

UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK

- - - - -x  
:  
GENERAL PUBLIC UTILITIES CORPORATION,  
JERSEY CENTRAL POWER & LIGHT COMPANY, :  
METROPOLITAN EDISON COMPANY and  
PENNSYLVANIA ELECTRIC COMPANY, :  
:  
Plaintiffs, : 80 CIV. 1683  
(R.O.)  
:  
-against- :  
:  
THE BABCOCK & WILCOX COMPANY and :  
J. RAY McDERMOTT & CO., INC., :  
:  
Defendants. :  
:  
- - - - -x

Continued deposition of The Babcock &  
(B&W)  
Wilcox Company by DANNY W. LABELLE, taken by  
Plaintiffs, pursuant to adjournment, at the  
offices of Kaye, Scholer, Fierman, Hays &  
Handler, Esqs., 425 Park Avenue, New York,  
New York, Thursday, the 4th day of June  
(810604)  
1981, commencing at 9:40 o'clock in the  
forenoon, before Joseph R. Danyo, a  
Shorthand Reporter and Notary Public within  
and for The State of New York.



8306290785 810604  
PDR ADOCK 05000289  
T PDR

WALTER SHAPIRO, C.S.R.

DOYLE REPORTING, INC.  
CERTIFIED STENOGRAPHIC REPORTERS  
369 LEXINGTON AVENUE  
NEW YORK, N.Y. 10017

## A p p e a r a n c e s :

KAYE, SCHOLER, FIERMAN, HAYS & HANDLER, ESQS.  
Attorneys for Plaintiffs  
425 Park Avenue  
New York, New York

By: STEVEN J. GLASSMAN, ESQ.,

of Counsel.

DAVIS POLK & WARDWELL, ESQS.  
Attorneys for Defendants  
One Chase Manhattan Plaza  
New York, New York

By: ROBERT F. WISE, JR., ESQ.

-and-

WILLIAM E. WURTZ, ESQ.,

of Counsel.

## Also Present:

DAVID TAYLOR

----

D A N N Y                      W.                      L a B E L L E                      resumed

as a witness and, having been previously duly sworn, was examined and testified further as follows:

MR. GLASSMAN: I would like to have marked as GPU Exhibit-292 for identification a memorandum dated 5/4/79<sup>(790504)</sup> from D. W. LaBelle to J. H. Taylor with a multi-page attachment.

(Memorandum dated 5/4/79 to J. H. Taylor from D. W. LaBelle, with attached documents, was marked as GPU Exhibit No. 292 for identification as of this date<sup>(810604)</sup>.)

EXAMINATION (Continued)

BY MR. GLASSMAN:

Q                      I show you what has been marked as GPU Exhibit-292 for identification (handing document to the witness). Did you send that document to Mr. Taylor in the ordinary course of business?

A                      As best I can recall, yes, I did.

Q                      I show you now a copy of what has been previously marked as GPU Exhibit-103 for identification and ask you if GPU Exhibit-103 is the reference contained in GPU Exhibit-292, the letter from J. H. Taylor to R. J. Matson, subject: B & W Company Commitments 4/30/79<sup>(790430)</sup> "A"?

1

2 A As best I can recall, it is.

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

Q GPU Exhibit-292 refers to materials  
(Item II.B.1) (Item II.B.2) (Item II.B.3)  
addressed in Items Roman Numeral II.B.1, 2, 3, 4, 5  
and Roman Numeral II.E.  
(Item II.B.4) (Item II.B.5)

I would like you to look at GPU Exhibit-103  
103 and tell us whether that refers to the items  
(Page-B.110) (Page-B.111)  
found at Pages B.110 and B.111 of GPU-103 under the  
heading "CADDs Analysis."

A There is a mention of Roman Numeral-II.E for  
which I do not know the specific reference. I  
believe that that may be a typo referring to III.E  
of GPU Exhibit 103.

The other references appear to be consistent  
(Page-110) (Page-111)  
with Pages 110 and 111 of GPU Exhibit-103.

Q In referring to reference-III, Roman  
Numeral-III.E on GPU 103, are you referring to the  
reference on Page-B.111 of that document?

A Yes, I am, but I could not state with any  
assurety that the correspondence is correct between  
Roman Numeral-II.E and Roman Numeral-III.E.

Q Do the references to Items II.B.1, 2, 3,  
4, 5 and III.E on GPU Exhibit 103 in turn refer to  
CADDs studies identified on Page-B.65 contained  
further on in GPU Exhibit 103?



1

2 A I don't recall.

3

4 Q Do the safety evaluations contained in  
5 GPU Exhibit-292 address the items which are contained  
6 on Page-B.65 of GPU Exhibit-103?

6

7 A They very well may, but I could not state with  
8 any assuery that they do.

8

9 Q I show you what has been marked previously  
10 as GPU Exhibit-109 for identification (handing  
11 document to the witness). Have you seen that document  
12 before?

12

13 A Yes, I have.

13

14 Q Was the safety evaluation supporting the  
15 CADDs analysis commitments which are contained in GPU  
16 Exhibit-279 in any way used as input to what is  
17 marked as GPU Exhibit-109?

17

18 A Portions of the analysis could have been.

18

19 Q Who performed the analyses and evaluations  
20 which are contained in GPU Exhibit-292?

20

21 THE WITNESS: Could you repeat the question,  
22 please?

22

23 (The pending question was read by the  
24 reporter.)

24

25 A I cannot recall who specifically performed each  
analysis that is described in Exhibit-292.

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 Was the work done by the Safety Analysis Unit?

A Yes.

Q Was it done under your supervision?

A Yes.

Q Did Mr. Banwarth do any of this work?

A He could have.

Q I would like you to refer to Page-3 of GPU Exhibit-292 which begins with the heading "3.0 LOFW Safety Evaluation." Did this evaluation include the effect of auxiliary feedwater<sup>(AFW)</sup> delay?

A Yes, there is a section within Section-3, Loss of Feedwater<sup>(LOFW)</sup> Safety Evaluation, which appears to address auxiliary feedwater delay.

Q Which section is that?

A Section-3.2.4.2.

Q Is there a page number on the upper right-hand corner that contains that?

A E-14485.

Q Are you referring to the page beginning with the heading "Parametric Study for AFW Delay"?

A Yes.

Q What is meant by "the realistic model" as those terms are used on Page-E-14485, the page to

1

2

which you were just referring?

3

MR. WISE: Can you tell us where on the

4

page that is?

5

MR. GLASSMAN: That is at the fifth line

6

of the text.

7

A "Realistic model," in the sense used in the

8

fifth line of Section-3.2.4.2, refers to the use of

9

the best available information on generic operating

10

characteristics for a loss of feedwater<sup>(LOFW)</sup> transient

11

which was analyzed with the CADDs code.

12

Q Are the pressurizer sprays assumed to

13

operate normally for the realistic model used in this

14

analysis?

15

A The CADDs code has the capability of providing

16

the function of the pressurizer sprays. I could not

17

recall whether that option was even necessary in terms

18

of an expected actuation during the analyses which

19

were done as described in Section-3.2.4.2.

20

Q The end of the paragraph to which you

21

were just referring has a reference to Table-3.2-3

22

which is contained on Page-E-14479.

23

I would like you to review that table and

24

tell us whether that refreshes your recollection as

25

to whether the pressurizer sprays were assumed to

operate normally for the realistic model?

A As I understood your question, you are referring to a Table-3.2-3 as described in the last sentence of the first paragraph of Section-3.2.4.2. This table occurs on Page-E-14487, and it is a sequence of events<sup>(SOE)</sup> table.

Q There is another table labeled 3.2-3<sup>(Table-3.2-3)</sup> which is contained on Page-E-14479 which bears the heading "Differences Between Realistic Model and Conservative Model."

Could you review that table, please, and tell us whether that refreshes your recollection as to whether the pressurizer sprays were assumed to be operating normally for the realistic model in the study for auxiliary feedwater<sup>(AFW)</sup> delay?

A No, I could not.

Q Is there anyone within the Safety Analysis Unit who would be familiar with the assumptions made in the study for auxiliary feedwater delay?

A Not that I would know.

Q If you wanted to find out what assumptions were made for the realistic model in the auxiliary feedwater delay, how would you go about it?

A I refer to the calculational document,

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

calculational file supporting the analysis.

Q Is there a separate calculational file  
supporting the study for auxiliary feedwater<sup>(AFW)</sup> delay?

A I cannot recall whether a separate file exists.

Q Is there a calculational file supporting  
GPU Exhibit-292?

A I would expect that there is.

Q Would that file be assigned a number?

A Yes, it would. I would also like for the record  
to show that there could be calculational files, not  
necessarily one calculational file.

Q Where would such file or files be  
located?

A These would be in the central files of the B &  
<sup>(B+W)</sup>W<sub>A</sub> Company, Nuclear Power Generation Division<sup>(NPG-D)</sup><sub>X</sub>

Q How would you go about finding such a  
file or files in the central files?

A One would look for calculational file number and  
subject title for that calculational file.

Q Are these calculational files indexed by  
number or by subject or both?

A They would have an index which included both  
the number and the title of the file.

Q Returning once again to Page-E-14461 of

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

GPU Exhibit 292 with the heading "LOFW Safety Evaluation," can you tell us whether this analysis took into account the effect of failed open PORV's?

A As best I can tell, the only failure of the PORV to perform its operation properly is considered in Section 3.2.3.3, which is the TMI-2 incident benchmark, referring to the incident of March 28th, 1979<sup>(790328)</sup> as performed with the CADDS computer code.

Q I would like you to refer to figures<sup>3.1-1)</sup> 3.1-1 and<sup>(Figure-3.1-2)</sup> 3.1-2 contained on Pages<sup>Page-4463</sup> E-14462 and 4463<sub>1</sub> which are the very next pages after the heading "LOFW Safety Evaluation."

Do those figures contain event trees?

A These figures contain event trees of major milestones during a sequence of events<sup>(SOE)</sup> as described for several loss of feedwater<sup>(LOFW)</sup> transient scenarios.

Q Do those scenarios include a postulated PORV failure in the open position?

A As stated on the figures in several of the branches of the event tree, the PORV is considered to fail open as an assumption.

Q Did the analyses made in support of the loss of feedwater safety evaluation provide for the situation both with and without reactor coolant pumps<sup>(RCP)</sup>?

1

2

running?

3

A The event trees as defined in figures <sup>(Figure-3.1-1)</sup> 3.1-1

4

(Figure-3.1-2) and 3.1-2, examined operation with RC pumps and with  
loss of RC pumps.

5

6

Q When was the work on these event tree

7

analyses begun?

8

A I believe you are making an assumption that the

9

analyses presented in the document were intended to

10

follow various branches of the event trees as

11

described in these figures.

12

I would like to clarify that as saying that the

13

event trees were requested and reviewed by the

14

(NRC) Nuclear Regulatory Commission and that any subsequent

15

analysis of branches or portions of the event trees

16

was as requested by the Nuclear Regulatory Commission.

17

Q When was that request made?

18

MR. WISE: Which request?

19

MR. GLASSMAN: The request of the Nuclear

20

Regulatory Commission.

21

MR. WISE: He talked of several requests.

22

Which one are you talking about?

23

MR. GLASSMAN: A request for the analyses

24

contained on 3.0-LOFW Safety Evaluation.

25

MR. WISE: I thought we covered that on



one of these previous exhibits. Maybe I am wrong.

BY MR. GLASSMAN:

Q If you would refer to GPU Exhibit-103 for identification, particularly to Page-B.108, there is a reference to commitments from B & W/NAC meeting on April 17th, 1979<sup>(190417)</sup>.

Is that the meeting to which you refer or the request to which you refer?

A That very well could be the meeting. I do not recall the exact date.

Q Was the work on this analysis for LOFW Safety Evaluation begun immediately after the NRC request?

A I have no recollection that it was or was not.

Q I would like you to refer to Page-E-14476 of GPU Exhibit<sup>A</sup> 279.

Under the heading 3.2.4, Accident Analysis, followed by the subheading 3.2.4.1, PORV and High Pressure Trip Set Point Study," there is a listing of five anticipated transients<sup>(5-transients)</sup> of concern.

I would like you to review each of those five anticipated transients of concern and tell us whether each or all of these anticipated transients



1

2

of concern can result in actuation of the PORV.

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

MR. WISE: What time are you talking

about? Are you talking about after some

changes that the NRC required following the

accident<sup>(190328)</sup> or are you talking about before the

accident, because those set points have been

changed and they are different on many plants.

I don't see how he can answer it unless  
you specify what you are talking about.

BY MR. GLASSMAN:

Q Prior to the TMI-2 accident and prior to  
the change in set points to which you have testified,  
can you tell us whether any or all of the anticipated  
transients of concern listed here can result in  
actuation of the PORV?

A No, I could not. The anticipated transients  
listed here have a potential for actuation of the  
PORV.

Q Do all of the anticipated transients of  
concern listed on this page have a potential for  
actuation of the PORV?

A I could not say with assurity that that is the  
case, no.

Q If you wanted to determine with assurity

1  
2 whether that was the case, who in B & W would you ask?

3 A I am not even sure that the people within B & W  
4 could answer your question with a firm response that  
5 each of these events would actuate a PORV.

6 Q Have any analyses been performed within  
7 B & W to determine whether or not these anticipated  
8 transients would or could actuate the PORV?

9 MR. WISE: Now you have asked two  
10 questions. Let us separate those out so the  
11 record will be clear. There is one question  
12 as to whether it would and there is another  
13 question as to whether it could.

14 MR. GLASSMAN: I was hoping to save time  
15 if the answer was the same. I thought the  
16 witness was capable of answering it this way.

17 MR. WISE: I think the question is of  
18 enough importance that it shouldn't be sloughed  
19 over in an attempt to save time two-and-a-half  
20 <sup>(2-1/2-days)</sup> days into the deposition.

21 MR. GLASSMAN: I thought I was asking the  
22 questions.

23 MR. WISE: I object. It is a double  
24 question. I direct him not to answer that one.  
25 You can rephrase it.

1  
2 MR. GLASSMAN: Could you please read back  
3 and type into the record the question first  
4 with the word "would"?

5 (The question referred to was read by  
6 the reporter as follows:

7 "Question: Have any analyses been  
8 performed within B&W to determine whether or  
9 not these anticipated transients would actuate  
10 the PORV?")

11 MR. WISE: Again, we are talking of a time  
12 prior to the accident?

13 MR. GLASSMAN: At any time.

14 MR. WISE: At any plant?

15 MR. GLASSMAN: At any time.

16 MR. WISE: We are not going to have at  
17 any time. Things have changed over time.

18 MR. GLASSMAN: Let us find out. I asked  
19 the question.

20 MR. WISE: Is your question now at any  
21 time at any plant has any study been performed to  
22 this witness's knowledge regarding any of five  
23 different things listed here in this memo?

24 MR. GLASSMAN: The question is very clear.  
25 You asked that it be separated into "would" and

1  
2 "could." I have been willing to go along with  
3 that. The question is very plainly on the  
4 record. I would like to have an answer.

5 MR. WISE: Your question is neither plain  
6 nor clear. I object to it as to form, but I  
7 will permit the witness to answer if he can.


8 A It is certainly possible.

9 Q Do you know if any such analyses were  
10 performed prior to the TMI-2 accident? <sup>(190328)</sup><sub>A</sub>

11 A In terms of analyses which were performed  
12 specifically with an examination of PCRV operation, no,  
13 I do not.

14 Q Were any such analyses performed subsequent  
15 to the TMI-2 accident?

16 A Yes.

17 Q Who performed those analyses? 

18 A A portion of those analyses are described in  
19 Exhibit ~~4~~ 292.

20 Q What pages of Exhibit 292 are those  
21 analyses found on?

22 MR. WISE: Do you want him to look  
23 through the whole exhibit now? This is getting  
24 a little silly. We have been over this  
25 document.

1  
2 A To the best of my knowledge, the PORV operation  
3 is considered throughout the analysis presented in  
4 GPU Exhibit<sup>A</sup> 292.

5 MR. GLASSMAN: I would like you now to  
6 read into the record the question originally  
7 posed with the words "would" and "could," this  
8 time with the word "could."

9 (The question referred to was read by  
10 the reporter as follows:

11 "Question: Have any analyses been  
12 performed within B&W to determine whether  
13 or not these anticipated transients could  
14 actuate the PORV?")

15 BY MR. GLASSMAN:

16 Q Referring in this question once again to  
17 the anticipated transients listed on Page-E-14476.

18 A Again, your question is addressing the time  
19 frame before the TMI-2 incident?

20 Q This is at any time.

21 THE WITNESS: Could you reread the  
22 question?

23 (The question referred to was read by  
24 the reporter as requested.)

25 A It is certainly possible.

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 any such analyses done prior to the  
TMI-2 accident? <sup>(190328)</sup>

A I don't know.

Q Were any such analyses done subsequent to  
the TMI-2 accident?

A There were some analyses.

Q To what analyses do you now refer?

A The analyses which I am familiar with which  
are those described in GPU Exhibit-279.

Q I would like you to refer to Page-E-14494  
of GPU Exhibit-292, which has the heading "3.2.4.3  
Anticipatory Reactor Trip."

Can you tell us whether the study of the  
effect of anticipatory reactor trip as contained in  
this section of GPU Exhibit 279 assumed a realistic  
model?

A I don't know.

Q If you wanted to find out, would you go  
to the calculational file or files for GPU 292?

A It is possible that one could determine from  
a calculational file if it exists that there were  
realistic analyses done in the sense that we have  
previously defined "realistic."

Q If you wanted to find out whether realistic



analyses were used in this study relating to anticipatory reactor trip, how would you go about finding out that information?

A I would look for the calculational file which supports the material.

Q If there were no calculational file or the information was not contained in that file, how would you attempt to determine that information?

A I may not be able to determine that information.

Q Is there anyone within the Safety Analysis Group that you would ask in order to attempt to obtain the information?

A Only if I were aware of who had performed the analysis.

Q Are you aware of who performed that analysis?

A No.

MR. GLASSMAN: Please mark as GPU Exhibit-293  
293 for identification a May 8th, 1979, (790508)  
memorandum from D. W. LaBelle to E. A. Womack;  
Subject: OTSG Dry Out.

(Memorandum dated May 8, 1979 to E. A.  
Womack from D. W. LaBelle was marked as GPU  
Exhibit No. 293 for identification as of this

1  
2 date.)

3 BY MR. GLASSMAN:

4 Q I show you what has been marked as GPU  
5 Exhibit ~~293~~<sup>A</sup> for identification (handing document to  
6 the witness).

7 Did you send that document to Dr. Womack  
8 in the ordinary course of business? \*

9 A Since my signature appears on this document I  
10 presume that I did.

11 Q What is the significance of "OTSG dry out"?

12 A Would you explain what you mean by "the  
13 significance"?

14 Q Is OTSG dry out a problem or potential  
15 problem in the operation of reactor coolant system? <sup>(RCS)</sup>

16 A As I understand your question, you are asking  
17 is "dry out" a problem. I think one should look at  
18 inventory in the generator as being an operational  
19 consideration that one considers in the design of  
20 the steam generator <sup>(SG)</sup> and heat removal via the steam  
21 generator.

22 Q Can you tell us how OTSG dry out relates  
23 to heat removal?

24 A I don't think we have established yet for the  
25 record what "dry out" refers to.



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 We appreciate your objection to the question.

MR. WISE: Perhaps the witness doesn't understand what you mean when you speak of "dry out."

BY MR. GLASSMAN:

Q Can you tell us what you understand by the term "dry out" in the sense of OTSG dry out?

A "OTSG dry out" to me refers to reduction in the inventory within the steam generator. <sup>(SG)</sup>

Q Are you talking about an inventory of liquid?

A Yes.

Q How does OTSG dry out relate to heat removal?

A The inventory of feedwater <sup>(FW)</sup> in the steam generator, secondary side, is one means of removing heat or energy from the primary coolant system.

Q Does dry out refer to reduction of liquid inventory to zero or just to any reduction?

A I would consider dry out to be a consideration of reduction in heat removal as the inventory in the steam generator is reduced, not that one would have to have complete zero inventory in the steam generator.

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 If there is a dry out in the OTSG, what effect does that have on the heat on the primary side?

MR. WISE: When you say "heat," are you using that synonymously with temperature?

MR. GLASSMAN: Yes.

A It depends on what other operations are going on within the rest of the system.

Q If there has been a loss of feedwater<sup>(LOFW)</sup>, what is the effect of OTSG dry out on the temperature on the primary side?

A I could not respond to that without some indication as to a point in time that you are considering and what other operational characteristics exist.

Q What is the effect of OTSG dry out on temperature on the primary side in the first one<sup>(1-minute)</sup> or two minutes<sup>(2-minutes)</sup> following loss of feedwater?

MR. WISE: Now I am confused. Are you asking him after the dry out occurs or after the loss of feedwater occurs? What does the one to two-minute delay refer to?

BY MR. GLASSMAN:

Q In the first sentence of GPU Exhibit<sup>293</sup>,

A        Maybe we should come back and again clarify the  
dry out that is being approached during the loss of

1  
2                   (L0FW)  
feedwater<sub>A</sub> type event.   The loss of main feedwater<sub>A</sub>                   (MFW)  
3 results in a reduction of inventory addition to the  
4 steam generators<sub>A</sub>                   (SG) in a pressurized water reactor<sub>A</sub> which                   (PWR)  
5 will result in reactor trip, normally on high system  
6 pressures.

7                   Prior to dry out of the steam generators  
8 in the sense of their having lost complete heat removal,  
9 there is actuation of emergency or sometimes referred  
10 to auxiliary feedwater<sub>A</sub>                   (AFW) to provide inventory to the  
11 steam generators for heat removal.

12                   Q           I repeat the question: Can OTSG dry out  
13 following a loss of feedwater result in increase in  
14 pressure on the primary side?

15                   A           If the generator was to lose its heat removal  
16 capability, yes, you could have an increase in primary  
17 system pressure.

18                   Q           Could this result in actuation of the  
19 PORV during the period prior to the TMI-2 accident<sub>A</sub>?                   (190328)

20                   A           You are saying is it possible that if no heat  
21 removal was provided by steam generator following a  
22 loss of main feedwater in a period of time prior to  
23 the TMI-2 incident, if this could have resulted in  
24 increases in system pressures to the point that the  
25 PORV would be actuated. Yes.

Q The second sentence of GPU Exhibit <sup>293</sup><sub>Λ</sub> reads as follows:

"In the past, Safety Analysis had not been concerned with this issue in that time appeared available for operator action to provide auxiliary feedwater <sup>(AFW)</sup><sub>Λ</sub> (if not auto-initiated) prior to loss of sufficient RCS inventory to uncover the core."

How much time appeared available for operator action as described in this sentence?

A There is no particular time here associated with operator action.

Q Were any analyses performed by B&W <sup>(190328)</sup><sub>Λ</sub> prior to the TMI-2 accident relating to the time that would be available for operator action to provide auxiliary feedwater if not auto-initiated prior to loss of sufficient RCS inventory to uncover the core?

A The analysis that is provided for the loss of feedwater <sup>(LOFW)</sup><sub>Λ</sub> transient for inclusion in the Safety Analysis Report <sup>(SAR)</sup><sub>Λ</sub> for plants does not, nor is it required by the Nuclear Regulatory Commission <sup>(NRC)</sup><sub>Λ</sub> include the delay of auxiliary feedwater to the steam generators <sup>(SG)</sup><sub>Λ</sub>.

Q Is it correct then to state that the

analysis provided by B & W for loss of feedwater<sup>(LOFW)</sup>  
transients for inclusion in the SAR for B & W  
designed plants does not include a delay of auxiliary  
feedwater<sup>(AFW)</sup> to the steam generators<sup>(SG)</sup>?

A Beyond the delay time which is provided in  
Safety Analysis Report<sup>(SAR)</sup>, which is on the order of  
<sup>(40-seconds)</sup>  
about forty seconds<sub>A</sub> from the time of loss of main  
feedwater.

Q Is it correct to state then that aside  
from the forty-second delay provided in the SAR, the  
analysis provided by B & W for loss of feedwater  
transients for inclusion in the SAR does not include  
any other delay of auxiliary feedwater to the steam  
generators?

A That is correct.

Q Has any such analysis been made  
subsequent to the TMI-2 accident?

MR. WISE: Could I have read back not the  
last question but the one before?

(The question referred to was read by the  
reporter as requested.)

MR. WISE: I thought we spent the better  
part of this morning going over Exhibit<sub>A</sub>-292.

That is basically what that exhibit is about.



1  
2 MR. GLASSMAN: If so, let us just get  
3 the answer yes and go on.

4 MR. WISE: We did spend a good part of  
5 this morning going over this.

6 MR. GLASSMAN: I am just trying to get an  
7 answer.

8 A There have been some analyses. The ones I am  
9 familiar with are the ones presented in Exhibit 292.

10 Q How long does it take to uncover the core  
11 if auxiliary feedwater <sup>(AFW)</sup> is not available?

12 A I don't know.

13 Q How long does it take to uncover the  
14 core if auxiliary feedwater is delayed more than the  
15 <sup>(40-seconds)</sup> forty seconds provided in the SAR?

16 MR. WISE: Isn't that the same question?

17 A To me, it would be the same question that you  
18 asked previously.

19 Q Do you know the answer to that question?

20 A No.

21 Q Were there any analyses performed by  
22 B & W prior to the TMI-2 accident <sup>(490328)</sup> with regard to the  
23 time it would take to uncover the core if auxiliary  
24 feedwater were delayed beyond the forty seconds  
25 provided in the SAR?

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 You are referring here again to the loss of  
feedwater<sup>(LOFW)</sup> analyses presented in the Safety Analysis  
Report<sup>(SAR)</sup>?

Q I am referring to any analysis.

A I don't know.

Q If you wanted to find out whether any such  
analyses were performed within B&W, how would you  
go about it?

A I would consult the analysis units of the plant  
design section or the plant engineering section as it  
is presently called.

Q The next sentence of GPU Exhibit<sup>A</sup> 280 reads  
as follows:

"This was not considered, however, based  
on plant operating data, to be a high frequency  
occurrence nor that pressurizer relief valve<sup>(RV)</sup>  
challenge and failure would be as frequent."

When you used the words "as frequent" in  
that sentence, what were you intending by those  
words? As frequent as what?

A I don't know what I was referring to at the time  
this was written. I think in retrospect "frequent" may  
not have been the proper word, that the fact that  
there had been challenges to the PORV which has led to



failures in operation would have been more appropriate.

Q The next sentence reads:

"In the wake of the TMI-2 accident, this component of our safety philosophy is no longer appropriate."

To what component of your safety philosophy are you referring in this sentence?

A I cannot recall specifically what the reference of this component was to. I presume it was to previously written material here, but I could not state with any assuery what this component actually meant, actually means at this time.

Q What do you now understand that to mean?

MR. WISE: I think he just said that in his last answer.

A I don't know.

MR. WISE: The document speaks for itself.

BY MR. GLASSMAN:

Q The first sentence of the next paragraph of GPU Exhibit <sup>A</sup>293 begins:

"It is my conclusion that B&W must enforce as a new safety criteria that both operating and future plants must" -- underline "must" -- "have a turbine trip initiated by

1  
2 a loss of feedwater<sup>(LOFW)</sup> indication," and it  
3 continues.

4 How could B & W enforce such new safety  
5 criteria?

6 A The use of the word "enforce" is intended to  
7 mean that my opinion was one which would be that B & W  
8 should support such additional criteria.

9 Q How would such additional criteria be  
10 communicated to the plants?

11 A You have to keep in mind that the utility is  
12 responsible for the operation of its plants and, as  
13 such, B & W can only offer recommendations that we  
14 feel would be appropriate. It would be up to them to  
15 make the determination of whether to adopt the  
16 suggestion into their operation.

17 Q Has B & W recommended to operating plants  
18 that there be new safety criteria as described in  
19 Paragraph-2 of GPU Exhibit<sup>Λ</sup>293?

20 A Referring again to GPU Exhibit<sup>Λ</sup>292 which we  
21 discussed earlier, results were presented of which I  
22 am aware within Safety Analysis and provided to the  
23 B & W owners group for those owners to consider the  
24 use of the suggested areas in this paragraph in their  
25 plant operation.

(190328)  
Q Prior to the TMI-2 accident, did B & W  
recommend safety criteria to operating plants?

MR. WISE: Any safety criteria?

MR. GLASSMAN: Yes.

A I could not say that we didn't. There are  
certainly design safety and balance of plant  
recommendations that are provided to the plant owners,  
and it is up to them as the owner and the licensee of  
the power plants to make a decision on which ones they  
desire to accept and also that they would be  
responsible for the licensing of those designs or  
criteria with the Nuclear Regulatory Commission. (NRC)

Q In what form does B & W provide design  
recommendations and balance of plant criteria to  
operating plants?

A I don't know.

Q If you wanted to find out, who would you  
ask within B & W?

A Your question is a very broad question in that  
there would be the potential for plants in operation,  
plants in design or plants in marketing such that one  
would consult the appropriate project site manager or  
possibly marketing manager with respect to those  
plants.

(Recess taken.)

BY MR. GLASSMAN:

Q At the bottom of GPU Exhibit <sup>293</sup> there is a reference to TMI owners group, is that correct, in handwriting at the very bottom?

A Yes.

Q Is that your handwriting?

A It appears to be, yes.

Q Is there a separate file relating to TMI owners group?

A The identifier is for my secretary, to alert her that this would be placed in my TMI-2 chron files relating to owners group activity following the Three Mile Island incident, the Three Mile Island-2 incident.

Q Are there more than one TMI-2 chron files which you have maintained?

A Not more than one chron file. There are subject categories within that chron file.

Q What other sort of categories can you now recall?

A There was one on sequence of events <sup>(SOE)</sup> one on background materials, one on accident analysis, one on B & W owners group, and I don't recall others,

although there could be others.

MR. GLASSMAN: I would like to have marked as GPU Exhibit <sup>294</sup> for identification a multi-page document, the cover page of which is a handwritten memorandum from JHT to D. W. LaBelle, bearing the date 1/8/80 <sup>(800108)</sup>

(Multi-page document, cover page being dated 1/8/80 to D. W. LaBelle from J.H.T., was marked as GPU Exhibit No. 294 for identification as of this date.)

BY MR. GLASSMAN:

Q Did you receive what has been marked as GPU Exhibit 294 in the ordinary course of business (handing document to the witness)?

A I can recall receiving portions of GPU Exhibit 294, the exception being a page-C-15-8537, which I do not recall, and the preceding page, C-15-8536.

Q I would like you to refer to Pages <sup>(page)</sup> C-15-8540, <sup>(page-C-15-8541, and page-C-15-8542)</sup> 8540, 41, and 42, which are the last three pages <sup>(3-pages)</sup> of

GPU Exhibit 294 for identification. Can you tell us what those pages are?

A These pages contain a draft abstract of a paper prepared for presentation at the American Nuclear Society Annual Meeting by several co-authors and

1

2

myself.

3

Q Could you tell us who Mr. Gharakhani is?

4

A Mr. Gharakhani at the time of the writing of this paper was an engineer working under my supervision in the Safety Analysis Unit.

7

Q Who is Mr. Kudlin, K-u-d-l-i-n?

8

A At the time that this paper, this abstract of a paper was written, Mr. Kudlin was a unit manager

10

within the technical staff section of the engineering

11

department of the Nuclear Power Generation Division<sup>(NPGD)</sup>

12

Q What is meant by the term "overcooling

13

event"?

14

A An overcooling event is an overcooling event.

15

Q How is such an event initiated?

16

A It could have any number of sources of initiation.

18

Q What are some of the sources of initiation of an overcooling event?

20

A Increased feedwater<sup>(FW)</sup> flow.

21

Q Could both increased main feedwater and

22

auxiliary feedwater<sup>(AFW)</sup> be initiating events for an

23

overcooling event?

24

A If that combination was credible, it would lead

25

to overcooling, 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 Could excessive auxiliary feedwater<sup>(AFW)</sup> alone initiate an overcooling event?

A You have to keep in mind the system's operation that has occurred previously which has led to what you have hypothesized as an actuation of auxiliary feedwater and perhaps potential cooling of auxiliary feedwater.

There are certainly some event scenarios in which auxiliary feedwater could lead to overcooling, yes.

Q Are there any other events that can initiate an overcooling event?

MR. WISE: Other than what?

BY MR. GLASSMAN:

Q Other than excessive main feedwater<sup>(FW)</sup> or auxiliary feedwater?

A There are perhaps others, yes.

Q In an overcooling event, what actually happens to the temperature on the primary side?

A The nature of the overcooling event is decrease in temperature of the primary system.

Q Can pressure also decrease in an overcooling event in the primary side?

A Yes, it can.

1

2

Q Can pressure drop below 1600<sub>A</sub> PSI?

3

A For some scenarios it could, yes.

4

Q Is 1600 PSI the ac<sup>t</sup>uation point for  
high pressure injection<sub>A</sub> <sup>(HPI)</sup>?

5

6

A The set point for high pressure injection can  
vary from plant to plant.

7

8

Q In an overcooling event can the pressure

9

in the primary side drop below the high pressure

10

injection actuation point, whatever it would be?

11

A There are some scenarios involving overcooling

12

that could lead to actuation of high pressure

13

injection system, yes.

14

Q Has such an event actually occurred at

15

B & W designed plants at which the pressure in the

16

primary side dropped below the high pressure injection

17

actuation point in an overcooling event?

18

A I could not say that it had not occurred. I

19

don't have any recollection of such.

20

Q I would like you to review the abstract or

21

draft of an abstract of a paper which is contained

22

*Page-C-15-8540, Page-C-15-8541, page-C-15-8542)*  
at Pages C-15-8540<sub>A</sub>-through-42 and ask you whether

23

that refreshes your recollection as to whether any such

24

events have occurred at B & W designed plants.

25

A No, it does not. The abstract and paper that



1  
2 was presented addressing what are termed non-LOCA  
3 overcooling events was based upon a generic study of  
4 several event scenarios, none of which are particularly  
5 related to an actual operating occurrence at a site  
6 with a B & W designed water-pressurized reactor.

7 Q Are you aware of any actual overcooling  
8 events on B & W designed plants where HPI was  
9 actuated?

10 A There may have been some, but I don't recall.

11 Q Did such an event occur at TMI-2 in 1978? <sup>(180000)</sup>

12 MR. WISE: You can conduct this examination  
13 any way you want to, but it seems to me we are  
14 taking a lot of time. Is there a point to this?  
15 Do you want to tell the witness something has  
16 happened and get some information from him?

17 He doesn't obviously know of the event.  
18 If there is something specific of an event, why  
19 don't you tell him and let us get on. This is  
20 fencing with the witness.

21 MR. GLASSMAN: We can get done with it if  
22 we can get an answer. If he knows, he knows.  
23 If he doesn't know, he doesn't know. We are  
24 just trying to find out.

25 THE WITNESS: Can you repeat the question?

1  
2 (The pending question was read by the  
3 reporter.)

4 A I don't know.

5 Q In an overcooling event, if pressure drops  
6 below the HPI actuation point can the pressure  
7 stabilize below that point?

8 A Could you explain what you mean by "pressure  
9 stabilize below that point"?

10 MR. WISE: This is the problem you get  
11 into with a hypothetical question. I haven't  
12 been objecting, but I am going to start pretty  
13 soon.

14 MR. GLASSMAN: I am just trying to  
15 understand the operation of this kind of event.

16 MR. WISE: You are asking it through a  
17 series of hypothetical questions which have the  
18 problem that all hypothetical questions do, and  
19 the witness is obviously starting to respond by  
20 asking you for more information.

21 We are going to be here all day trying to  
22 hypothesize an event. These are very complicated  
23 analyses that are done. If you have read any  
24 of them, you are familiar with that.

25 MR. GLASSMAN: I would just like to ask a

1  
2 few questions. I think I can clarify what the  
3 word "stabilize" means. I have no doubt that  
4 the witness can understand what it means very  
5 shortly.

6 BY MR. GLASSMAN:

7 Q In an overcooling event after the pressure  
8 has dropped below the HPI actuation point, can the  
9 pressure on the primary side level out at a pressure  
10 below the HPI actuation point?

11 A Depending on what is taking place during the  
12 event, there is certainly a possibility one could have  
13 periods of stabilization of pressure below the high  
14 pressure injection point.

15 Q Are you aware of any such events which have  
16 occurred at B&W designed plants?

17 A No, I am not.

18 Q In such an overcooling event where  
19 pressure drops below the HPI actuation point and  
20 stabilizes below that point or levels out at a point  
21 below the HPI actuation point, will the system refill  
22 and the pressurizer level recover, if HPI is still on?

23 MR. WISE: I object; hypothetical. I  
24 object to the form of the question. The witness  
25 is permitted to answer it.

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 You are starting to get into areas where one must know the conditions that surround the particular circumstances that you are imposing upon the system. It would not be possible to give you a specific origin or response to your question.

Q I will only ask one or two more questions in this area.

Assuming that there is no break in the system, in an overcooling event after pressure has dropped below the HPI actuation point and stabilized below that point, if HPI is still on, will the system refill and pressurizer level recover or can it refill and recover?

MR. WISE: I make the same objection to the question.

A If the head on your high pressure injection <sup>(HPI)</sup> pumps is sufficient to push against the pressure of the system, it is certainly possible that the fluid inventory that one is adding to the primary system will fill the system, yes.

Q If the pressurizer level then goes up, is it proper for the operator to terminate high pressure injection?

MR. WISE: I object to the question on the

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

grounds that it is hypothetical, and you failed to give the witness anywhere near enough information for him to be able to answer.

A I would have to agree that there is just insufficient information to be able to provide you with a proper response.

Q What other information would you need?

A I don't know. You have to just have much greater knowledge of the entire transient-type situation.

Q In an overcooling event where the pressurizer level has first gone down below the HPI actuation point and then rises again, can it be appropriate for an operator to terminate HPI under -- with any additional criteria, under any criteria?

MR. WISE: I object to that question on the grounds it is hypothetical and also that it is virtually unintelligible.

A There is just no way I could respond to your question as it is phrased.

Q Are you aware of any events at B&W designed plants involving overcooling events where it was appropriate for the operators to terminate high pressure injection?

MR. WISE: I object. You have asked that

question and he answered it at least three or four times with respect to whether he was aware of overcooling events at B & W plants, and then we went through even specific events, and he told you several times he doesn't know of those events. Now you are asking the question.

BY MR. GLASSMAN:

Q I would like a yes or no answer.

A Your previous question had asked if I was aware of any overcooling events which had led to high pressure injection <sup>(HPI)</sup> actuation, and the answer to that is no.

In terms of am I aware of events which have led to overcooling at operating plants with B & W nuclear steam supplier systems <sup>(NSS)</sup>, the answer would be yes.

MR. WISE: That was not the question that was asked. The question was asked whether you had knowledge of someone terminating after HPI had come on, and you earlier said you weren't aware of such events.

So I don't see how he could possibly be aware of events where it was terminated if he wasn't aware of events where it came on in the first place.



1  
2 BY MR. GLASSMAN:

3 Q To which overcooling events are you  
4 referring that you knew of?

5 A I don't know. What I have stated is that I have  
6 an awareness of overcooling events.

7 Q Any particular overcooling events of which  
8 you are aware?

9 A No.

10 MR. GLASSMAN: I would like to have  
11 marked as GPU Exhibit <sup>A</sup>295 for identification a  
12 multi-page document bearing the date April 12th,  
13 (1904/2) 1979 from D. W. Fairbrother to Distribution,  
14 Subject: Summary of Pressurizer Level  
15 Investigation/Instruction #196.

16 (Multi-page document dated April 12th,  
17 1979 to Distribution from D.W. Fairbrother,  
18 Subject: Summary of Pressurizer Level  
19 Investigation/Instruction #196, was marked as  
20 GPU Exhibit No. 295 for identification as of  
21 this date.)

22 BY MR. GLASSMAN:

23 Q Did you receive a copy of GPU Exhibit 295  
24 for identification in the ordinary course of business?

25 A I have no recollection of having received the



1  
2 memo from Mr. Fairbrother to Distribution of April  
3 12th, 1979<sup>(190412)</sup>.

4 Q Is your name listed as being on  
5 distribution of that memorandum?

6 MR. WISE: Yes, it is.

7 A Yes.

8 Q I would like you to refer to attachment-  
9 No. ~~2~~ to this memorandum which is contained at Page-<sup>(3541)</sup>  
10 ~~3541~~ of GPU Exhibit-295. Your name is indicated as  
11 being on Distribution. Did you receive a copy of  
12 that memorandum?

13 A The memo from E. A. Womack to Distribution  
14 of April 6th, 1979<sup>(190406)</sup> looks familiar, but I don't recall  
15 having received it, no.

16 Q Item ~~4~~-5 on Page-3541 speaks of an  
17 assessment being made or that an assessment should be  
18 made of actual versus indicated pressurizer level  
19 throughout the TMI-2 transient, and your name appears  
20 after that.

21 Did you make or participate in any such  
22 assessment?

23 A I don't recall what action was taken with respect  
24 to Item 5.

25 Q I would like you to refer to Page ~~3~~-3543

1  
2 of this exhibit and ask whether you received a copy of  
3 the April 6th, 1979<sup>(190406)</sup> memorandum from E. W. Swanson to  
4 yourself.

5 A Nothing other than a vague recollection of  
6 having seen such a document.

7 Q I would like you to refer to Page-D-3552  
8 of GPU Exhibit-295, which indicates carbon copy to  
9 yourself on the following page. Did you ever receive  
10 a copy of this document?

11 A I can recall only a vague recollection of having  
12 seen this document.

13 Q Can you identify for us who Mr. Hudson  
14 and Mr. Snow are?

15 A At the time that this memo was written, Mr.  
16 Hudson and Mr. Snow were engineers in our components  
17 group of the engineering department.

18 Q Do you know their current positions?

19 A I don't know either their current positions or  
20 the current units to which they are attached.

21 Q Can you identify for us Mr. Tornow, Mr.  
22 Mitchem and Mr. Burke?

23 A At the time that this memo was written I believe  
24 that these gentlemen were unit managers within the  
25 components area.

1

2

Q Do you know their current positions?

3

A No.

4

Q Do you know their current units?

5

A No.

6

Q The second sentence of Page ~~D~~<sub>A</sub> 3552 reads

7

as follows:

8

"The only design requirement that we can

9

positively identify is that the surge line/

10

pressurizer arrangement must be such to allow

11

pressurizer draining and maintenance while

12

keeping the core covered and decay heat<sup>(DH)</sup><sub>A</sub>

13

operating." .

14

I would like you to review the April 10th,

15

(190410) 1979<sub>A</sub> memorandum contained at Pages D 3552<sub>A</sub> through 53<sub>A</sub> (Page-D-3552) (Page-D-3553)

16

and tell us whether you ever discussed the design

17

requirements for the surge line/pressurizer arrangement

18

with anyone at E&CW.

19

A I have no specific recollection.

20

Q Do you have any general recollection?

21

A Just of having been involved in discussions.

22

Q Would you tell us with whom you discussed

23

that question?

24

A I can recall discussions with Mr. Dunn of the

25

ECCS Unit which would have no particular bearing on

1  
2 the information presented in this particular memo.

3 Q What was the nature or substance of your  
4 discussion with Mr. Dunn?

5 A I don't recall.

6 Q Are you aware of any requirement for the  
7 surge line/pressurizer arrangement other than that  
8 stated in the second sentence on that page, D-3552?

9 A The particular design requirement cited is not  
10 one with which as manager of the Safety Analysis Unit  
11 I would have had to have dealt with, nor would I be  
12 aware of any other design requirements of that nature,  
13 no.

14 Q Who at B & W would be most familiar with  
15 the design requirements for the surge line/pressurizer  
16 arrangement?

17 A I think you would have to ask Mr. Hudson and Mr.  
18 Snow.

19 Q I would like you to refer to Page-D-3558 of  
20 GPU Exhibit-295 for identification. Did you and Mr.  
21 Gharakhani forward this document to Dr. Womack in the  
22 ordinary course of business?

23 A Since I am listed as a co-author, I would presume  
24 that I did.

25 Q Would you please review "Final Conclusion-4

1  
2 No. 4, which is listed on Page-D-3559, which is the  
3 (page-2) (790410)  
second page of the April 10th, 1979 memorandum from  
4 yourself and Mr. Gharakhani to Dr. Womack.

5 Can you tell us the basis of that  
6 conclusion?

7 A No.

8 Q Was any analysis done within the Safety  
9 Analysis Unit to support that conclusion?

10 A Not that I am aware of.

11 Q Did you discuss that conclusion with  
12 anyone at B & W?

13 A Not that I can recall.

14 Q Under the heading "Recommendations" on  
15 that same page, there is a recommendation that:

16 "A task group should be originated to  
17 look into the following:

18 "No. 1. The origin of the current B & W  
19 surge line design."

20 Was that ever done?

21 A I can only recall that it was examined and that  
22 may be addressed elsewhere in your Exhibit-295.

23 Q Do you know who examined that question?

24 A No.

25 Q Do you know if recommendation No. 2, which

1

2

is contained on the following page, ~~No. 1~~-D-3560, was  
ever implemented?

3

4

A No, I do not.

5

6

Q If you wanted to find out, who would you  
ask?

7

8

A I cannot recall anyone specifically that I  
would consult.

9

10

11

Q Do you know if anyone within B & W looked  
into the items listed as Recommendation ~~No. 2~~-3 on  
Page-D-3560?

12

A I don't know.

13

14

Q If you wanted to find out, who would you  
ask?

15

16

A I would not know who to ask within the working  
levels at B & W.

17

18

Q Is there anyone you would ask above the  
working levels?

19

A The engineering department manager.

20

21

22

Q Do you know if anyone within B & W looked  
into the recommendation ~~No. 3~~-4 or did any work relating  
thereto?

23

24

25

A I have no specific recollections, although I can  
recall that there were studies that have been done  
pre-<sup>190328</sup>TMI-2 incident<sub>N</sub> as well as after.

1

2

Q To what studies are you referring?

3

A I have no recollection of what those studies would be specifically.

4

5

Q Who performed those studies?

6

A There were some studies which were performed pre-<sup>#</sup>TMI-2 incident within Safety Analysis Unit and in conjunction with our instrumentation people.

7

8

9

Q If you wanted to find out the results of

10

those studies, how would you go about doing it?

11

A I would not know where to look.

12

Q Would there be a calculational file

13

relating to some of the techniques to measure

14

pressurizer level?

15

A I don't know.

16

Q Do you know if anyone at B&W has looked

17

into or done any work relating to recommendation No. <sup>2</sup>~~7~~5 which appears on Page ~~D~~-3560?

18

19

A No.

20

Q If you wanted to find out whether any

21

such work had been done, how would you go about

22

finding that out?

23

A I would have to consult the engineering department manager.

24

25

MR. GLASSMAN: I would like to have marked



1  
2 (Exhibit)  
3 as GPU<sup>A</sup> 296 for identification an April 5th,  
4 (790405)  
5 1979<sup>A</sup> memorandum from Mr. Swanson to Mr. Kane  
6 with a carbon copy to a number of people  
7 including Mr. LaBelle.

8 (Memorandum dated April 5, 1979 to Mr.  
9 Kane from E. W. Swanson was marked as GPU  
10 Exhibit No 7-296 for identification as of this  
11 date.)

12 BY MR. GLASSMAN:

13 Q I show you what has been marked GPU  
14 Exhibit 296 for identification (handing document to  
15 the witness). Did you receive a copy of that document?

16 A I have no recollection of having received this  
17 document.

18 Q The document speaks of a proposed  
19 operating instruction. I would like you to focus on  
20 the proposed operating instruction and in particular  
21 review the second paragraph<sup>2</sup><sub>1</sub> of GPU Exhibit 296 marked  
22 for identification.

23 Did the Safety Analysis Unit have any  
24 input to formulation of this proposed operating  
25 instruction?

A Not that I recall.

MR. GLASSMAN: I would like to have marked

1  
2 as GPU Exhibit-297 for identification an April  
3 8th, 1979<sup>190408</sup> memorandum, subject: Operating  
4 Instructions for Stuck-Open PORV.

5 (Memorandum dated April 8th, 1979 to G.  
6 T. Fairburn from D. G. Newton and L. R. Cartin  
7 was marked as GPU Exhibit No. J-297 for  
8 identification as of this date.)

9 BY MR. GLASSMAN:

10 Q I show you what has been marked as GPU  
11 Exhibit 297 for identification 'handing document to  
12 the witness). Did you receive a copy of this  
13 memorandum?

14 A I have a vague recollection of having seen a  
15 similar-type document, yes.

16 Q Did you ever conduct a review of that  
17 document or the operating instruction attached thereto?

18 A I cannot recall that a specific review was  
19 provided for GPU Exhibit 297.

20 Q Did you ever discuss an operating  
21 instruction for a stuck-open PORV with anyone at B&W?

22 A Yes.

23 Q With whom did you discuss it?

24 A I cannot recall.

25 MR. GLASSMAN: I would like to have

1  
2 marked as GPU Exhibit-298 for identification  
3 this document dated April 8th, 1979-12:57 a.m. (190405)

4 Subject: Operating Instructions for Stuck-  
5 Open PORV.

6 (Memorandum dated April 8th, 1979 to  
7 E. A. Womack from D. G. Newton was marked as  
8 GPU Exhibit No. J-298 for identification as of  
9 this date.)

10 BY MR. GLASSMAN:

11 Q I show you GPU Exhibit 298 marked for  
12 identification (handing document to the witness). I  
13 would like you to review the first paragraph of that  
14 document and tell us whether that refreshes your  
15 recollection as to any discussion you had with anyone  
16 at B&W regarding operating instructions for a stuck-  
17 open PORV?

18 A No, it does not.

19 Q Do you know if anyone else in Safety  
20 Analysis Unit had any input to an operating  
21 instruction for a stuck-open PORV subsequent to the  
22 TMI-2 accident? (190328)

23 A No, I do not, with the exception that Exhibit 298  
24 298 refers to discussions which were held with Mr.  
25 Bonoca who was working in the Safety Analysis Unit at

1

2

the time.

3

Q Does that refresh your recollection as to whether Mr. Bonoca provided any input to formulation of operating instructions for a stuck-open PORV?

5

6

A No.

7

Q Did there come a time after the TMI-2 accident <sup>(190328)</sup> when individuals in the Safety Analysis Unit considered changing the set point for the PORV?

9

10

A I am not sure I understand what is referred to as changes in set point being considered by Safety Analysis.

11

12

13

Q Did there come a time after the TMI-2 accident when individuals in the Safety Analysis Unit reviewed advantages or disadvantages of changing the set point for actuation of the PORV?

14

15

16

17

A I believe this subject has been previously testified to, yes.

18

19

Q The answer is yes?

20

A Yes.

21

Q Do you recall at this point how soon after the accident that was considered?

22

23

A No.

24

Q Do you know whether it was considered within a week after the accident?

25

1  
2 A I don't recall, but I would add that the  
3 subject of the set point change became an issue which  
4 was very much of concern to the Nuclear Regulatory  
5 Commission. <sup>(NRC)</sup>

6 Q Do you know when the Nuclear Regulatory  
7 Commission's concern was first communicated to B & W?

8 A No.

9 Q Did anyone in the Safety Analysis Unit of  
10 B & W consider the advantages or disadvantages of  
11 changing the PORV set point before the NRC expressed  
12 its concern to B & W?

13 A No.

14 MR. GLASSMAN: I would like to have marked  
15 as GPU Exhibit <sup>7</sup>299 for identification an April  
16 9th, 1979 <sup>(990409)</sup> memorandum, subject: Operating  
17 Instructions for Stuck-Open Power Operated  
18 Relief Valve.

19 (Memorandum dated April 9th, 1979 to  
20 E. A. Womack and G. T. Fairburn from E. R. Kane  
21 was marked as GPU Exhibit ~~No.~~ <sup>7</sup>299 for  
22 identification as of this date.)

23 BY MR. GLASSMAN:

24 Q I show you what has been marked as GPU  
25 Exhibit 299 for identification (handing document to

1  
2 the witness). Did you receive a copy of that  
3 document?

4 A Not that I can recall.

5 MR. GLASSMAN: I would like to have marked  
6 as GPU Exhibit <sup>A</sup>300 for identification a multi-  
7 page document bearing the page ~~numbers~~ D-46956--  
8 through <sup>D-</sup>~~6968~~ <sup>A</sup> and having a written indication  
9 "D. W. LaBelle" on the front page.

10 (Multi-page document bearing page numbers  
11 D 46956 through D 46968 was marked as GPU  
12 Exhibit ~~No.~~ <sup>J</sup>300 for identification as of this  
13 date.)

14 BY MR. GLASSMAN:

15 Q I would like you to review what has been  
16 marked as GPU Exhibit 300 for identification (handing  
17 document to the witness). Tell us whether you can  
18 identify that document.

19 A The document is familiar to me.

20 Q Can you tell us what it is?

21 A It is a summary of information which was  
22 prepared for a meeting with the Nuclear Regulatory  
23 Commission <sup>(NRC)</sup>

24 Q Who prepared GPU Exhibit 300?

25 A There were many different people involved.

1

2

Q Who was responsible for supervising the preparation of this document?

3

4

A I don't recall specifically.

5

6

Q What unit was responsible for preparation of this document?

7

8

A I don't recall that any specific unit was responsible for the document?

9

10

Q What units participated in the preparation of this document?

11

A Other than Safety Analysis Unit, I don't know.

12

13

Q Who in the Safety Analysis Unit participated in the preparation of this document?

14

A At least myself.

15

16

17

Q Anyone else within the Safety Analysis Unit that you can recall who participated in the preparation of this document?

18

A I don't know.

19

20

21

Q Do I correctly understand that this document represents a summary of information prepared for an NRC meeting?

22

A Yes.

23

24

Q What back-up information can be found within B&W relating to this document?

25

A I don't know.



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 Was there other information prepared for this meeting with the NRC?

A I don't know.

Q If you wanted to find out, where would you look?

A One would have to check with the individuals that provided the information to determine that.

Q When did this meeting with the NRC take place?

A I don't recall the specific date.

Q Approximately when did it take place?

A Some time after the TMI-2 incident. (790328)

Q Within a month after the incident?

A I don't recall.

Q Can you identify for us the words that are written at the bottom right-hand corner of this exhibit?

A You are referring to the TMI/2 anal seq.?

Q Yes. Do you know what that refers to?

A Yes.

Q What does it refer to?

A That is an abbreviated indication to my secretary that this is to be placed in my TMI-2 chron file with the subject title "Analysis Sequence."

1

2

Q From whom did you receive this document?

3

A I have no specific recollection.

4

5

6

7

8

Q Page 1 of this document, the second full paragraph, discusses a number of alternatives which were considered in developing proposed actions. Were these alternatives considered by the Safety Analysis Unit?

9

10

A As best I can recall, the Safety Analysis Unit participated in suggestion and review of alternatives.

11

12

Q What work did you personally do with regard to this document?

13

A I don't know.

14

15

Q Was this document in its final form prepared in the plant design section?

16

A I don't recall.

17

18

Q There is a paragraph on Page 1 of Exhibit-287 which reads:

19

20

21

22

23

"An analysis of the impact of these various alternatives and their contribution to assuring that the PORV will not actuate for the class of anticipated transients of concern has been completed."

24

Where can that analysis be found?

25

A Any analysis that was performed by the Safety

1

2 Analysis Unit would be found in the files of the  
3 Safety Analysis Unit, I would presume.

4

Q How would you find those files?

5

A By referring to the calculational files for  
6 any calculational materials.

7

Q If analysis of the impact of these various  
8 alternatives and their contribution to assuring that  
9 the PORV will not actuate were performed by the ECCS  
10 Unit, where would that be found?

11

A I think you have to keep in mind that the  
12 alternatives that are dealt with here cover a very  
13 broad range of suggested changes in reactor protection,  
14 PORV operating set point and other types of  
15 combinations, so it is difficult for me to be able to  
16 site any references beyond input that is provided by  
17 the Safety Analysis Unit.

18

Q Did B&W arrive at a conclusion as to  
19 which of these alternatives were the most appropriate?

20

A No. These were presented to the Nuclear  
21 Regulatory Commission<sup>(NRC)</sup> and the last page of the  
22 document summarizes some of the pros and cons of one  
23 alternative which was presented.

24

There were other pros and cons which were  
25 considered by the Nuclear Regulatory Commission and

1  
2 B & W was instructed as to which alternative the  
3 Nuclear Regulatory Commission<sup>(NRC)</sup> wished to be placed into  
4 effect at the operating plants.

5 Q Does this document contain B & W's  
6 assessment of the advantages and disadvantages of each  
7 of the four proposed<sup>(4-)</sup> alternatives?

8 A As best I can recall, it presents portions of  
9 information which may pertain to advantages and  
10 disadvantages.

11 Q What was the highest level of B & W  
12 management that reviewed this document or the proposed  
13 recommendations or alternatives?

14 A I don't know.

15 Q What is the highest level that you are  
16 aware of?

17 A At least my immediate supervisor.

18 Q That was Dr. Womack?

19 A Yes.

20 Q Are you aware of whether any level of B-&W<sup>(u)</sup>  
21 management above Dr. Womack reviewed this document  
22 or the alternatives presented?

23 A No.

24 MR. GLASSMAN: I would like to have  
25 marked as GPU Exhibit<sup>301</sup> for identification a

1  
2 June 11th, 1979<sup>(190611)</sup> memorandum, Subject: Plant  
3 Computer Post Trip Requirements.

4 (Memorandum dated June 11th, 1979 to  
5 R. I. Lutz from D. B. Fairbrother was marked  
6 as GPU Exhibit No. ~~2~~-301 for identification as of  
7 this date.)

8 BY MR. GLASSMAN:

9 Q I show you what has been marked as GPU  
10 Exhibit-301 for identification (handing document to  
11 the witness). Did you receive a copy of this  
12 document?

13 A The document seems vaguely familiar, yes.

14 Q Can you read for us the handwritten  
15 notation at the bottom of the first page?

16 A Other than TMI-2, no, I cannot.

17 Q Are you familiar with a TMI-2 equipment  
18 design file?

19 A The handwriting would indicate that it is my  
20 writing and that this would be in one of my TMI-2  
21 subject files.

22 Q Do you have a TMI-2 subject file which  
23 is called TMI-2 equipment design?

24 A I could. I don't recall.

25 Q I would like you to refer to the third

1  
2 (3)  
page<sub>1</sub> of GPU Exhibit-301 for identification. Tell us  
3 whether this document, these next two sheets labelled  
4 (D-46902)  
D-46901 and 02<sub>1</sub> whether these pages were prepared by  
5 anyone in the Safety Analysis Unit.

6 A Not that I am aware of.

7 Q Do you know who prepared them?

8 A No.

9 Q I would like you to review the first page<sup>(-1)</sup>  
10 of GPU Exhibit 301. The third sentence in Paragraph-/  
11 ~~1~~ refers to:

12 "The comments from Safety Analysis  
13 (attached)..."

14 I would like you to review that paragraph  
15 and tell us whether that refreshes your recollection  
16 as to whether the attached two pages<sup>(2-pages)</sup><sub>1</sub> were prepared by  
17 anyone within Safety Analysis.

18 MR. WISE: Couldn't we have done this  
19 earlier? Was it necessary to go this long route  
20 to get to this?

21 MR. GLASSMAN: I don't know what long  
22 route you are talking about. We haven't spent  
23 so much time on this document.

24 A No, I have no recollection of this.

25 MR. GLASSMAN: I would like to have marked

1  
2 as GPU Exhibit <sup>(800425)</sup> 302 for identification an April  
3 25th, 1980, memorandum, subject: Reliability  
4 of ESFAS II, with an attached memorandum of  
5 December 7th, 1979, <sup>(791207)</sup> subject: PSC-36-79  
6 "Reliability of ESFAS-II."

7 (Memorandum dated April 25th, 1980 to  
8 E. A. Womack from J. H. Taylor, with attached  
9 memorandum dated December 7th, 1979 to J. H.  
10 Taylor from D. W. LaBelle, was marked as GPU  
11 Exhibit ~~No 7~~ <sup>302</sup> for identification as of this  
12 date.)

13 BY MR. GLASSMAN:

14 Q I show you what has been marked as GPU  
15 Exhibit ~~302~~ for identification (handing document to  
16 the witness). Did you receive a copy of this document  
17 in the ordinary course of business?

18 A Yes, I did.

19 Q Did you prepare and forward to Mr. Taylor  
20 the December 7th, 1979 memorandum that is annexed to  
21 the April 25th, 1980 cover memorandum?

22 A Yes.

23 Q If you wanted to find a copy of PSC 36-79  
24 which is referenced in the December 1979 <sup>(791200)</sup> memorandum,  
25 how would you go about finding it?



1

2

A I would check with the licensing organization.

3

4

Q Does the Safety Analysis Unit maintain a file of PSC's?

5

6

A I may have a chron file that has PSC information in it.

7

8

9

Q Can you tell us what is meant by ESFAS<sup>II</sup>?

A This would be the second in a series of ESFAS designs.

10

Q What does ESFAS stand for?

11

A Engineered Safety Features Actuation System.

12

13

14

Q What is meant by the term of "acceptance criteria" as contained in the first sentence of this memorandum?

15

A You are on Page<sup>1</sup>?

16

17

18

Q Referring to the December 7th, 1979<sup>(791207)</sup> memorandum, Page<sup>2</sup> of GPU Exhibit<sup>302</sup> for identification.

19

A Acceptance criteria is an acceptance criteria.

20

21

Q Could you describe that for the benefit of a layman?

22

23

A You have certain criteria by which you provide a design.

24

25

Q Would acceptance criteria include failure rate?

1  
2 A It could.

3 Q At the end of the paragraph which we are  
4 reviewing the following words appear:

5 "...I am concerned that B & W has not  
6 defined reliability goals for its safety systems  
7 and is not presently designing to such criteria."  
8 What safety systems are you referring to?

9 A To all safety systems.

10 Q Would the term encompass high pressure  
11 injection? <sup>(HPI)</sup>

12 A Yes.

13 Q Would the term encompass auxiliary  
14 feedwater? <sup>(AFW)</sup>

15 A Yes.

16 Q Would the term encompass integrated control  
17 system? <sup>(ICS)</sup>

18 A It could.

19 Q Would --

20 A But the integrated control system is not  
21 presently considered a system that is necessary for plant  
22 safety.

23 Q Would the term safety system encompass the  
24 PORV?

25 A It could; although the PORV is not presently

1  
2 considered a safety system.

3 Q In what respect could the PORV be  
4 considered a safety system?

5 A If it was deemed to have safety significance.

6 Q Was the PORV deemed to have safety  
7 significance?

8 A It has, to date, not been classified as a safety  
9 system.

10 Q When you refer to a piece of equipment or  
11 component being deemed to have safety significance,  
12 what do you mean?

13 A Whether it is necessary for core protection or  
14 to meet any other criteria that have been established  
15 for plant safety. You are getting into an area  
16 where there are many different considerations that  
17 have to be accounted for, and these are only a few of  
18 them.

19 Q The next paragraph of the December 7th,  
20 (191207) 1979 memorandum contains a recommendation regarding  
21 the definition of reliability goals for all B&W  
22 system designs. Do you know if this was ever done?

23 A No.

24 Q Did you ever discuss this recommendation  
25 with Mr. Taylor?

1

2

A Yes.

3

4

Q Could you tell us what you said to Mr. Taylor and what he said to you?

5

A I have no recollections of our discussion.

6

7

Q Do you recall the nature or substance of your discussion?

8

A Nothing other than the subject described here.

9

10

Q Did Mr. Taylor say anything to you in that regard?

11

A Not that I can recall.

12

13

Q Did you have any discussions with regard to this recommendation with Dr. Womack?

14

A Yes.

15

16

Q Do you recall the nature or substance of any such discussion?

17

A Nothing other than the subject described here.

18

19

Q Did Dr. Womack say anything to you?

A Not that I can recall.

20

21

22

23

24

25

MR. GLASSMAN: I would like to have marked as GPU Exhibit <sup>303</sup> (790502) for identification a May 2nd, 1979 memorandum, subject: Preparation of a document on the safety aspects of MK-A in view of the TMI accident.

(Memorandum dated May 2nd, 1979 to

1  
2 Distribution from J. R. Bohart was marked as  
3 GPU Exhibit ~~No~~<sup>A</sup>-303 for identification as of  
4 this date.)

5 BY MR. GLASSMAN:

6 Q I show you what has been marked as GPU  
7 Exhibit ~~A~~<sup>A</sup>-303 for identification (handing document to  
8 the witness). Have you ever seen a copy of this  
9 document?

10 A Not that I can recall.

11 Q There is a reference under the  
12 Distribution heading of this document to a T. W.  
13 LaBelle. Do you know if there is any other LaBelle  
14 at B & W other than yourself?

15 A No.

16 Q At the bottom right-hand corner of the  
17 first page of GPU Exhibit 303 there is a reference  
18 to BBR TMI-2, followed by what appears to be the  
19 number-70 which is circled. Do you know what that  
20 refers to?

21 A Yes; this is an identification to my secretary  
22 to file this in my BBR chron file.

23 Q Does that appear in your handwriting, that  
24 identification?

25 A Yes.

1

2

Q What is the 70 with a circle around it?

3

A The specific chron file number.

4

Q Are all of your chron files numbered?

5

A No.

6

7

Q Did you have any particular practice regarding when you assign a number and when you don't?

8

A Normally, a major file such as TMI-2 would not carry a number because of the amount of information.

9

10

It would have been filed in notebooks instead of folders.

11

12

Q Would a chron file of yours which contains a number indicate a chron file contained in a folder rather than a notebook?

13

14

A Not necessarily.

15

16

Q Can you tell us who G. G. Ziph is, Z-i-p-h?

17

A At the time of this memo Mr. Ziph was chairman of the board of Babcock & Wilcox <sup>(B & W)</sup> Company.

18

19

Q Do you know if he is still with B & W?

20

21

MR. WISE: Mr. Ziph is no longer the chief executive officer. We can provide you with this information at some point.

22

BY MR. GLASSMAN:

23

24

Q Would you identify for us the positions of each of the B & W persons indicated under Distribution

25

1  
2 on this document?

3 A Are you referring to current positions or  
4 positions at the time the memo was written?

5 Q I would like you to identify both of those,  
6 if you know.

7 A Mr. Jenkins, Mr. Lexa, Mr. Warner and Mr. Henig  
8 were a part of the International Project Engineering  
9 Unit within the plant design section at the time of  
10 the memo being written.

11 To the best of my knowledge, these gentlemen  
12 are in our project engineering area for the international  
13 program at the present time, but I don't know the  
14 specific name of their section.

15 B. B. Eanes and R. H. Rhodes I do not specifically  
16 recognize.

17 Q Can you tell us if you know the positions  
18 at BBR of the individuals listed under the Distribution  
19 listed for BBR, those positions of May 2nd, 1979<sup>(190502)</sup> and  
20 their current positions if you should know?

21 A I do not know Mr. Thomas's position title. Mr.  
22 Caspar, at the time of this memo and to the present  
23 time as far as I know, is the manager of what would  
24 be termed plant integration.

25 At the time of the memo Mr. Day and Mr. Beebe



probably reported to Mr. Caspar.

Q Do you know the functions or the responsibilities of Mr. Thomas?

A Not specifically, no.

Q Do you know them generally?

A Other than to say that he is in high level management at the BBR.

Q Referring to Page ~~2~~<sup>1</sup> of GPU Exhibit ~~303~~<sup>1</sup>, the end of the fifth full paragraph, there is a reference to a Bob Warner. Do you know who he is?

A He is an engineer at B & W or he was an engineer at B & W.

Q Do you know what section he works or worked at?

A He was with the International Project Engineering Organization.

Q The next full paragraph on Page ~~2~~<sup>1</sup> of GPU Exhibit 303 reads as follows:

"I would like to ask Peter Caspar and Danny LaBelle to work together in preparing the sections <sup>(sections-)</sup> in <sup>2.0</sup> on differences in safety and operating philosophy and Section-3.0 on the existing BBR analysis which supports the argument that the occurrence of the TMI <sup>(TMI-2)</sup><sub>1</sub>

490328)  
accident<sub>n</sub> on MK-A is very unlikely."

Did you do any work in this regard?

A As best I can recall, I did.

Q Can you describe for us the work you did?

A Nothing other than the general subject matter that is presented here.

Q Can you describe for us generally the role that Peter Caspar played in this work as compared to the role you played?

A No. I have no recollection of that.

Q Did anyone else in Safety Analysis work on preparing sections of the requested report?

A Yes.

Q Who was that?

A Mr. Bonoca.

Q Anyone else in Safety Analysis Unit do work on this report?

A Not that I can recall.

Q Did you supervise the work of Mr. Bonoca?

A Yes.

Q Did Mr. Bonoca actually work with Peter Caspar in preparing certain sections of the report?

A I don't recall.

Q Did you actually work with Peter Caspar

1  
2 in preparing sections of the report?

3 A I just do not recall.

4 (Whereupon, at 1:10 o'clock p.m., a  
5 luncheon recess was taken.)  
6  
7

8 \* \* \*

9  
10  
11  
12 AFTERNOON SESSION

13 2:25 P.M.

14 D A N N Y W. L a B E L L E resumed  
15 as a witness and, having been previously duly  
16 sworn, was examined and testified further as  
17 follows:  
18

19 EXAMINATION (Continued)

20 BY MR. GLASSMAN:

21 Q Referring again to GPU Exhibit-393 for  
22 identification, and in particular Attachment-1 to that  
23 exhibit at Page-D-49269, does the handwritten notation  
24 on the right side of that page contain your handwriting?

25 A It could be.

1

2

Q Can you attempt to read that for us?

3

A "MK-A designed to" -- the next word looks like "prevent, TMI-2," and then there is something else there. I can't tell.

4

5

6

The next line reads, "Safety systems," and in parentheses "anticipatory trips."

7

8

9

The next line says "Single failures" and two<sup>2</sup>-sub topics, "safety" and "non-safety systems."

10

11

The next line says "Mitigative systems availability."

12

13

14

The next line says "Thirty-minute<sup>(30-minute)</sup> operator action," and the last word looks like it might be "criteria."

15

16

17

The next line reads "Systems; independent."

The next line reads "Control systems," and the last line reads "I. C. Limitation."

18

19

Q Does your handwriting appear on the left side of that page?

20

21

A The left side of the page does not appear to be my handwriting.

22

23

24

25

Q Does Attachment-1 to GPU Exhibit-290 refresh your recollection as to any work you did in connection with preparation of safety aspects of the Muelheim-Kaerlich plant in view of the Three Mile

(TMI-2)  
Island 2 accident?

A Not by itself, no.

Q Does it refresh your recollection as to whether you did any work in connection with such a report?

A I was involved in support of the preparation of this report, yes.

Q Do you now recall the nature or substance of your involvement?

A No, I do not.

Q I would like you to refer to the next page of GPU Exhibit-303 for identification. The name LaBelle appears in handwritten form on that document. I would like you to review that sheet of paper and tell us whether that refreshes your recollection as to the nature or substance of any work you did in support of or in relation to the safety aspects of the Muelheim-Kaerlich plant in view of the Three Mile Island 2 accident.

A No, not by itself, it does not.

Q If you wanted to refresh your recollection with regard to the nature or substance of the work you did on safety aspects of the Muelheim-Kaerlich plant in view of the TMI-2 accident, are there any

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

documents to which you would refer?

A I could refer to the document itself that is described in outline form here, yes.

Q I show you what has previously been marked as GPU Exhibit-32 for identification (handing document to the witness). Can you identify that document for us?

A As best I can recall, it appears to be the document which is cited in GPU Exhibit-290.

Q I would like you to review what has been marked as GPU Exhibit 32 and tell us if that refreshes your recollection as to the nature or substance of your involvement in the preparation of this report. In particular, as you go through that report, if there are any particular pages which refresh your recollection would you please note them for the record.

A I will state in general there are certain pieces of background information that may have been referenced in preparation of the report as taken from Safety Analysis Unit files.

I could not state that I can recall writing any portions of the report. There are graphs and tables and certain sections of words that appear to have been generated in the Safety Analysis Unit

1  
2 outside of the specific preparation of this document.

3 There was background information that was taken  
4 from old calculations that were performed, or reports.

5 Q Is that the only work you recall being  
6 performed by the Safety Analysis Unit as input to this  
7 report?

8 A You refer to work being performed as input to  
9 the report. I understand this to mean the supply of  
10 information that had previously been available for  
11 inclusion in the report.

12 Q From what sources was information  
13 gathered by the Safety Analysis Unit or anyone in the  
14 Safety Analysis Unit for inclusion in the report?

15 A I could not identify specific sources from my  
16 recollections.

17 Q If you wanted to find out that information,  
18 where would you go?

19 A To safety analysis unit calculational files or  
20 to perhaps the chron files which were maintained by  
21 myself for Three Mile Island <sup>(TMI-2)</sup> 2A

22 Q To what calculational files would you go?

23 A I don't know which specific calculational files  
24 I would go to.

25 Q If you wanted to find that out, how would



1  
2 you go about it?

3 A I would have to identify who the author of the  
4 calculational file would have been.

5 Q Are there any calculational files in  
6 existence which relate specifically to information  
7 provided for inclusion in this report?

8 A There could be.

9 Q If you wanted to find out whether there  
10 were such calculational files, who would you ask?

11 A As I said previously, I would have to know who  
12 the individuals were that were involved in the  
13 calculations.

14 Q If you wanted to find out who the  
15 individuals were, how would you go about it?

16 A I would have to rely on my recall from which I  
17 could not specifically identify who those individuals  
18 would be.

19 Q Are you referring to individuals within  
20 the Safety Analysis Unit?

21 A Yes.

22 Q Are there any particular portions of GPU  
23 Exhibit <sup>32</sup> for which the Safety Analysis Unit or  
24 anyone within the Safety Analysis Unit provided  
25 information, whether in the form of graph, tables or

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

writing?

A I could only respond just for those materials of which I am familiar. I could not respond as to what contributions may have been made by others in my unit for which I have no specific recollection.

Q Did you review the information provided by others in the Safety Analysis Unit before it was provided to the writer or writers of this report?

A I should have, but I could not recall that I did.

Q Did you prepare any written notes or comments with regard to information supplied by members of the Safety Analysis Unit as possible input to this report?

A I have no recollections that I did.

Q If you had prepared such documents, where would you find them?

A They would be in the BBR personal chron file.

Q I would like you to review the report, GPU Exhibit 232 for identification, and tell us what information contained therein you recall as being provided directly or indirectly by the Safety Analysis Unit.

MR. WISE: I will note for the record

1  
2 that the report is, I would guess, about an  
3 inch-and-a-half thick. I don't know how many  
4 pages.

5 Much of it is typed material, and then  
6 there are a number of graphs. I don't know that  
7 it is a particularly fair question to ask him  
8 to look at a document that size and separate  
9 out page-by-page where the information came  
10 from.

11 To the extent Mr. LaBelle can, by a  
12 reasonable perusal of the document, identify  
13 something specific that he knows came from his  
14 unit, I have no objection.

15 But the record should be clear that the  
16 witness is being asked to look at a very good-  
17 sized document and I think it is fair to ask  
18 him to do the best he can in a reasonably short  
19 time, but I don't think it is at all fair to  
20 ask him to go through it on a line-by-line basis  
21 to separate out specific pieces of  
22 information that may have come out of his unit.

23 MR. GLASSMAN: Mr. LaBelle did respond to  
24 an earlier question by saying this document would  
25 refresh his recollection, or he thought it would,

1  
2 and Mr. LaBelle already turned the pages and  
3 reviewed the entire document in some manner  
4 while we have been sitting here waiting for  
5 his answer. I think we can therefore proceed  
6 without it taking too much time.

7 MR. WISE: You are right. You did ask  
8 him before to go through it. He will have to go  
9 through it on a page-by-page basis again. If  
10 there is something specific in here that you are  
11 interested in, you might wish to focus your  
12 questions on that, rather than have him go  
13 through the whole document.

14 BY MR. GLASSMAN:

15 Q Did Safety Analysis provide input in all  
16 of the sections of this report, as far as you recall?

17 A Not that I am aware.

18 Q Did Safety Analysis provide input to the  
19 introduction of the report?

20 A Let me clarify your word "provide." The way I  
21 would understand "provide" would mean whether we  
22 generated information to go into the report versus  
23 whether information was generated by others from  
24 information that they had collected from correspondence  
25 from the Safety Analysis area or subsequent reports

1  
2 that may have contained Safety Analysis information  
3 that had been generated by Safety Analysis. The  
4 latter is more indicative of the documentation that  
5 will be found in this report.

6 Q I would like you to go through the table  
7 of contents, please, found on Page-5504, and tell us  
8 whether the Safety Analysis Unit or anyone therein  
9 provided any input or forwarded any background  
10 information, writing, graphs or tables, with regard  
11 to each of the sections listed there.

12 A I could not do that based on the table of  
13 contents alone.

14 Q I would like you to review Pages-E-5671  
15 through-5685 of this report, which bears the heading  
16 "No-4 Comparison of TMI-2 and MK-A," and tell us  
17 whether Safety Analysis or anyone in the Safety  
18 Analysis Unit provided any input whatsoever,  
19 background information, graphs or tables or writing,  
20 to prepare this section of the report.

21 A As best I can recall, Mr. Bonoca of Safety  
22 Analysis worked with Mr. Caspar of BBR in preparation  
23 of Section-4.1 of Chapter-4 within the pages that you  
24 have identified.

25 Other than that, I recognize no portions which

1  
2 are readily identifiable as having input provided by  
3 the Safety Analysis Unit.

4 Q I next would like you to review Section<sup>5</sup>  
5 of this report which bears the heading "Safety Aspects  
6 of the MK Plant," which is found on Pages 5686--  
7 through 5708.

8 I would like you to review those pages,  
9 please, and tell us whether anyone within the Safety  
10 Analysis Unit provided any input to the preparation of  
11 that portion of the report, whether by way of  
12 background information, graphs, tables or writing.

13 A I do not recognize any portions of the pages  
14 that you have described as having been based on  
15 background generated by the Safety Analysis Unit.

16 Q I would like you to review next Appendix<sup>D</sup>  
17 of this report which is found beginning at Page 5732  
18 and tell us whether anyone within the Safety Analysis  
19 Unit provided any input to the preparation of this  
20 report, whether by background information, writing,  
21 graphs or tables.

22 A No.

23 MR. GLASSMAN: I have no further questions  
24 of this witness at this time.

25 MR. WISE: I have one or two quick



1  
2 questions.

3 EXAMINATION BY

4 MR. WISE:

5 Q During your examination the other day by  
6 Mr. Glassman you were asked about your activities on  
7 the day of the accident, March 28th, 1979<sup>(190328)</sup> I would  
8 like to focus your attention to the time when you  
9 arrived at the project control room<sup>(CR)</sup> and there was a  
10 discussion occurring with Mr. Dunn present and the  
11 subject of superheat came up.

12 Mr. Glassman, I believe, asked you  
13 whether at that time you had any opinion whether the  
14 existence of superheat in the system was a good or bad  
15 thing.

16 Could you explain for us the circumstances  
17 at the time you entered the room and the reason for  
18 the answer that you gave to Mr. Glassman?

19 MR. GLASSMAN: I object to the form of the  
20 question.

21 A The time I spent in the project control center,  
22 as best I can recall, was a very short period of time  
23 which did not allow me very long to grasp the complete  
24 surroundings of the discussions that were being held  
25 with respect to superheat.



1  
2 Q In general, do you have any opinion as  
3 to whether or not the existence of superheat in a  
4 pressurized water reactor <sup>(PWR)</sup> is a good or a bad thing?

5 A It would have been of concern to me since one  
6 does not desire to be in saturation during operation  
7 or shutdown, much less to be in superheat conditions.

8 MR. WISE: I have no further questions at  
9 this time.

10 MR. GLASSMAN: I have no further redirect  
11 questions at this time.

12 (Time noted: 3:10 p.m.)  
13  
14

15 -----  
16 Subscribed and sworn to  
17 before me this-----day  
18 of-----, 1981.  
19  
20  
21 -----  
22  
23  
24  
25

CERTIFICATE

STATE OF NEW YORK    )  
                          : ss.:  
COUNTY OF NEW YORK    )

I, JOSEPH R. DANYO, a Notary  
Public of the State of New York, do hereby  
certify that the continued deposition of  
DANNY W. LaBelle was taken before  
me on June 4th, 1981 consisting  
of pages 252 through 337;

I further certify that the witness had  
been previously sworn and that the within  
transcript is a true record of said testimony;

That I am not connected by blood or  
marriage with 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 21 day of June 1981,

Joseph R. Danyo  
JOSEPH R. DANYO

## I N D E X

Witness	Examination by	Page
Danny W. LaBelle -		
	resumed Mr. Glassman	254
	Mr. Wise	336

\* \* \*

## E X H I B I T S

GPU Exhibits For  
Identification

292	Memorandum dated 5/4/79 <sup>(490504)</sup> to J. H. Taylor from D. W. LaBelle with attached documents	254
293	Memorandum dated May 8, 1979 <sup>(490508)</sup> to E. A. Womack from D. W. LaBelle	270
294	Multi-page document, cover page being dated 1/8/80 <sup>(800108)</sup> to D. W. LaBelle from J.H.T.	284
295	Multi-page document dated April 12, 1979 <sup>(790412)</sup> to Distribution from D. W. Fairbrother, subject: Summary of Pressurizer Level Investigation/ Instruction #196	294
296	Memorandum dated April 5, 1979 <sup>(490405)</sup> to Mr. Kane from E. W. Swanson	302
297	Memorandum dated April 8, 1979 <sup>790408</sup> to G. T. Fairburn from D. G. Newton and L. R. Cartin	303

## INDEX OF EXHIBITS CONTINUED

GPU Exhibits For  
Identification

## Page

- 298 Memorandum dated April 8th, 1979<sup>(190408)</sup> to E. A. Womack from D. W. Newton 304
- 299 Memorandum dated April 9th, 1979<sup>(190409)</sup> to E. A. Womack and G. T. Fairburn from E. R. Kane 306
- 300 Multi-page document bearing page numbers D-46956 through D-46968<sup>(190611)</sup> 307
- 301 Memorandum dated June 11, 1979<sup>(800424)</sup> to R. I. Lutz from D. B. Fairbrother 313
- 302 Memorandum dated April 25, 1980<sup>(191201)</sup> to E. A. Womack from J. H. Taylor, with attached memo dated December 7, 1979<sup>(190502)</sup> to J. H. Taylor from D. W. LaBelle 315
- 303 Memorandum dated May 2, 1979<sup>(190502)</sup> to Distribution from J. R. Bohart 319

---