding from Mr. Collins of the operator licensing
6 plants that that has been the approach, period. That has
7 not changed. So operators who have been licensed have been
8 licensed under that circumstance, haven't they?

9 A What I am saying is that I don't know every
10 operator who has been licensed knows nothing and it was not
11 examined on the design of the equipment for which he is
12 licensed.

13 Q No. Let me see if I can — you are
14 misunderstanding the point I was making.

15 The NRC has not examined the design of the equipment for
16 which the operator is licensed, except through the plant
17 licensing program. That is what I am saying. That has been
18 the case, hasn't it?

19 A That is correct, sure.

20 Q So any operator during the last ten years who has
21 been licensed by the NRC has been licensed under
22 circumstances in which the operator licensing branch of the
23 NRC has not examined the design of the equipment for which
24 that man is licensed; isn't that true?

25 A That is true. That does not say anything about

sonMGM 1 the operator.

2 Q I understand that. I am not trying to —

3 A That is the only point I am trying to make.

4 Q I am not trying to address the adequacies of the
5 utilities' training programs. I am trying to address
6 the position of the NRC vis-a-vis those training programs.

7 A It is not the NRC who is going to operate those
8 plants. The question was should we allow the plants to
9 operate. Okay?

10 Now, if the question is should we allow the plants to
11 operate, the only question is are the operators capable of
12 operating the plants. Whether the NRC itself in the
13 operator training branch studied that plant is one thing.
14 What I want to know is if the operator ^{has} and that is a
15 function of the utilities' training program.

16 I don't think we ought to generalize — that is my only
17 point, I just don't think we ought to generalize because
18 Paul Collins outlines a series of deficiencies in NRC's
19 operator training program. We don't train them.

20 Q I understand.

21 A You see, so we better go and find out what the
22 training was before we generalize as to what their training
23 was. I would be delighted to go ahead and do that.

24 Q So far you have not?

25 A No.

sonMGM

1 Q In the meantime, Mr. Denton was prepared to resume
2 licensing those plants, correct?

3 A Yes.

4 Q With those operators out there, about whom you
5 don't know one way or the other, what real kinds of training
6 they have had?

7 A By the time any of those plants were to come on,
8 the operators would have been trained under a new regimen.

9 Q I am curious about that because Mr. Denton did
10 indicate that the two plants, Salem-2 and — would be
11 eligible for OLs within a month or two. I understand it is
12 going to go to the Commission and they are going to vote.
13 But the point was that as far as Mr. Denton was concerned,
14 he was prepared to allow them to have an OL as the director
15 of NRR — he signs the OLs, as I understand.

16 * He was prepared to let them have an OL within 30 to 60
17 days. Is it your understanding that all those changes are
18 going to be made and all those operators will be trained
19 under those changed circumstances to the extent they need to
20 be within 60 days?

21 A No.

22 Q So then there would be some plants that would get
23 those licenses and have operators in those control rooms not
24 subjected to the new regimen of training and about whose
25 training the NRR knows very little in light of the

sbnMGM 1 involvement it's had to date?

2 A I can't answer that until I know what the training
3 of the utility in connection with Salem-2 and North Anna
4 actually is.

5 Q Coming back to that —

6 A You have a valid point, if in fact the training of
7 those individuals was inadequate. That I don't know. So I
8 can't answer your question.

9 Q We just don't know one way or the other because
10 again, there is no periodic evaluation of training programs
11 or programs by vendors.

12 A I agree.

13 Q And that applies to the 75 plants we already
14 have. We just don't know what training those operators in
15 those control rooms have been given.

16 A But it is not fair to generalize from that that it
17 is bad training.

18 Q I was not trying to. We just don't know. We know
19 in the case of TMI-2 that they were not trained the way it
20 should be. We have done some investigation, the
21 Presidential Commission has, of the actual nature of the B&W
22 training program and what it includes and does not include.

23 Many of those things I raised with Mr. Collins and he
24 confessed to be unaware.

25 A That, I would have to add, is our fault.

:bn/MGM

1 Q We know that the B&W training program has some
2 deficiencies in it. That brings me back to the points we
3 discussed before.

4 Again, don't you think at the very least the NRC should
5 guarantee, I mean guarantee 100 percent, that the operators
6 at B&W plants understand the TMI-2 accident before they are
7 permitted to continue to operate B&W plants?

8 A Guarantee?

9 Q By getting them themselves and being sure that
10 that fellow understands what the TMI-2 accident was all
11 about. Every one of them that works with a B&W plant?

12 A I think we have satisfied ourselves through the
13 checks we have made.

14 Q Okay. As I understand it, from Mr. Collins, those
15 were essentially the same kind of checks that have been used
16 in the past —

17 A No, I don't think that's true. I think Harold
18 Denton, for example, went to Oconee.

19 Q I am glad you brought that matter up. As I
20 understand it from Mr. Denton's description at the
21 Presidential Commission hearing, he did go to Oconee because
22 there were some problems.

23 There was a question that the retraining program being
24 offered by Oconee on TMI-2 was not adequate. Someone
25 checked it out and found it was not adequate and changes

sbn/KGM 1 were made to insure that the training was adequate.

2 Mr. Denton advanced that as evidence of NRC's astute
3 involvement in this process.

4 My question is, doesn't that indicate still further the
5 necessity for NRC to individually test each one of these
6 operators before allowing them to go into a B&W control room
7 again?

8 A My understanding is that each of the licensee
9 retraining programs ^{at} ~~on~~ the B&W plants was in fact reviewed by
10 the NRC.

11 Q The training program?

12 A Yes.

13 Q But the individuals were not individually
14 examined?

15 A No, they were not, that is correct. They were
16 spot-checked.

17 Q So we still don't know exactly what kind of
18 understanding they got out of it. We know how they did on
19 the utility examination, and we know they took the course
20 and we know NRC evaluated the course?

21 A And spot-checked some of the examinations, and I
22 believe, some of the operators.

23 Q Okay. We have been discussing before the
24 man/machine interface. And the fact that there was at least
25 in the design review a less than desirable look and

- 15 08

IBM/MGM

1 examination at the way in which the people who operate the
2 machine would interface with the machine. Is that a new
3 problem in terms of the NRC?

4 A As far as the NRC is concerned, I think — I guess
5 I don't know whether I would call it a new problem. I think
6 it is a problem that has not been given enough attention.

7 Q Is it a problem that's recently surfaced within
8 the NRC?

9 A I don't recall the problem being discussed
10 particularly. Let me just say something about that.

11 A good many years ago I had an occasion to think about
12 that from a sort of managerial point of view and it is a
13 very, very important consideration, because you can build
14 almost anything in two different ways.

15 One way that is easy to operate and maintain, and one way
16 that is — that may be more efficient in terms of the
17 machine itself, but in a way that is almost impossible to
18 operate effectively and certainly not to maintain. That is
19 — those are the two extremes.

20 Now, somewhere in between there is a rational balance
21 where you devised a design which will facilitate the
22 effective control and operation of that machine by the
23 operator. You make him more comfortable, you present to him
24 the information and data he needs and ways in which he can
25 readily comprehend. And, also, draw relationships among

son:AGM

1 that data, facilitating the processes that he has to go
 2 through to do that. There are just a lot of things that one
 3 can do.

4 We have not been involved in any significant way, to my
 5 knowledge, in that sort of thing. That being a matter which
 6 we have, up to now, seen as a matter for the architect,
 7 engineers, and their customers.

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

E15

re MGM

1 Q As a matter of fact, I think Dr. Mattson has
2 testified in his deposition and before the Presidential
3 Commission that prior to Three Mile Island, there was no
4 office within the NRC that was directed to address the
5 man/machine interface. So it simply wasn't focused on as a
6 formal thing?

7 A Yes.

8 Q Also, there had been a lot of questions raised
9 about the information systems whereby reliability problems
10 at the operating reactors are addressed by the NRC and the
11 LER process we talked about in connection with Mr. Creswell
12 and the Davis-Besse transients.

13 I know there are a lot of movements to improve that
14 process in a separate office in the NRC itself. Again, is
15 that something that has come up since TMI-2 as a new sort of
16 issue?

17 A Not really. I think TMI-2 gave it a substantial
18 boost and made it perfectly clear that some things that were
19 in people's minds ought to get moving.

20 I think the interface, the LER interface between I&E on
21 the one hand, on operating reactors on the other, and NRR,
22 the licensing people and indeed I would add also the
23 research people has been something very much in our minds
24 for a long time.

25 Q What has that — why hasn't that problem been

to MGM 1 solved?

2 A Well, you know, what is a solution? What I think
3 of as — I think something is solved today and you suddenly
4 find out that, by gosh, it didn't work.

5 That doesn't say it wasn't solved. It simply says that
6 you found a better way to do it.

7 Q Let me take an obvious example. As I understand
8 it, the NRC has a computer arrangement where LERs are
9 stored, the information on LERs is stored in computers.

10 However, it is my understanding that up until recently,
11 at least, the computer was not programmed to disclose
12 information from LERs under certain areas, such as PORVs
13 failing to open. You couldn't hit a button and have it feed
14 out all the ^{PORVs}~~PORVs~~ failing to open. It wasn't programmed
15 that way. ; That is an obvious thing, yes —

16 A Not ^{so}~~to be~~ obvious, necessarily.

17 Q In means of a computer —

18 A How was it programmed?

19 Q Simply to store LERs?

20 A You called it up by LER, not by subject.

21 Q It is a fairly obvious thing and it just wasn't
22 done. It is now being done obviously. Compiling history of
23 certain components such as PORVs or other safety related
24 components from LERs.

25 A I am surprised, I hear words about histories.

re MGM

1 Anybody who ever had to maintain anything even like his own
2 automobile recognizes that the maintenance history of a
3 piece of equipment, whatever it is, is a terribly important
4 thing.

5 Now, not only as to that piece of equipment, but as to
6 its siblings and its neighbors and acquaintances. One
7 learns a great deal from the maintenance history. And I —
8 so I must say I am surprised to hear that maintenance
9 histories don't exist. I find it hard to believe that there
10 are not detailed maintenance histories at plants.

11 Q At individual utilities?

12 A And maybe even in the utility headquarters. What
13 is not happening is, is what I would guess — if anybody
14 would have asked me, I suppose I wouldn't have expected an
15 individual utility would be sharing with each other their
16 normal maintenance histories.

17 Let me say that that goes to a different question. If we
18 were to consider that, and I am not making a judgment on
19 that right now, if we were to consider that maintenance
20 histories on individual pieces of equipment were matters
21 which ought to be shared among operators of that kind of
22 plant, ^I suppose that would be something that ought to be
23 worked out by the vendor who supplies the material in the
24 first place.

25 And let me suggest that to the extent that that was

4 16 04

re MGM

1 agreed among utilities, it would represent a very different
2 view of an industry.

3 What we are talking about is a wholly new kind of
4 approach to the way these plants are operating. I mean, in
5 the broadest managerial sense. We are talking about these
6 plants as not solely the property of — and the concern of a
7 given utility. But rather of general interest to the entire
8 industry. That is something that comes a little hard, I
9 think, for most industries. It isn't easy to develop that,
10 even within trade associations.

11 Now I understand, and all I know is what I hear, I
12 understand that the EEI and the others are attempting to get
13 that kind of view before utility operators. It is so
14 slanted. I think that is all to the good and I think that
15 is the way it ought to be.

16 I would add that it is going to cause changes in the way
17 they see themselves. Sooner or later, someone has to worry,
18 I suppose, about how far they can go ⁱⁿ ~~with~~ this regard
19 without getting in trouble with the antitrust laws.

20 Q One of the reasons I asked some of these questions
21 is because from some documentation that comes to our
22 attention, there were attempts in the NRC to address these
23 questions totally apart from the industry.

24 What I have here is a memorandum, dated March 13, 1975,
25 to Commissioner Gilinsky from Steven Hanauer. He is a

1 pretty technically competent person.

2 A Yes.

3 Q The memorandum is entitled "Technical Issues." It
4 says, "Attached you will find, in accordance with your oral
5 request, discussion of some technical issues that I consider
6 to be important for Commission consideration, although not
7 necessarily in the immediate future. The list is confined
8 to reactor safety topics. I have also appended a list of
9 some reactor safety policy issues that have come to my
10 attention."

11 Have you ever seen a copy of that before, if you recall?

12 A I must have since I see my name on the bottom, but
13 I do not recall it.

14 Q You are in the distribution. If you turn to the
15 third page of the document, there are a couple of paragraphs
16 here of interest. Paragraph 3 at the top is entitled
17 "Reliability and the Single Value Criteria."

18 It says the operating plans are one of our chief sources
19 of information, but we do not know whether the rate of
20 abnormal occurrence, as now being experienced, is a
21 satisfactory one or not. We do know that nuclear unit
22 availability and capacity are not satisfactory. We need to
23 find out whether safety system availability is satisfactory
24 and to improve whatever aspects of reliability need
25 improving.

re MGM

1 That seems to call attention to the very problem we have
2 been discussing before the reporting of operating history of
3 nuclear power ~~plants~~ ^{plants}.

4 This is 1975, four years before the accident. Why wasn't
5 the problem cleared up in that four-year period?

6 A I think great changes have been made over the four
7 years. I don't think it is a question of the problem not
8 being cleared up. A lot of changes have been made. A lot
9 more information was available.

10 When I implied I wasn't satisfied, I think some of the
11 people in this room would find it hard to believe I had ever
12 been satisfied with much. But I am not satisfied that we
13 are doing all we need to do now.

14 Q I wanted to ask you about that. But taking a
15 specific example, the PORV, as of today — or as of the time
16 of the TMI-2 accident, did the NRC know whether the rate of
17 abnormal occurrences then being experienced for the PORV was
18 a satisfactory one or not?

19 A I do not know.

20 Q I have been told by Roger Mattson and Harold
21 Denton and a number of other people they also don't know.

22 Again, it is the kind of thing being asked here by
23 Mr. Hanauer, efforts have been made, but as of the time of
24 the accident, they were still not sufficient in that
25 regard.

to MGM 1 You have doubts as to whether they are sufficient today?

2 A I am convinced we need to do more. I am convinced
3 that is going to take a much closer relationship between
4 ~~organizational~~ ^{organizational} elements of this institution.

5 Let me just say that that applies to a whole lot of
6 things.

7 Q Let's take some of the other things it presumably
8 applies to. The next paragraph is number 4, and it is
9 entitled "Human Performance."

10 "Present designs do not make adequate provision for the
11 limitation of people, means must be found to improve the
12 performance of the people on whom we depend and improve the
13 design of equipment so that it is less dependent on human
14 performance."

15 The last paragraph says, "The relative roles of human
16 operation and automation should be clarified. Criteria are
17 needed regarding allowable computer safety related function
18 and computer hardware and software for safety related
19 application" — again, this is addressing the man/machine
20 interface.

21 We saw what happened at TMI-2 for failure to consider
22 that. Why wasn't it addressed in the four-year period when
23 Mr. Hanauer makes these comments to the time the accident
24 occurred?

25 A I can't answer that. I think I have already

re MCM 1 indicated I think it should have been.

2 Q The very last paragraph on the last page is
3 entitled "Too Many Surprises."

4 "In the past couple of years, surprises have come both
5 from operating experience and from improved understanding by
6 both reg and industry of safety problems we thought were put
7 to bed. An obvious example is all the trouble we had with
8 ECCS evaluation materials. Innovation by applicants will
9 continue to generate surprises. We must develop methods of
10 evaluating these surprises without having a fire drill each
11 time" — there were surprises with the design in the TMI
12 accident, was there not?

13 A Yes.

14 Q There was also surprise in the ECCS evaluation at
15 Westinghouse, was there not?

16 A The latter, he was talking about; not the former.
17
18
19
20
21
22
23
24
25

1754
1 Q I bring that specifically to the question of
2 coincident logic. I asked Roger Mattson about that because
3 his office had specifically examined the Davis-Besse transition
4 of September 24, 1977, in which the pressurizer level stayed
5 high or went high and primary system pressure fell. And
6 therefore, if they had had coincident logic at that plant
7 which they did not, it would not have come on under those circumstances
8 where you might very well want to come on. Mr. Mattson's
9 explanation was that they simply did not make the connection.
10 At the time I took Mr. Mattson's deposition, I did not have
11 the document I'm referring to here. But, again, I'm curious,
12 in 1975, Mr. Hanauer is pointing out that there's trouble
13 with ECCS evaluation models and the NRC is going to have
14 to take steps to prevent being surprised by this situation.
15 Why weren't those steps taken in that four-year period to
16 prevent surprises?

17 A A great many steps were taken.

18 Q Not enough?

19 A Not the ones that would have prevented these.

20 Q What assurance do we have, if we can state it in
21 any kind of succinct form, that those oversights will not
22 continue to occur?

23 A I'm not sure that one needs to call them oversights.
24 I am not confident we're going to know everything about every-
25 thing all the time. I think we would be misstating both our

1p 2
SM

1 capability and maybe even our role if we said we were going
 2 to be the repository of all knowledge to solve all problems
 3 before they can be imagined in the future. We can't. I will
 4 add to that that we have to do better. I have said that publi-
 5 ly. I will say it again. We have to do better.

6 Q Are you confident that you do know enough, the
 7 NRC commission does know enough and will know enough to
 8 make those plants operating as well as to be licensed safe?

9 A Yes.

10 Q Well, I take the specific example of coincident
 11 logic for ECCS actuation. Again, if that system had been
 12 present at Davis-Besse as it was in the Westinghouse
 13 facility in Switzerland in 1974, you could well have a
 14 situation where ECCS, the emergency core cooling system,
 15 the basic safety system in the plant would not come on auto-
 16 matically when you would want it to come on automatically.
 17 That strikes me as a layman as a serious safety issue. It
 18 was not spotted until we had the TMI-2 accident. That sugges-
 19 to me, then, that the NRC commissioners and NRC itself being
 20 composed of human beings will or can very well miss or fail
 21 to appreciate issues that raise serious safety questions
 22 about operating power plants.

23 A We have to find every way to get those safety
 24 issues ~~enforced~~ ^{remedied} before somebody else spots them.

EM 3

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

BY MR. KANE:

Q Let me take another example with you, Mr. Kennedy, of something provided to us by Mr. D. Baskexas. Are you familiar with him?

A Yes.

Q He's a reactor safety engineer within the NRC?

A Yes.

Q He's provided us with an illustrative document. It's entitled "A Comparative List of Safety Concerns Before and After the TMI-2 Accident." The left side of the page is apparently a recommendation which Mr. Baskexas made in 1976 relating to the necessity to perform a failure mode and effects analysis on the control system failures which had been encountered in operating the nuclear power plants. He notes at the bottom of the left-hand page that in encountering his arguments in 1976, the NRC regulatory staff maintained the following, "Although analyses have not been performed for these postulated sequences of events, the staff believes the consequence would be acceptable and much less severe for those calculated or postulated accidents."

On the right side of the page are recommendations by the NRC staff in connection with the Babcock and Wilcox subsequent to the TMI. They committed that they would proceed to undertake a reliability analysis of the integrated control system which will include a failure mode and effects analysis. And

1 On May 16, 1979, the staff issued NUREG 0360 which is
 2 the generic assessment of transients, it recommended that
 3 all classes of operating plants shall be re-analyzed using
 4 failure mode and effects analysis to effect a realistic plant
 5 interaction. This says that the NRC staff in 1976 was wrong,
 6 it was not properly taken ^{Care} ~~care~~ of and the action now reflected
 7 on the right-hand side of the page indicates it now will be
 8 taken care of. Is that a fair statement?

9 A Well, let me just say, I don't think I have ever
 10 seen it before.

11 (Discussion off the record.)

12 THE WITNESS: To go back to your question, ^{your} ~~my~~
 13 question was --

14 BY MR. KANE:

15 Q Doesn't the left-hand side of that document
 16 reflect a position being taken by the NRC in 1976 on a
 17 suggestion by Mr. Baskexas which in light of what we know
 18 today was wrong?

19 A I'm not sure that I would characterize it as wrong
 20 because I don't know if I understand what's being said here.
 21 In 1976 they did reach a conclusion that the staff believes
 22 the consequence would be acceptable and much less severe than
 23 calculated for postulated accidents. In 1979 the staff says
 24 they should be reevaluated and re-analyzed.

25 Q Well, it's more than that. On the left-hand side

1 on the page, as I understand it, the staff has taken the
2 position that this failure modes and effects analysis need
3 not be done?

4 A That's correct.

5 Q On the right-hand side of the page --

6 A It says let's do it.

7 Q Yes. That strikes me as contrary positions.

8 A That may be true, but that doesn't -- your
9 characterization of the first one was that it was wrong.

10 Q I'm sorry. What I meant to say was --

11 A I simply said I couldn't judge that it was wrong.

12 Q What I meant to say, what was wrong was the position
13 of the NRC staff on the left-hand side of the page, that the
14 failure modes and effects analysis need not be done --

15 A Because they had reached a conclusion about it.

16 Q And the conclusion that that analysis need not be
17 done is clearly wrong on the basis of what we know today.

18 A All right. Yes. That is correct. That's a fair
19 statement.

20 Q So, again, what this document reflects is a
21 situation where the NRC, in 1976, felt that an analysis was
22 not necessary. Today it clearly feels it was. Again, that
23 suggests to me that we have built into the system -- that we
24 be because our system is composed of human beings -- we have
built into our system the possibility and actuality

1 that analyses that should be done are not done, and then
2 later on are determined to be necessary.

3 MR. CHOPKO: I'm going to object to this only
4 on the ground what you're asking the commissioner to respond
5 to are materials taken out of context and the points of your
6 compound questions assume first of all that this individual
7 was right and clearly presented his views in 1976. And
8 secondly, that the staff perceived his issue correctly at
9 that time and then subsequently changed its mind. Without
10 back-up information, I think you're asking my client to
11 respond far beyond the four corners of this documents.

12 MR. KANE: I'm afraid I have to take some
13 exception to that in that the four corners of the document
14 cite the pertinent document. They quote the pertinent section:
15 It clearly has been culled out of a compilation of other
16 documents. On the other hand, I will certainly concede that
17 the question I'm posing is based upon assumptions that you
18 just stated, that in fact this document accurately reflects
19 a situation where Mr. Baskakas proposed a failure mode and
20 effects analysis to be done, the NRC staff at that time
21 concluded it was not necessary to do so, and that since the
22 Three Mile Island accident, the NRC staff has concluded that
23 it is necessary to do such an analysis.

24 The question I'm posing does make that assumption.

25 MR. CHOPKO: Perhaps you should pose the assumption

10
SM

1 separately and allow the commissioner to respond to your
2 assumptions. You asked a compound question of three parts.

3 MR. KANE: Let me break it all down.

4 BY MR. KANE:

5 Q I believe I asked you whether or not this document
6 a fair characterization of this document before you is that
7 in 1975 Mr. Basdekas proposed that a failure modes and effect
8 analysis be done. At that time the NRC staff took the position
9 that no such analysis should be done. And that since the
10 Three Mile Island accident, the NRC staff has taken the posi-
11 tion that such an analysis should be done. Is that a fair
12 characterization?

13 A That's a fair characterization of this document.
14 I cannot attest to whether it's a fair characterization of
15 the facts in their totality simply because --

16 Q Let's assume it is just for the purposes of this
17 deposition.

18 A I'm just telling you that I can't make that
19 assumption because I don't know. I don't know what the
20 documents say. All I know is what these excerpts from these
21 documents say.

22 Q Let's assume for the moment that there is no
23 other documentation that negates that characterization of
24 this document that, in fact, this occurred. Mr. Basdekas
25 made this recommendation, the NRC staff concluded it's not

10 7
EM

1 necessary, it now concludes it's necessary.

2 A Yes.

3 Q Again, my question is, assuming that to be the
4 case -- I'm not asking you to state it is or isn't -- assuming
5 that's the case, doesn't that indicate, then, that the NRC
6 regulatory process has built into it necessarily, because it's
7 composed of human beings, the possibility and the actuality
8 that certain analyses that should be done will not be done?

9 A I don't think that follows. I don't think that
10 follows necessarily.

11 Q Why not?

12 A I think it can happen. I don't think it necessarily
13 will.

14 Q Assuming --

15 A It's possible.

16 Q Assuming that this document is what it appears to
17 be, it has happened?

18 A Yes, if this document is as it appears to be, it
19 happened. That does not prove either that it must or, in fact,
20 even it will, only that it has.

21 Q The same for the TMI-2 accident. The fact that it
22 has happened is undeniable. The fact that it will again or
23 might is not proved by the fact it did happen?

24 A That's right.

(Kennedy Exhibit 3 identified.)

3
M

4-1-17

amr
AGM

1 MR. KANE: While we have been off the record we hav
2 been discussing the document we have marked as Exhibit 3 now.
3 The document was forwarded to the Presidential Commission by
4 Mr. Basdekas. It has been pointed out to me by counsel for
5 the NRC and for Commissioner Kennedy that there are
6 differences between an earlier — an apparently earlier
7 version of the same document.

8 We have therefore determined that we should mark as
9 Exhibit 4 to the deposition the earlier version of the
10 document which does not have some of the language which
11 appears in the document we have marked as Exhibit 3, and
12 which also does not bear the date in the upper right-hand
13 corner which Exhibit 3 does bear.

14 So we will have this earlier less complete document
15 marked as Exhibit 4.

16 MR. STEPHENS: The markings on that document are
17 yours.

18 MR. KANE: The ink underlining markings are my own
19 which I put on there last night.

20 (Exhibit 4 identified.)

21 BY MR. KANE:

22 Q Something else that has come up in connection with
23 the Three Mile Island accident, or really the clean-up after
24 the Three Mile Island accident, is the question of what to do
25 with the waste which will be extracted from the water which

1 currently in the containment building and TMI-2 and as I
2 understand it also in the auxiliary building. It is my
3 understanding at the present time that there is a disagreement
4 between the office of nuclear reactor regulation and between
5 the office of waste management within the NRC as to how or
6 in what form the waste should be transported.

7 Are you familiar with that disagreement?

8 A Yes.

9 Q Can you explain what that disagreement is?

10 A Yes. My understanding of the disagreement is that
11 the people in NRR would propose that this material be
12 processed through a system which would immobilize the liquids
13 and essentially absorb them into a material which would then
14 be — what shall I say — essentially canned, and shipped in
15 large containers.

16 Now this would not be wholly solidified. People in waste
17 management, as I understand it, would prefer that the material
18 be wholly solidified which would be processing it further into
19 a matrix either of concrete or something of the sort and
20 shipping it in that form.

21 Q Why do the people in waste management prefer that it
22 be shipped in that concrete form?

23 A Their contention is that it will be more safe to
24 ship in that the possibility of any liquid loss would be less
25 in the event of some sort of accident. Since it is going to

mn
GM

1 have to travel considerable distance, they consider that —
2 as I understand their argument, they consider this a
3 consideration of merit. On the other hand, the people at NRR
4 as I understand their view, believe that as a matter of fact,
5 there is very little danger in any event. That for all
6 practical purposes the liquid will have been immobilized in
7 the resins, and there won't be any significant amount of
8 liquid that will be possibly disturbed.

9 So that the — they would contend the risk is relatively
10 slight. They would add, I think — and I am trying to pose
11 all these arguments as best as I can recall them myself —
12 they would add, I think, that first there is a much longer
13 time involved.

14 If you are going through the ^{solidification} ~~certification~~ process, an
15 entire facility to accomplish that additional step in the
16 process would have to be essentially created at the site.
17 That would mean that the liquids now in the building, which
18 they are trying to move out, would have to remain there that
19 much longer, some considerable period.

20 I have forgotten, but it seems to me my recollection is
21 several weeks or months, probably more likely months. And
22 that they consider to have its own risks and therefore, they
23 would prefer to see the material moved.

24 Q What is the risk in letting it sit there in the
25 containment building for another couple months?

1 A The longer it sits there, the more likelihood I
2 suppose of some deterioration and leakage and it is just
3 better to dispose of it and get rid of that material.
4 Moreover, you are going to have to have someplace — you are
5 not going to be able to get at anything else around the
6 building ^{until you} ~~to~~ remove that material. It's desirable to get it
7 out of there if it is possible to do so.

8 I would add, I think — I don't know whether they raise
9 this argument, but I have heard it raised — that since it is
10 true that it is going to be travelling over a considerable
11 distance, therefore one needs to be very concerned, obviously
12 about the safety of the transport, which is what motivates the
13 people in NMMS — in waste management.

14 On the other hand, it increases the volume and the weight
15 of the shipment dramatically, and therefore means more
16 shipments. So while you might be further immobilizing the
17 liquids and make it less likely in the event of an accident
18 that anything will escape, by the same token you are
19 significantly increasing the number of shipments and
20 statistically, at least, the possibility of shipping accidents

21 Q We deposed Dale Smith and he expounded upon the
22 division of waste management's point of view on this subject.
23 He points to a history of corrosion of transport containers
24 and radiation leakages where weights are shipped in liquid
25 form. He specifically made reference to the June 1979 arrival

amh

1 at the Beatty burial site in Nevada of leaking containers
2 from the Palisades reactor.

AGH

3 Are you familiar with that instance?

4 A Yes.

5 Q As I understand it Governor List of the state of
6 Nevada, refused to allow the burial and ordered return of the
7 shipment; was it in fact returned?

8 A Yes.

9 Q Was it returned to the Palisades reactor?

10 A Yes.

11 Q Where is that?

12 (Discussion off the record.)

13 BY MR. KANE:

14 Q Mr. Kennedy, we have taken a break off the record,
15 and your assistant checked and ascertained that the Palisades
16 reactor is in the State of Michigan. The shipment was
17 returned from Nevada to Michigan. Was it returned in the same
18 state in which it arrived?

19 A My recollection is that some steps were taken by the
20 shipper to — the shipping company — to be sure that further
21 leakage wouldn't occur as it was going back.

22 Q What type of casks were used for that shipment?

23 A I don't know precisely. I don't know what shipping
24 containers these were, the ones that went —

25 Q Does the NRC have a requirement for the type of

1 shipping containers that can be used?

2 A Yes, we do have a requirement.

3 Q Was there any suggestion or indication in connection
4 with this incident —

5 A These are also by the way ^{subject to} ~~a factor of~~ the Department
6 of Transportation.

7 Q Yes. It is a type 3 DOT container?

8 A Yes.

9 Q In this specific instance of the shipment to the
10 Beatty burial site, was there any indication that the NRC
11 requirements on this had not been complied with?

12 A My understanding was that there ^{was} ~~were~~ not any such
13 indication. Some damage occurred somewhere in the process of
14 the shipment, or the shipment — the material had been put in
15 the containers with too much liquid in the first place.

16 Q So it was packaged incorrectly?

17 A That is my understanding.

18 Q Mr. Smith also provided us with a study, I
19 unfortunately do not have with me, an August 1979 study of
20 waste shipments to the Chem Nuclear Facility in South
21 Carolina. That study shows a high number of leakages of
22 semiliquid wastes.

23 Are you familiar with that study, August 1979?

24 A No. I am not familiar with that study, but I have
25 visited that facility.

an
OK

1 Q The division of waste management points out, or
2 Mr. Smith points out, that there could be upwards of 200
3 truckloads of TMI-2 waste to be trucked through 11 to 17
4 states depending on the routing, in order to get to Hanford,
5 Washington.

6 Do you think it is prudent to ship those in semiliquid
7 form?

8 A When we speak of semiliquid, I don't think it is
9 semiliquid. I have seen some of this resin, impregnated with
10 a liquid. It certainly is not in a condition I would have
11 called semiliquid. I am reasonably confident — although I
12 can't attest to this — I am reasonably confident that as the
13 material — the resin — sits in the container, and is shaken
14 with motion, it compresses and will then squeeze some small
15 amount of water — the liquid — out.

16 That is where the liquid comes from that you finally find
17 out. But that is not semi. When you speak of semiliquid,
18 I am speaking of a very large quantity of free liquid. It is
19 not my impression that that is what you see.

20 Q In any event, in light of these prior incidents
21 in which you have leaking from shipments in that form,
22 whatever it is, doesn't that suggest to you —

23 A You prevent that by the proper containers. I don't
24 know whether this study on the Chem nuclear plant spoke of
25 precautions that company takes in shipping such material, but

1 I have seen the shipping containers and I would be — some of
2 the containers which they use and presumably of the kind that
3 would be used in this case. — I would be very surprised indeed
4 if there was any leakage, if there could be any leakage.

5 Q On the other hand —

6 A As long as the possibility exists, the question
7 arises.

8 Q On the other hand, that did occur at the incident
9 at the burial site in Nevada?

10 A Yes, but I don't know what kind of containers they
11 were.

12 (Discussion off the record.)

13 BY MR. KANE:

14 Q Your counsel, Mr. Kennedy, has pointed out that we
15 don't know — I certainly don't know whether or not what was
16 in those casks that arrived at the Beatty burial site was the
17 same type of dewatered resins that we are talking about as
18 potentially coming out of the TMI containment and auxiliary
19 building.

20 On the other hand, you did confirm that there was no
21 evidence that the shipper had violated any NRC requirements
22 in how that shipment was packaged, or the utility for that
23 matter.

24 A Not so far as I know.

25

218

re MGM

1 Q So far as we know, they complied with NRC
2 regulations and used the type of container they were
3 supposed to use.

4 But there is some question of whether they packaged it
5 correctly by putting too much in the containers.

6 A I simply don't know.

7 Q In any event, there was some leakage?

8 A Yes.

9 Q Under those circumstances, do you think it is
10 prudent to ship these dewatered resins as is or do you think
11 it should be put into a concrete matrix form?

12 A I am going to want to look at that much more
13 carefully, I can't answer that question categorically. As I
14 told you, there are tradeoffs.

15 Q The tradeoffs being that you would have to make
16 more shipments if you use concrete?

17 A That is more traffic.

18 Q It would take more time?

19 A Considerably more time. The material would have
20 to stay in place for a considerable period.

21 Q On the other hand, if you were the governor of one
22 of the states that truck would pass through, you wouldn't
23 care how much time it took?

24 A I would want to know with high assurance that the
25 material was protected.

re MCM

(Discussion off the record.)

BY MR. KANE:

Q Again, off the record, your counsel has been discussing with you the possibility that placing the dehydrated resins into concrete matrix form might involve a greater likelihood of worker exposure —

A I don't know whether it is a greater likelihood or some possible increase to the worker exposure.

Q There might be some possible increase?

A Possibly.

Q That would be the workers at TMI-2?

A Yes.

Q Is the NRC Commission scheduled to make any decision on that question?

A The NRC Commission will consider that question.

Q Do you know when that will be considered?

A I do not.

Q Do you know if it will be considered during the next month? I am curious in terms of the deadline the Presidential Commission has.

A I can't answer the question. But I can also assure you that we will be — we will keep that very much in mind.

Q All right. Another subject I wanted to discuss with you, at least briefly, is the Price-Anderson Act. I

14 19 03

re MGM

1 had a discussion with Commissioner Ahearne concerning the
2 limitation of liability under the Price-Anderson Act, a
3 maximum of \$560 million.

4 Commissioner Ahearne was suggesting that for the purpose
5 of reflecting inflation at all, that number of \$560 million
6 should be raised to at least \$1.3 billion which he roughly
7 computes to be the effect of inflation since the time the
8 act came into effect.

9 Do you think that \$560 million should be inflated?

10 A For inflation purposes, yes. It should be
11 increased. And increased probably substantially.

12 Q Do you think there should be any limitation on
13 liability in connection with nuclear power plant accidents,
14 such as imposed under the Price-Anderson Act?

15 A Yes, I believe there should.

16 Q Why?

17 A Because I think that there has got to be some sort
18 of a limitation if in fact damage — I don't know what the
19 number is, let me say. When we see what comes of the suits
20 that are now being entertained, and we have some notion of
21 what we are looking at in this kind of an accident — we will
22 have some notion of the total level of liability, if any, is
23 assessed, ^{will} ~~be~~ be. I think we could ^{then} better look at what that
24 upper limit might be.

25 I think there has to be some sort of upper limit. With

34 17 04

re MCM

1 no upper limit whatever, I can't remember an insurance
2 policy taking any risks, would it?

3 Q Why wouldn't insurance companies be willing to
4 take that risk?

5 A With no upper limit?

6 Q Well, there are —

7 A They would set one themselves, somehow.

8 Q Of course, there would be a limitation on the
9 policy. But there are many industries, of course, in which
10 insurance is issued in which there is no legal limitation on
11 the liability the industry might have to face.

12 The insurance premiums set their premiums according to
13 the risk they assess, and they charge the policyholder
14 accordingly to cover their risks.

15 Why can't the same thing be done with nuclear power?

16 A I think that question ought to be examined.

17 Q I gather it was in connection with the
18 Price-Anderson Act?

19 A Yes.

20 Q If I understand it, the Price-Anderson Act was
21 passed in 1957?

22 A Yes.

23 Q At that time, if I understand history correctly,
24 it was felt that nuclear power needed a boost, a legislative
25 help. That if in fact no limit were imposed, there would be

34 19 05

70 MGM 1 no nuclear power industry because no insurance company would
2 touch it and the utilities would not be able to receive
3 insurance, and therefore, we would not have nuclear power.

4 The thought was at that time with the AEC being in force,
5 it was a mission agency, there was a public policy on the
6 part of the United States to encourage nuclear power,
7 therefore, the Price-Anderson Act fell into that approach.

8 A But one doesn't see all those factors at play
9 today. Therefore, as I say, I suggest it might bear --

10 Q It might well be the case we should continue with
11 the Price-Anderson Act today?

12 A I would not want to make a judgment.

13 Q Based on your four years in charge of the federal
14 agency that regulates nuclear power, is it your position
15 that today the industry needs the Price-Anderson Act?

16 A Frankly, I do not think the industry needs the
17 Price-Anderson Act to exist.

18 Q I spent some time examining a notice that appeared
19 in the Federal Register for Monday, July 23, 1979, provided
20 to the Presidential Commission by Mr. Fitzgerald, who is
21 here today from the Office of General Counsel.

22 It describes the process whereby the Nuclear Regulatory
23 Commission is going to make the determination, pursuant to
24 the Price-Anderson Act, whether or not Three Mile Island-2
25 was or was not an extraordinary nuclear occurrence.

4 19 06

re MGM

1 As I understand it, that determination has some serious
2 significance in terms of rights or liabilities under the Act
3 itself. The notice which appears in the Federal Register
4 states that the Commission was given broad discretion, free
5 of judicial review, to determine what constitutes an
6 extraordinary nuclear occurrence.

7 But it was required by the ¹⁹⁶⁶~~1969~~ amendments to ~~the~~
8 published written criteria which would be adopted after a
9 public rulemaking process.

10 Do you think that the NRC should be empowered to
11 determine what is an extraordinary nuclear occurrence
12 without being subject to judicial review on that
13 determination?

14 A I see no reason why it should not.

15 Q Let me see if I can suggest why it shouldn't.
16 Shouldn't the determination of legal rights such as the ones
17 that would be enforced or not enforced under the
18 Price-Anderson Act, based on that determination, be subject
19 to judicial review?

20 A Legal rights?

21 Q Yes. It is my understanding, for example, that
22 certain defenses to claims being made are waived if the
23 determination is made that the accident is an extraordinary
24 nuclear occurrence.

25 A That's correct.

34 19 07

re MGM

1 Q So this determination by the NRC directly impacts
2 legal rights. I know you are not a lawyer and I am not
3 asking for a legal interpretation.

4 Again, in terms of your position as a member of the NRC
5 Commission, do you feel that the NRC Commission should have
6 the power to determine those kinds of legal rights without
7 being subject to judicial review?

8 A Well, let me put it this way: I do not recall the
9 history and thus do not recall the precise underlying reason
10 that the Congress provided that particular authority.

11 But as a general proposition, I have no objection to
12 anything that this Commission does being subject to judicial
13 review.

14 Q Okay. Mr. Kennedy, something else was brought up
15 before the Presidential Commission last week by Anthony
16 Roisman was the matter of funding intervenors in license
17 proceedings. Mr. Roisman made a quite lengthy presentation
18 as to how they felt there should be funding of intervenors,
19 which is understandable in that he represents a lot of
20 intervenors.

21 In any event, does the NRC itself currently have
22 authority to fund intervenors in licensing proceedings?

23 A I believe that is a serious question, and I do not
24 believe, on the basis of the evidence presented to me and

25

re MCM

1 legal opinion which I have seen, that we do.

2 Q What evidence are you basing that on?

3 A I am basing it on the views of the Controller
4 General of the United States.

5 Q There has been an opinion rendered by him?

6 A Yes.

7 Q And that is that you do not have the authority to
8 fund intervenors?

9 A It is not that unequivocal. It, rather, indicates
10 that this is a matter which, if we wish to pursue it, the
11 Controller General believes we really should seek
12 congressional authority to do so.

13 Q I see.

14 A Without saying that we do not have the authority.

15 Q There is just some question?

16 A As I understand the authority of the Controller
17 General, if he thought we did, he would say so.

18 Q The fact that he doesn't —

19 A He doesn't say so, I certainly would not be — I
20 would not be the one who would sign the check, I will tell
21 you.

22 Q Have you recently been advised by the Controller
23 General?

24 A We have, just again, requested the Controller
25 General for a further view of this matter, with particular

14 19 09

re MCM

1 reference to the Three Mile Island situation.

2 MR. FITZGERALD: I believe that is the case.

3 THE WITNESS: We have not received another
4 response.

5 BY MR. KANE:

6 Q Has there been prior notification from the
7 Controller General along these lines?

8 A Yes, much earlier. This was a year ago, I think.
9 (Discussion off the record.)

10 BY MR. KANE:

11 Q I am interested, Mr. Kennedy, in obtaining
12 documentation relating to the NRC's position in this regard
13 at the present time and the Controller General's opinions.

14 A I will provide it.

15 Q Specifically in connection with that
16 documentation, I have an excerpt from an article here that
17 appeared in Nucleonics Week for August 23, 1979. The
18 article states that the NRC's existing inability to fund
19 intervenors stems from a 1979 letter from the Controller
20 General that sets down two stages of financing intervenor
21 cost.

22 A Who is saying this?

23 C An article in Nucleonics Week.

24 A Read the sentence ahead of it.

25 Q All right, fine. "In debating restart

re MGM

1 proceedings, the Commission decided, in light of recent
2 congressional indication, to seek a new opinion from the
3 Controller General on the status of intervenor funding.
4 NRC's existing ability to fund intervenors stems from a
5 December 1976 letter from the Controller General."

6 Would we be able to obtain a copy of that letter?

7 A Yes. That is the letter I am talking about.

8 Q "In which the Controller General sets down two
9 basic standards for agency financing of intervenor costs."
10 It goes on to state what those are. Then it says, also,
11 "And ends of July paper on TMI-1 restart prepared by NRC
12 General Counsel, Sickwit, S-i-c-k-w-i-t, concluded that the
13 Commission authority to fund intervenors remains reasonably
14 firm."

15 Would be able to obtain a copy of that?

16 A Yes.

17 Q It also says, and this is what I am interested in,
18 it says, "Source," it doesn't reveal who, "cites a sentence
19 in NRC's appropriation bill reports specifically saying
20 appropriations do not include funding for intervenors."

21 It doesn't state a year or date or anything. Are you
22 familiar with that?

23 A Yes.

24 (Discussion off the record.)

25

4 19 11

7c MGM

BY MR. KANE:

2 Q We have been discussing this NRC appropriations
3 bill report. Your counsel, Mr. Kennedy, was surmising it
4 may be from last year.

5 In any event, if we could obtain a copy of that, I would
6 appreciate it.

7 A Yes.

8 Q And, lastly, the report says: "Recent
9 congressional action to deny funds for a federal agency
10 regulatory commission program for intervenor funding adds to
11 such programs."

12 Do you have some documentation on that?

13 A I do not. But I am sure we could find it. I
14 don't have it, I don't think. Although I asked specifically
15 that counsel take those parts into consideration in a
16 further review of the matter for me, if you recall, at a
17 Commission meeting which this subject came up in.

18 Let me say something about the intervenor funding
19 business.

20
21
22
23
24
25

14 20 01

sonMGM

1 Q Sure.

2 A I do not wish to suggest that I am against
3 intervenor funding per se. I am against this agency or
4 indeed any other arrogating to itself the authority to spend
5 taxpayers' money in this way without the explicit
6 understanding of the Congress that that is what it is
7 doing. That is my only concern.

8 We do not have that explicit indication of the Congress'
9 will in this regard. Indeed, such evidence as we have of
10 the congressional feeling in the matter is the other way.
11 So I believe that we need — it is a matter which should be
12 put before the Congress.

13 And moreover, I believe that it really ought to be put
14 before the Congress in a broad sense, that is, if this is a
15 good idea, it is a good idea. Not just a good idea for one
16 narrow segment of regulatory affairs in the world, it is a
17 good idea.

18 I think it ought to be discussed on its merits and
19 resolved. I say resolved because it takes a good deal of
20 our time discussing this kind of matter, ruminating about
21 it, reading erudite papers prepared by counsel and others to
22 describe all the precedent which exists in the matter and
23 reaching some, usually, nebulous or ambiguous conclusion.

24 It seems to me that these are matters that ought not to
25 be within the province of regulatory commissions to decide.

sbn:MGM

1 This is a matter of basic national policy and ought to be
2 before the Congress, and let it decide it.

3 Q I hate to seem overbearingly pushy about this, but
4 as we sit here today, there is staff of the Presidential
5 Commission that is preparing a portion of the report for the
6 Presidential Commission on intervenor funding. It would be
7 terrible if that report has to go in even in draft form
8 before we have the opportunity to look at these documents.

9 A We can get these documents within a day.

10 MR. FITZGERALD: These are all public documents.

11 MR. KANE: They're available in the PDR?

12 MR. FITZGERALD: The Controller General opinions
13 and the —

14 THE WITNESS: We can get them for you. Tomorrow
15 we can have these documents for you.

16 MR. CHOPKO: Can we have a copy of the "Nucleonics
17 Week" article, so we have the precise reference?

18 THE WITNESS: We have that here.

19 (Discussion off the record.)

20 BY MR. KANE:

21 Q Mr. Kennedy, I did spend some time reading a
22 speech that you gave on June 4th, 1979, in New Orleans. And
23 in that speech you made some references to the state of
24 emergency planning. You described in the speech some of the
25 problems of TMI-2, which previously established emergency

14 20 03

sonMGM

1 plans could have prevented or at least mitigated;
2 communication problems, or off-site radiological monitoring,
3 et cetera.

4 Do you feel that the absence of a state emergency plan
5 poses an undue risk in the licensing of a plant in that
6 state?

7 A First, I don't think there are situations in which
8 there is absence of plans. I don't know of a state — now I
9 would have to check this, but I don't know of a state
10 offhand in which there is no plan. There are states which
11 do not have plans which come up to our total standard and
12 meet the standard for the basic set of criteria which we
13 have concluded are necessary. That is true.

14 I don't think that those are situations in which the
15 absence of a plan poses an undue risk, because I don't think
16 that situation arises. I don't think the situation is
17 whether or not they're quite up to snuff poses undue risks
18 either.

19 Let me add — I say that now because I have the highest
20 confidence that the states in which things are not quite up
21 to par and which approved plans, concurred-in plans, I think
22 is the proper word, concurred-in plans have been reached.
23 Those states are moving very, very rapidly now to get those
24 plans completed and concurred in.

25 Q You mentioned in your speech that 16 states have

14 20 04

son:GCA

1 operating reactors without NRC concurred-in state plans.
2 Four more are near plants in adjacent states and those
3 states are without concurred-in plants. Why has that
4 occurred?

5 A Well, because we didn't put enough pressure on the
6 states to get those things completed, I think, for one
7 thing.

8 Secondly, it has been, and I believe should be, a sort of
9 voluntary thing on the part of the states. There is no law
10 that requires them to do this. There is no regulation up to
11 now which has demanded their existence.

12 Now I think in the future we are going to have to be a
13 little bit more hardnosed about that.

14 Q Why?

15 A Because I think those plans ought to be done.

16 Q Do you think that their absence poses an undue
17 risk to the operation of reactors in that state?

18 A No, as I told you, because it is not an absence of
19 a plan.

20 Q The absence of an NRC concurred-in plan?

21 A I don't think the difference is going to be all
22 that great. There are a few things which are going to be
23 important, but they are not so significant in my judgment as
24 to warrant holding things up.

25 Now wait. If in fact the states don't do what I think

4 20 05

son.AGM 1 they are going to, and I have talked to an awful lot of the
2 people in the states — I have spent a lot of time doing
3 that over the last four years. I know most of them pretty
4 well.

5 If they don't do what I think they are going to do, then
6 I may well revise my view. It will not necessarily be
7 wholly on the basis of undue risk. It will be because I
8 think the states are not doing their share of the job.

9 Q But your job as an NRC Commissioner in terms of
10 licensing plants --

11 A Is to protect the public health and safety.

12 Q From undue risk?

13 A Yes.

14 Q If you determine that the absence of an NRC
15 concurred-in plan does not pose an undue risk, how can you
16 legitimately take the position that the plants should not
17 operate in that state?

18 Again, your mandate is, your bible is, no undue risk?

19 A There are also environmental considerations.

20 Q That all comes under undue risks?

21 A No, undue risks has to do with public health and
22 safety.

23 Q That is environmental, isn't it?

24 A No, environmental goes beyond that.

25 Q It certainly includes that?

son:GM

1 A No.

2 Q Maybe I am misunderstanding. If, for example —

3 A Public health and safety has to do with the

4 physical risks associated with the radiological conditions

5 involved in the plants.

6 Q Let me ask you this. Does public health and

7 safety have to do for example with a situation where a plant

8 puts out radioactive effluent into the river that

9 contaminates the fish, people catch the fish, eat the fish,

10 and is that public health and safety or environment?

11 A Public health and safety.

12 Q So that would always come up whenever we talk

13 about radioactive releases?

14 A Back to the question. I don't believe that their

15 absence now in completed form is of a level of significance

16 that would require us to do anything other than what is

17 already being done. That is, to bring extreme pressure on

18 them to get them finished.

19 If they don't comply, then it seems to me we are going to

20 have to go back and take another look at this whole

21 question.

22 Q I am puzzled by that position on your part. Why

23 don't you feel there is any undue risk in these states

24 currently — these 16 states, plus the other four, so we are

25 talking about 20 states, that do not have NRC

14 20 07

son:GM 1 concurred-in plans?

2 A I don't think it is that many. I think there have
3 been some concurred in since I gave that speech.

4 Q Give or take. In any event, approximately 20 as
5 of June 1979?

6 A Well, I guess for the reason that they are coming
7 along, there are plans. ~~There are~~ ^{is} also a very, very
8 intensive interest on the part of the states now. They
9 understand the problem in a way they never understood it
10 before or if they did before, didn't do very much about it
11 in the way they should have.

12 So I am satisfied right now that they are going to move
13 to get these things completed. In the meantime, they have
14 already taken steps. A plan itself, you know — let's
15 remember, a plan is a five-foot shelf of books or maybe a
16 few pages. Plans don't do anything. People and equipment
17 do.

18 Q Now we saw at TXI-2 what the absence of that kind
19 of planning, people and equipment, can result in?

20 A Correct.

21 Q We certainly don't want that to happen again?

22 A Part of what we are talking about there, the
23 communications, the off-site monitoring, all the rest of
24 that. That had nothing to do with the state plan. Very
25 little to do with the state plan.

54 20 08

SONMGM

1 Q When we talk about things like evacuation —

2 A Those are things inside. Those are things that
3 are the responsibility of this agency, other federal
4 agencies working with the states and with the utility.

5 Q On the other hand, when we talk about evacuation,
6 we are talking about state ^{plans} ~~plans~~, aren't we?

7 A Yes.

8 Q And in these 20-odd, however many it is, as they
9 currently exist —

10 A I would not say that in any one of those 20
11 states, they don't have evacuation plans. I don't know
12 that. But I would like to find out.

13 Let me just point out to you that states from the
14 southern tip of Florida on up to North Carolina are going
15 through evacuations right now. States have a tendency to
16 know how to do that.

17 The problem with the State of Pennsylvania, if I
18 understand it correctly, was not that they didn't have a
19 plan for evacuation. They didn't know where to evacuate.
20 What was going to have to be evacuated?

21 In part that was our responsibility. We didn't tell
22 them. They had plans out two and a half miles. We suddenly
23 were talking about 10 or 20 miles.

24 Q So they have no plans to cover that?

25 A That is a completely new order of magnitude that

4 20 07

sbnMGM

1 is not their fault, it is our fault. If we are going to
2 change the numbers, we can't expect them to do that in 20
3 minutes.

4 Q Again, to the extent the numbers will be set by
5 the NRC, the state will have to be concurred in to see that
6 that is complied with?

7 A Yes, along with a host of federal agencies.

8 Q As of today, you do not feel that the plants in
9 the states that do not have concurred-in plans, need to be
10 shut down? You do not feel that there is any undue risk as
11 those currently stand?

12 On the other hand, if the states do not continue to move
13 toward getting those concurred-in plans, as you anticipate
14 they will, you said you would reconsider and might consider
15 shutting down the plants in those states; is that correct?

16 A That is correct.

17 Q Given your mandate that you can only shut down a
18 plant if it poses an undue risk, that suggests to me that
19 there is then some change from the situation today, when
20 they don't have concurred-in plans and there is no undue
21 risk — let me finish, please — and the situation in the
22 future when they don't have concurred-in plans, at that
23 point you would feel it would pose an undue risk?

24 What has changed in between except the level of effort by
25 the state?

14 20 10

son.MGM

1 A Time.

2 Q How long have these states currently had nuclear
3 power plants in in them without NRC concurred-in plans?

4 A I can't answer that question without looking at
5 the list of states.

6 Q It probably would be years in some instances.

7 A Possibly.

8 Q So there is quite a bit of time already gone by.
9 What is the significance of time between now and this future
10 date when they are supposed to have these NRC concurred-in
11 plans?

12 A I think we are going to just tighten up.

13 Q My question is why hasn't the NRC tightened up
14 in the past on this particular subject?

15 A I already said we should have.

16

17

18

19

20

21

22

23

24

25

e-20

6784
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

Q Okay. What is your understanding for why that wasn't done?

A It's been a voluntary program. I believe it should be a voluntary program. We didn't invest enough pressure on the states as we should have, nor did we invest enough resources on our own side in this project. It was Mr. Collins who commented on the relatively small number of people devoted to this project.

Let me just point out that I would -- as a commissioner, I would have to take my share of the responsibility for that because we did not invest that those resources be made available to the Office ^{of} ~~the~~ State Programs. We had the opportunity to. Propositions were put to us. We didn't do it.

Q All right. Something else I wanted to ask you about Mr. Kennedy. There was an article that appeared in the Wall Street Journal on August 7, 1979, dealing with a number of items concerning the NRC and the TMI-2 accident. One statement is made and I don't know if it's an accurate statement, and I'm not asking you if it's accurate. It was along these lines, "Transcripts of commission meetings during this critical period show the five men were frequently confused by what was going on. Chairman Herbinie complained to his colleagues that he felt they were 'like a couple of blind men staggering around making decisions'. He later had

p 2
EM

1 to apologize after receiving complaints from blind persons."

2 Was it your observation that during the first few hours
3 of the accident that the NRC commissioners were a couple of
4 blind men standing around making decisions?

5 A The first few hours of the accident -- let's look
6 at Wednesday. We're talking about then. We knew very little
7 very little indeed about the accident. As a matter of fact,
8 throughout the day on Wednesday there was a general feeling,
9 I believe, among the commissioners that whereas there had been
10 a rather untoward significant incident early on in the morn-
11 ing hours at Three Mile Island, that by the end of that day
12 things were reasonably stable and now the whole process was
13 one of recovering from whatever the incident was. But it was
14 not all that serious a matter. This is based on the
15 information that we had.

16 Q Of course, that wasn't true?

17 A It was not ^{true} ~~true~~. But I'm not sure that -- I'm not
18 sure that ever the people in the control room realized
19 that that was not all that true at that point. They realize
20 that they has a very, very strange anomaly facing them. The
21 were a whole series of unusual events that they were dealing
22 were/ ^{with} I don't think they fully knew the import. We certainly
23 did not.

24 Q Why was that?

25 A We didn't know on Thursday.

1 Q Why was that?

2 A Well, I think perhaps some poor diagnostics is
3 about the best way I could describe it.

4 Q Can you elaborate on what you mean by poor
5 diagnostics?

6 A Well, people not recognizing what signals they
7 were getting. There were the -- I won't try to go through
8 the whole thing. I know the full chronology you have in the
9 record. People did not realize the import of some of the
10 temperature readings. Indeed, they for a while didn't even
11 believe some of them.

12 Q Was that information, though, passed through to
13 the commissioners on such things as temperature readings,
14 for example?

15 A Not all of them. We didn't get all of them, I
16 don't believe. We did not know until, it seems to me, Friday
17 of the very high thermocouple readings in the core. We didn't
18 know about those. This had been missed apparently by others
19 We did not know about the hydrogen burn or explosion, which-
20 ever it was, that occurred in the containment. It occurred
21 on Wednesday. We did not know that until Friday. It was not
22 until, as I recall, later Thursday night when the A & W
23 engineers and scientific people concluded that those high
24 thermocouple readings were right, that in fact there was a
25 potentially seriously damaged core here. We did not know th

4
1 Now, let me say that I don't find that as surprising in
2 retrospect as I did at the time.

3 Q Why?

4 A So long as the accident got contained as it did,
5 people began focusing very quickly on the problem of how to
6 get that machine down and stable. And what they seemed to
7 be focusing on -- and I think probably rightly -- was how
8 to get steam binding they thought they were dealing with in
9 the loops out so they could restore effective circulation
10 and thus be able to bring the machine down to a cold shut-
11 down in an organized, reasonable way.

12 Q In fact, they ran a simulator study on that,
13 didn't they, on that question of how they should do it?

14 A I'm sure they ran a variety of such. By noontime
15 I'm sure on -- as I recall, on Wednesday, all manner of revis
16 were being undertaken and they normally would be by the
17 technical staff of what do you -- how do you do this? How do
18 you now go from here with whatever has happened. Let's get
19 on with getting this machine down and to a cool condition.

20 So they were putting all their attention on that without
21 realizing perhaps that their problem was not out there in
22 the loops, their problem was in the core.

23 Q Okay.

24 A And it was only when it was realized that there
25 was a very substantial bubble of non-condensable gas in the

1 core -- not in the core but in the pressure vessel ~~to head~~ ^{head}
2 that they realized that there were certain things that weren'
3 going to work like depressurizing.

4 Q I wanted to ask you about that. This is a little
5 aside. I have read in several places that there was a thought
6 that if they depressurized, they could get the bubble to go out
7 through one of the reactor coolant pipes, out of the core and
8 into the reactor cooling system, and hopefully up into the
9 pressurizer where they could vent it up out the top. Do you
10 recall that?

11 A Yes.

12 Q There was something like that?

13 A Yes.

14 Q But they determined they couldn't do that?

15 A One of the reasons was, of course, that if you did
16 as I understood it, if you did start depressurizing, that
17 bubble would simply grow in size. It would be in gas, so the
18 lower the pressure, the greater the volume of the gas. And
19 you did that, you might well be driving the water and steam,
20 to the extent that there was any, in the core that was then
21 cooling part of it down. You had this non-condensable gas
22 sitting there with the core uncovered. That would not be
23 considered a very wise choice.

24 Q I thought I heard something about them depressurizing
25 and letting the bubble decrease in size only to the point that

12 5
GM

1 it opened one of the pipe openings into the core, and then
2 they could push it out through that pipe?

3 A To the extent they were thinking about that, of
4 course, they were thinking about something that was a kind
5 of an iffy ~~thing~~ thing, and ~~they~~ ^{they} finally concluded that as
6 iffy as it was, it probably wasn't the way to go. Certainly
7 not at that point.

8 Q Okay.

9 A To get back to the question, you know, yes,
10 we were confused. That's correct. We didn't have enough --
11 on Wednesday and Thursday, we didn't think we were confused.
12 We thought we knew -- we knew as much as anybody did. We
13 thought we understood what was happening, we thought by
14 Thursday afternoon, late afternoon, evening -- I remember
15 very well going home thinking things are in a pretty stable
16 condition. Now we'll be able to get to work and the utility
17 people and other industry people together with advice ^{and} ~~from~~
18 counsel ^{from} ~~on~~ our own staff and assistants, we'll be able to
19 bring that machine into a stable shutdown condition. It
20 wasn't until Friday when that burst of radioactivity came
21 along that we realized we had a different problem. And it
22 was here, that is when we really didn't have information.

23 I remembering receiving a call, we just got word that the
24 had a 1200 MR release. I said where, and finally determined
25 it was over the stack. I said how did they measure that. I

1 remember even weeks later being told that nobody ever was
2 able to ascertain. Now, it turns out, yes, they finally did,
3 think, ascertain that, yes, an A-119 aircraft did measure it.
4 When you hear people begin to pass numbers to you, you always
5 want to know where did the number come from. I remember
6 hearing some of the ~~things~~ things that Governor Thornburg
7 said. I thought very wisely, you don't want to jump at the
8 first number you hear because you may make a catastrophic
9 mistake.

10 Q This whole area raises the question which several
11 of the Presidential commissioners have urged that I raise
12 in each of the depositions. That is, given what happened
13 at TMI-2, what should be the role of the NRC commissioners
14 during an emergency like the TMI-2 accident? We have stated
15 that NRC is a collegial body and not the best way to operate
16 an organization. Presumably that would be worse during an
17 emergency situation. What should be the role of the commis-
18 sioners during an emergency situation?

19 A I don't agree that it's not the most efficient
20 way to run an organization. As to an emergency, I don't
21 believe the organization was ever created to do that. It
22 grew out of the Atomic Energy Commission. I don't believe
23 Atomic Energy Commission would have attempted to manage as a
24 commission an emergency. It had a whole establishment desi-
25 ed to do just that.

Q What was that establishment?

A They had the general manager, as I told you before. Under him was an organization called the IRAP and IRAC. That was their mission in life, to respond to and function in emergencies. The regulatory activity of the AEC had very little relationship to that. That is, it was not involved in the actual emergency situation; it would be involved in producing all kinds of data. But providing for the radiological record, the data collection, providing communications, providing aircraft, all that was done by the other side. We don't have any of those. We didn't have any then, we don't have any now. I believe we should have -- I don't mean airplanes, but I believe we should have emergency communications kits that can be flown exactly as the Department of Energy now does. That can be flown in ^{cargo} ~~merchandise~~ compartments of airplanes. ^{However, the Commission} ~~the commission~~ should not try to run any kind of emergency.

14 22 01

JER:GM

1 Q Should that be allocated to someone like Harold
2 Denton?

3 A In the first place, I have had some experience
4 over my life with emergencies of various kinds from wars on
5 up, and you can't run them from the basements of the White
6 House or the Pentagon. There are some things you can do,
7 but a lot you can't do. The fellow on the ground has to be
8 somewhat in command. The role of the Staff and of the
9 Commission is to support that guy. But that is the fellow
10 — somebody has got to be put in command and it has to be
11 one fellow. You have to know who he is at the outset.

12 Let me point out, too, that I don't think we ever
13 visualized long run emergencies. Nuclear reactor accidents
14 were events that occurred, occurred quickly, and were over.
15 What you were trying to do was mitigate its effects and
16 protect people from it. But you weren't trying to go
17 through the bubble kind of exercise for two or three days.

18 So, to get back to the basic question, I don't think that
19 the Commission ought to be in the business of trying to
20 manage crises. It ought to be in the business of
21 interfacing with the public. It ought to be in the business
22 of interfacing with the Congress and others and assuring
23 that the appropriate interface with other government
24 agencies is taking place. Its principal function,
25 therefore, is to be sure that the support of those in

54 22 02

JER/MGM

1 charge is required is there, is provided.

2 Q Do you think some person or agency outside of the
3 NRC should be designated to manage nuclear reactor
4 emergencies or do you think it should be kept within the
5 NRC?

6 A I think the NRC can continue to do it. But it
7 can't do it on a shoestring. To do that sort of thing
8 requires substantial equipment, equipment which had always
9 been available, you see, in the other half of the — in the
10 other half of the AEC. That which is now the DOE. They have
11 that sort of stuff.

12 Now either — they need it because, of course, they have
13 a large number of nuclear plants and facilities of their
14 own, to say nothing of the whole weapons program. So I am
15 not suggesting that they give it to us. I am suggesting
16 that something like it is needed by us.

17 Q Rather than to simply delegate that function to
18 DOE entirely?

19 A I don't think I would do that. I think we ought
20 to remain responsible for — we are the people who ought to
21 be the greatest experts about the condition of those plants,
22 short of the people who are operating them. I guess in that
23 light, we ought to continue with responsibilities ^{here} ~~there~~.
24 But as I say, it ought not to be the Commission itself
25 trying to do that.

JER/MGM

1 By and large I don't think the Commission was. I think
2 by and large the Commissioners tended to defer much in the
3 way I suggested it ought to be in the normal course, to the
4 Chairman as the spokesman. And when the — when Denton went
5 to Three Mile Island, the authority for — essentially
6 putting it in his hands, as I think ^{it} ~~they~~ should be.

7 Q Just a few more questions —

8 A He put it right, Denton did, when he said you
9 can't — the one thing he had learned is that you can't run
10 this kind of an operation, you can't run a crisis from
11 Bethesda or Washington. Even though he himself had been
12 trying to do that for a couple of days before he got to
13 Three Mile Island.

14 Q Okay. Just a few more questions and I think we
15 can conclude.

16 Are you familiar with the fact that the resident
17 inspector has been urged by the Lessons Learned task force?

18 A The Commission has been urging the resident
19 inspector for a few years.

20 Q It's an old item?

21 A Yes. Our only problem has been getting the
22 resources. Let me also add there that as we were pushing it
23 and as even — even as the President was announcing that
24 there ought to be a man in the control room, do you
25 remember, back in 1976 he said there ought to be a man in

JERKGM

1 the control room of every reactor. We were pushing this.
2 The problem was the word didn't get down to some of the
3 people in the budget office.

4 Q Well, that whole concept of a resident inspector
5 program was evaluated by a task force set up to study
6 nuclear energy in the State of Arkansas, set up by the
7 governor of Arkansas. The Presidential Commission has
8 received a copy of the final report to the governor by this
9 task force. What the task force was addressing was the
10 state of nuclear power within the State of Arkansas and
11 specifically about the proposed change in regulatory
12 requirements by the NRC.

13 MR. CHOPKO: Have we established whether the
14 Commission ²⁶ has in fact seen the document and is familiar
15 with it. :

16 THE WITNESS: I have not, I don't believe.

17 BY MR. KANE:

18 Q Have you seen that study?

19 A I don't believe so.

20 Q I want to direct your attention to just a portion
21 of it.

22 MR. CHOPKO: Perhaps Mr. Kane will provide you
23 with a copy.

24 MR. KANE: Let me just ask this question and we can
25 have it copied.

8.5

- 1
2 A They had been assured that action was being taken
3 to train operators to handle small break LOCA.
- 4 Q I see. Does the GORB do any independent
5 check of what is being reported from the plant?
- 6 A They do periodically, but it is usually a specific
7 action and not a general action.
- 8 Q Now, it also says in that paragraph that
9 "Met Ed has committed to having full flow in the
10 unaffected leg within 10 minutes after the accident."
11 Do you know why Met Ed committed to having
12 that full flow within 10 minutes?
- 13 A No, I don't specifically know what the reasons
14 were.
- 15 Q What does it mean when the operating
16 utility commits to having full flow within 10 minutes
17 after the accident?
- 18 A To me it means that they have set up procedures
19 that that's one of the things that the operator is to
20 do.
- 21 Q And full flow would mean that the plant
22 stays on line?
- 23 A Not necessarily.
- 24 Q What does "full flow" mean?
- 25 A Well, are we talking about the one leg of the

8.6

1
2 reactor's system or some other part of the piping
3 system? I am not sufficiently tuned in in detail
4 enough to answer that question.

5 Q I see. I believe that one of the things
6 that was being talked about here is a small break at
7 the reactor coolant pump discharge. Would that be
8 through the reactor or coming out of the reactor?

9 A Well, is this their reactor circulating pump or
10 one of the feed pumps?

11 Q I see. So you can't tell from this what it
12 is they are talking about?

13 A No.

14 Q And you can't tell what it would mean to
15 have full flow in the unaffected leg within 10 minutes
16 after the accident, is that correct?

17 A That's right.

18 Q Now, it also says at the end that Met Ed
19 has performed small break LOCA drills, and that the
20 NRC has reviewed the results of those drills and is
21 satisfied with Met Ed's performance.

22 A I know that's true.

23 Q How do you know that, as you say it is
24 "true"?

25 A I was told by Gary Miller several times that they

817

1
2 had done that, and that's my source.

3 Q I see. Were you presented with any NRC
4 evaluations of these drills?

5 A No.

6 Q Were you ever told who from the NRC attended
7 these drills?

8 A No.

9 MR. GORINSON: Counsel, can I request any
10 NRC evaluations which the company received with
11 respect to the small break LOCA drills mentioned
12 in Item 3A on Page 4 of Exhibit 11.

13 Q Now, at the end of that sentence, it says
14 "TMI 1 was restricted to a power level of 91 percent
15 for approximately 13 days."

16 A Yes.

17 Q Was that the result of one of one of these
18 drills?

19 A I don't know. There were restrictions on the
20 power level that No. 2 could operate at different
21 times, but I don't know what the reason was here.

22 Q This is TMI 1, according to this paragraph
23 at least.

24 Do you have any knowledge as to why that
25 was done?

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

A No, I don't, not specifically here.

MR. GORINSON: Let me mark as the next Exhibit, a document entitled "Three Mile Island Nuclear Generating Station, General Office Review Board, Draft Minutes, Meeting No. 32, January 10, 1979."

(Above-described document was marked Miller Deposition Exhibit 13 for identification, this date.)

Q Let me put in front of you what has been marked as Miller Exhibit 13. According to the front page of this, sir, you were present at that meeting, is that correct?

A Yes, sir.

Q Do you know whether final minutes have ever been compiled?

A No, because tomorrow is the next meeting.

Q I see. And the draft minutes would be reviewed?

A That's the first item on the agenda.

Q And in fact, Item 1A of this draft says that "The minutes of Meeting No. 31 were approved as modified"?

A Yes.

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

Q So there were modifications to the draft minutes of Meeting No. 31?

A Yes.

Q Now, look at Item 1B, which says "Station Reorganization."

A Yes.

Q The second paragraph says, "The GORB questioned plant staff depth should additional key people leave TMI." Do you see that?

A Yes.

(Continued on following page.)

1
2 Q What key people had left TMI as of the date
3 of this meeting, to your knowledge?

4 A Well, we lost a unit superintendent for Unit 1.
5 He had gone to Arkansas.

6 Q Is that Mr. O'Hanlon?

7 A Yes, and some of us had been discussing the
8 general problem, and the number of nuclear plants that
9 were coming on the line within the next five years,
10 and recognizing the difficulty of manning these stations,
11 and the opportunities that are going to exist for
12 experienced people, this was what was in back of this
13 discussion.

14 Q Had the GORB ever been informed that there
15 were personnel problems at TMI other than the desire
16 of particular individuals to leave for desirable new
17 opportunities?

18 A Well, we had discussed personnel problems in
19 general at a number of different occasions when they
20 went to the GORB, they would talk about their problems.

21 Q What kind of problems did they talk about?

22 A Various kinds of personnel problems and organiza-
23 tion problems, and what they are thinking about doing
24 to alleviate problems. There were quite a number.
25 I can't be very specific.

1
2 Q Well, for instance, was there a morale
3 problem at TMI?

4 A Yes, I think there was. There is always a
5 morale problem in a plant that's expanding and training
6 and developing.

7 Q What was the genesis of the morale problem?

8 A Well, it is hard to be specific. Frequently
9 it has to do with personalities. Some people want a
10 different kind of job. Overtime is always a serious
11 kind of morale kind of problem, and schedules, and
12 certain company policies had created an unhappy reaction.
13 So there were many things that the plant was working on
14 to correct and trying to something about, and there
15 always is, and that's not unusual in a developing
16 organization.

17 Q Let us take a few of them and separate
18 them out. Overtime, was the morale problem caused by
19 too much or too little overtime?

20 A By too much. They were working many hours trying
21 to get out all the paperwork and tech specs and procedures
22 that they had to get out.

23 Q What about the operators, were they working
24 substantial amounts of overtime?

25 A They didn't work that much overtime, I don't think.

1

Miller

201

2 Q Supervisory?

3 A Supervisory and engineers.

4 Q What about certain policies of the company,
5 something you referred to, what policies?

6 A Overtime policy was one; how they were paid.

7 I don't remember all the specifics. That has been
8 changed several times to try to correct it, and I don't
9 know where it stands right now.

10 Q You mentioned that one of the things was
11 how the personnel were paid for overtime. How were
12 they paid for overtime?

13 A Well, it depends on the personnel you are talking
14 about.

15 Q Let us take the engineering personnel, how
16 were they paid for overtime?

17 A They were paid overtime for all hours over 44
18 hours a week.

19 Q And was that overtime time and a half or --

20 A I think so, I am not positive.

21 Q Why would that create a morale problem?

22 A Well, there was a -- I am trying to remember,
23 but there was another rule that in order to get over-
24 time, you had to work 54 hours a week.

25 Q That's the engineers, not the --

1
2 A After you worked the 54 hours, then you were paid
3 from 44 hours on, is the way I recall it, and that had,
4 whenever you have got engineers and union people working
5 side by side, you always have comparisons being made,
6 and this has been a problem ever since I worked with
7 organizations as to how to handle professional overtime
8 versus production hourly people.

9 Q I see. Was there a substantial turnover
10 of personnel at TMI at the time this was written?

11 A I don't know, I don't think so. For the way we
12 were expanding, we were losing people, but you always
13 lose people in a case like that.

14 Q Let us go to Page 3, Item 2C1 PORC chairman's
15 report, and the third paragraph, where it says "The PORC
16 reviewed the generic concerns on safety injections and
17 loss of pressurizer level during transients."

18 Do you see that?

19 A Yes.

20 Q What was the generic concern on loss of
21 pressurizer level during transient?

22 A Well, they apparently have had problems on the
23 trips and so forth with pressurizer level, and they were
24 working with B&W and in their own organization relative
25 to this problem, and they reported it to GORB. Other

1
2 than that, I don't remember what brought the subject up.

3 Q It says "Met Ed is exploring with B&W the
4 possibility of operating with a raised pressurizer
5 level during normal plant operations."

6 A Yes.

7 Q And then notes that "This change will
8 affect the FSAR Accident Analysis and will cost many
9 dollars for re-analyses at high pressurizer levels."
10 Do you see that?

11 A Yes.

12 Q Did Met Ed implement that change?

13 A I don't know.

14 Q Why would a raised pressurizer level cause
15 a recomputation or affect FSAR Accident Analyses?

16 A I can't answer that.

17 Q Would something appear in the FSAR Accident
18 Analyses, to your knowledge, unless it was safety related?

19 A I think the basis of FSAR is safety related, but
20 I am sure there are lots of things in there that are
21 background information.

22 Q But would it be necessary to revise the
23 FSAR Accident Analyses for mere background information?

24 A I don't know. I don't know what the relative
25 effect of raising the water level in the pressurizer has

2 to do with what their analysis has assumed. I mean,
3 when they made the analysis they assumed a certain
4 level, and if they assumed a different level, I am sure
5 they have got to re-analyze it.

6 Q Did the PORC inform your group, the GORB,
7 that there had been two losses of pressurizer level inci-
8 dents at TMI 2 prior to the date of January 10, 1979?

9 A They may have, I don't recall.

10 Q Did anybody on the PORC inform the GORB that
11 this had also occurred at other plants as a result of
12 their contacts and learning about incidents at other
13 plants?

14 A I remember discussions about difficulties with
15 pressurizer levels and going solid, as they call it,
16 and when you lose the level, but I don't remember whether
17 it was in GORB or whether it was in other groups that
18 I have been in on the discussion.

19 Q What was the discussion on going solid that
20 you had?

21 A One of the things that they had wanted to guard
22 against is filling the pressurizer with solid water and
23 to keep the --

24 Q Why?

25 A That's the way they maintain pressure in the

2 pressurizer.

3 Q Yes, but what impact would it have on the
4 plant if the pressurizer went solid?

5 A That's maintaining the pressure in the -- you
6 get a cushioning effect with steam, whereas if you go
7 solid, you don't have that.

8 Q Would going solid create any safety
9 concern?

10 A I am sure it would, but this is the subject that
11 has been under discussion with different plants and B&W
12 for some time, even before the accident.

13 Q What safety concern would be created by
14 the plant going solid, the pressurizer going solid?

15 A The pressure control, you lose cushioning effect
16 of that stream. You have heaters in this pressurizer
17 that you can turn on and generate steam in the top of
18 this pressurizer to give you this cushion, and it is a
19 very -- they decided when they first started to operate
20 this plant, that that's the way they were going to
21 operate it. When you go solid is where you have got
22 solid water all the way around. It creates a whole
23 new method of control.

24

25

(Continued on Page 206.)

10.1
ew

1

Miller

206

2 Q But creating a whole new method of control,
3 does that create a safety concern in the sense --

4 A Anytime you affect control, you create a safety
5 concern.

6 Q Are you saying that if the plant goes
7 solid, it is more difficult for the operators to
8 control?

9 A I don't know that, but that isn't the way they
10 started out to operate it.

11 Q So they started to operate it with the
12 steam bubble and the pressurizer, and that would
13 involve one type of control, is that correct?

14 A That's correct.

15 Q And if the plant went solid, that would
16 create another problem of control?

17 A Yes.

18 Q Are you aware of the role that the code
19 safety valves play in the pressurizer?

20 A Yes.

21 Q What function do the code safety valves
22 perform?

23 A They are backup relief valves.

24 Q And to relieve the system of pressure?

25 A That's right.

10.2

- 1
- 2 Q Let me just go on to Page 4, Item 2F,
- 3 where we are talking about Licensee Event Reports, and
- 4 you notice in the last paragraph on the page it says,
- 5 "There was a general comment concerning the statement
- 6 on each LER that 'the health and safety of the public
- 7 was not affected.' The GORB is concerned that the
- 8 statement is being used without a thorough review of
- 9 the incident."
- 10 A Yes.
- 11 Q What led to that concern?
- 12 A I don't recall.
- 13 Q Was this a concern that would be raised
- 14 by yourself or that you would feel?
- 15 A Well, I didn't raise it, but I am sure somebody
- 16 in GORB must have raised it.
- 17 Q But is this a personal concern of yours?
- 18 A No.
- 19 Q Did you believe at the time of this meeting
- 20 that the statement was being used after a thorough
- 21 review of the incident?
- 22 A I don't recall.
- 23 Q Now, on Page 5, Item 3 where it says TMI 2
- 24 operations, it shows the following equipment problems
- 25 were encountered in 1978. Do you see that?

10.3

1

2 A Yes.

3 Q Did anybody mention an equipment problem
4 relating to the pilot-operated relief valve?

5 A Not that I recall.

6 Q Was the question of the pilot-operated
7 relief valve raised at this meeting as a problem that
8 was encountered in 1978?

9 A I don't recall that it was.

10 Q Prior to March 28, 1979, had there ever
11 been any discussion at the GORB meetings of any
12 problems associated with pilot-operated relief valve?

13 A I don't recall any specific discussion on that.

14 Q Okay. Have you had any discussion prior
15 to March 28, 1979 concerning pilot-operated relief
16 valves?

17 A No, I don't recall that I have. We have those
18 in other plants.

19 Q Now, looking at Page 6, again, at the last
20 paragraph, it says "The GORB was concerned about loss
21 of pressurizer level and uncovering the pressurizer
22 heaters." Do you see that?

23 A Yes.

24 Q What was the cause of that concern?

25 A Well, there is a big electric heater in this

10.4

1
2 pressurizer, and when the pressure drops, then these
3 heaters become exposed without any cooling, and they
4 were concerned about burning them out.

5 Q What about the first part of that, where it
6 says "concerned about loss of pressurizer level." Do
7 you see that?

8 A Yes.

9 Q Just previously on Page 3 it had been said
10 that Met Ed is exploring the possibility of operating
11 with a raised pressurizer level.

12 A Yes.

13 Q A change that will cost many dollars; do
14 you see that?

15 A Yes.

16 Q And yet at Page 6 the GORB once again
17 expresses its concern about loss of pressurizer level.

18 Did the GORB give any direction to Met Ed
19 management at this meeting or thereafter as to what
20 Met Ed management was to do with respect to the problem
21 of loss of pressurizer level?

22 A Well, I remember this discussion about burning
23 out these heaters, because when they became uncovered,
24 and I think this is what this discussion is about,
25 they drop in pressurizer level, and then GORB raised

10.5

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

the question what happens if you uncover a heater and it is on, and they were assured it is automatically turned off.

MR. GORINSON: Counsel, let me make one more request, and that's for GRR 312, 319 and 325. They are mentioned on Page 4 of Exhibit 13, Item 2F, Licensee Event Reports.

At this point I am going to recess this deposition. At some point in the future, we may want to speak with you some more, Mr. Miller, we have no plans one way or the other at this time, and we would request that within five days of your receiving the transcript that you make your corrections and sign it, and have it returned to us.

THE WITNESS: Okay.

(Whereupon, at 6:30 p.m., the deposition was adjourned.)

John G. Miller

Subscribed and sworn to
before me this _____
day of _____
1979

Notary Public

I N D E XWitnessDirect

John G. Miller

111

E X H I B I T SMILLER DEPOSITION
FOR IDENTIFICATIONPAGE

9	Document dated April 26, 1978 headed "Three Mile Island GORB"	154
10	Memorandum dated May 18, 1978 on the letterhead of Three Mile Island GORB	156
11	Document entitled "Three Mile Island Nuclear Generating Station, General Office Review Board, Final Minutes - Meeting No. 30, June 6, 1978."	163
12	Document entitled "Metropolitan Edison Company, Three Mile Island Nuclear Station, Unit No. 2 Operations Review Committee Meeting No. 254, February 5, 6, 7, 8, 9, 10, 1978."	168
13	Document entitled "Thee Mile Island Nuclear Generating Station, General Office Review Board, Draft Minutes, Meeting No. 32, January 10, 1979."	197

o o o

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 E R T I F I C A T E

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

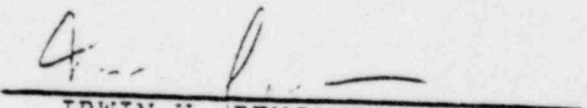
I, IRWIN H. BENJAMIN, a Certified Shorthand Reporter and Notary Public of the State of New York, do hereby certify that the foregoing deposition of JOHN G. MILLER was taken before me on the 9th day of July, 1979.

The said witness was duly sworn before the commencement of his testimony; that the said testimony was taken stenographically by myself and then transcribed.

The within transcript is a true record of the said deposition.

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

IN WITNESS WHEREOF, I have hereunto set my hand this 15th day of July, 1979.



IRWIN H. BENJAMIN, CSR